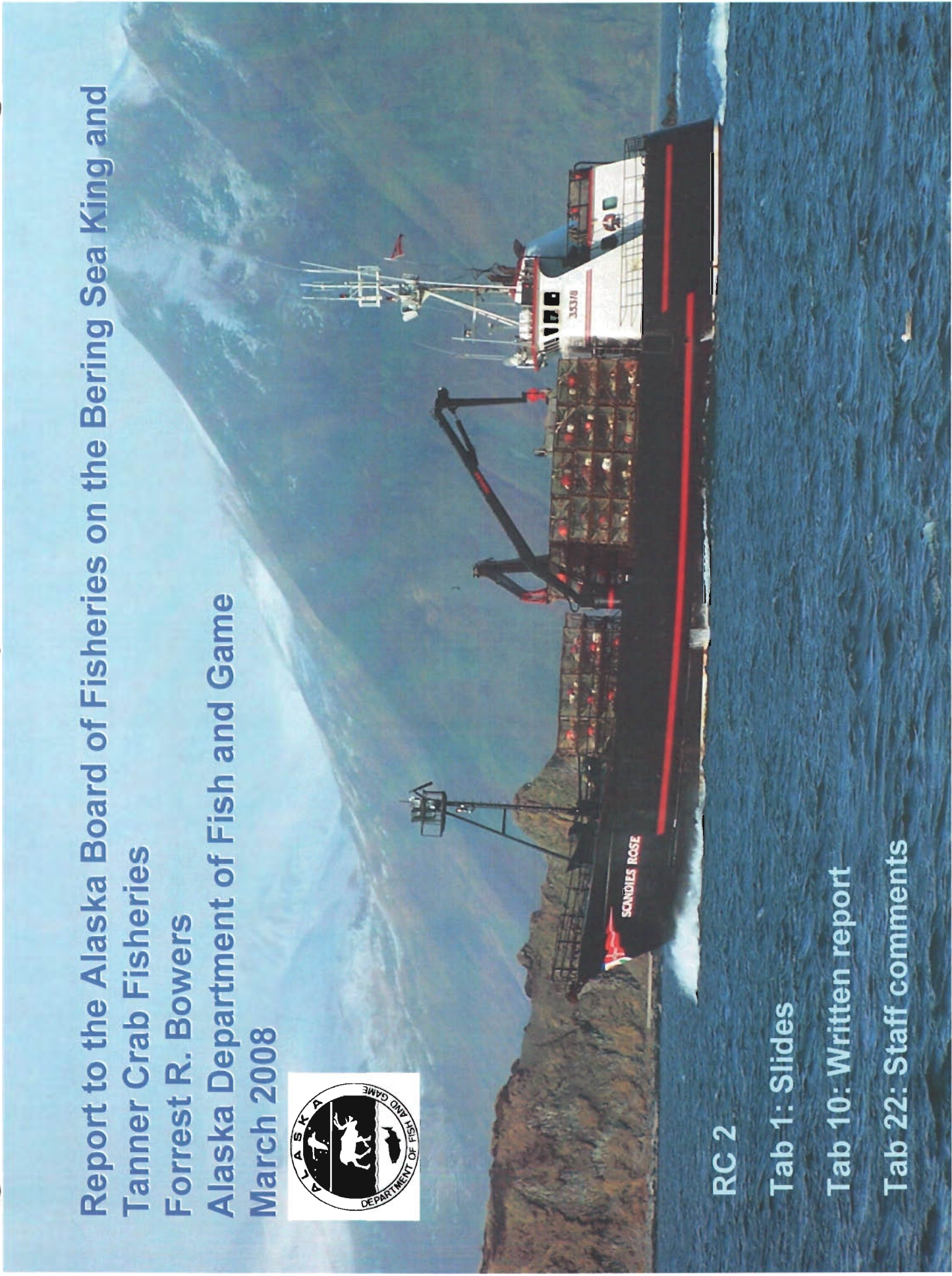


ORAL REPORTS

| | |
|----|--|
| 1 | Report to the Alaska Board of Fisheries, Bering Sea King and Tanner Crab |
| 2 | Report to the Alaska Board of Fisheries, Aleutian Islands King and Tanner Crab |
| 3 | The Pribilof District Red King Crab, a report to the Alaska Board of Fisheries |
| 4 | Review of categories for Federal BS/AI King and Tanner Crab FMP Management Measures |
| 5 | Central Region Shellfish |
| 6 | The Weathervane Scallop Fishery |
| 7 | Overview of Revised Federal Overfishing Definitions for the BS/AI King and Tanner Crab Stocks |
| 8 | Customary and Traditional Use: Tanner and King Crabs, PWS Management Area |
| 9 | WRITTEN REPORTS |
| 10 | Annual Management Report for the commercial and subsistence shellfish fisheries of the Aleutian Islands, Bering Sea and Westward Region's Shellfish Observer Program |
| 11 | Federal Requirements for State of Alaska Management Measures Under the Auspices of the FMP for Bering Sea/Aleutian Islands King and Tanner Crabs |
| 12 | Annual Management Report for the shellfish fisheries of the Kodiak, Chignik, and Alaska Peninsula Areas, 2006 |
| 13 | The Norton Sound section shellfish, 2007 |
| 14 | Prince William Sound king and Tanner crab review, 2007 |
| 15 | Biodegradable twine report to the Alaska Board of Fisheries |
| 16 | Annual Management Report for the commercial weathervane scallop fisheries in Alaska, 2005/06 |
| 17 | Shellfish keywords, 1999 |
| 18 | |
| 19 | SUBSISTENCE |
| 20 | Customary and Traditional Use Worksheet, king crab and Tanner crab, Prince William Sound Management Area, and other background information |
| 21 | |
| 22 | STAFF COMMENTS |
| 23 | DELIBERATION MATERIAL |
| 24 | |
| 25 | |
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**Report to the Alaska Board of Fisheries on the Bering Sea King and
Tanner Crab Fisheries
Forrest R. Bowers
Alaska Department of Fish and Game
March 2008**



RC 2

Tab 1: Slides

Tab 10: Written report

Tab 22: Staff comments

Proposals

- Committee A – Bering Sea king and Tanner crab
 - 368 – CDQ transfer
 - 369 – Tanner crab observer coverage
 - 370-372 – Registration requirements
 - 373 – Directed/Incidental Tanner crab fisheries
 - 374-375 – Gear operation and storage
 - 376-377 – Pot limits
 - 378-379 – Bait pots
 - 380 – Pribilof District red king crab plan
 - 381 – Saint Matthew Island Section blue king crab minimum TAC

Overfished Stocks/Rebuilding Plans

- Overfishing is defined in federal crab FMP
 - A stock is considered overfished if the stock size in any given year falls below 1/2 of the long-term average stock size.
 - A rebuilding plan must be implemented within one year of a stock being declared overfished.
 - A rebuilding plan must result in the stock reaching the long-term average stock-size within 10 years of the overfishing declaration.
- Currently the following major BSAI crab stocks are considered overfished
 - Snow crab - 1999
 - Saint Matthew Island Section blue king crab - 1999
 - Pribilof District blue king crab - 2002
- Rebuilding plan components
 - Habitat protection measures
 - Bycatch reduction
 - Gear modifications promoting escapement of non-target individuals
 - Harvest strategy that promotes rebuilding
 - Abundance based thresholds
 - Conservative harvest rate
 - Minimum TAC/GHL

Crab Rationalization Overview

- Implemented in August 2005.
- TAC distributed as Individual Fishing Quota (IFQ)
 - TAC may not be adjusted inseason as GHIL could.
- Seasons have been lengthened from a few days to a few months.
- Fleet size has been reduced by 2/3.
- Number of days a vessel is active in a fishery has increased from a few days to a few weeks.
- Vessel operators may share gear with one another.
- Soak times have increased.
- Pot limits increased to 450 per vessel for major fisheries.
- Concurrent harvesting of some species.

King Crab Registration Area T – Bristol Bay



Bristol Bay Red King Crab Fishery Overview

- Domestic pot fishery developed in mid-1960s.
- Harvest peaked in 1980, then decreased with fishery closures in 1983, 1994 and 1995.
- Aggressive inseason management measures were implemented prior to the 1996 season
 - Tiered pot limits
 - Inseason reporting
 - Refined harvest strategy

Bristol Bay Red King Crab Fishery Harvest Data, 1996 – 2007/08

| Year | TAC/GHL ^a | Number of | | Harvest ^b | CPUE ^c | Deadloss ^d |
|--------------------------------|----------------------|------------|------------|----------------------|-------------------|-----------------------|
| | | Vessels | Landings | | | |
| 1996 | 5.0 | 196 | 198 | 8,405,614 | 16 | 0.3% |
| 1997 | 7.0 | 256 | 265 | 8,756,490 | 15 | 0.2% |
| 1998 | 15.8 | 274 | 284 | 14,290,271 | 15 | 0.4% |
| 1999 | 10.1 | 257 | 268 | 11,070,729 | 12 | 0.4% |
| 2000 | 7.7 | 246 | 256 | 7,546,145 | 12 | 0.4% |
| 2001 | 6.6 | 230 | 238 | 7,786,446 | 19 | 0.7% |
| 2002 | 8.6 | 242 | 254 | 8,856,828 | 20 | 0.4% |
| 2003 | 14.5 | 252 | 275 | 14,529,124 | 18 | 1.6% |
| 2004 | 14.3 | 251 | 270 | 14,112,438 | 23 | 1.1% |
| 1996-2004 average | 10.0 | 245 | 256 | 10,594,898 | 16 | 0.6% |
| 2005/06 | 16.5 | 89 | 264 | 16,478,458 | 25 | 0.5% |
| 2006/07 | 13.9 | 81 | 187 | 13,892,044 | 34 | 0.7% |
| 2007/08 | 18.3 | 74 | 246 | 18,327,780 | 28 | 0.7% |
| 2005/06-2007/08 average | 16.2 | 81 | 232 | 16,232,761 | 29 | 0.6% |

^aMillions of pounds.

^bPounds.

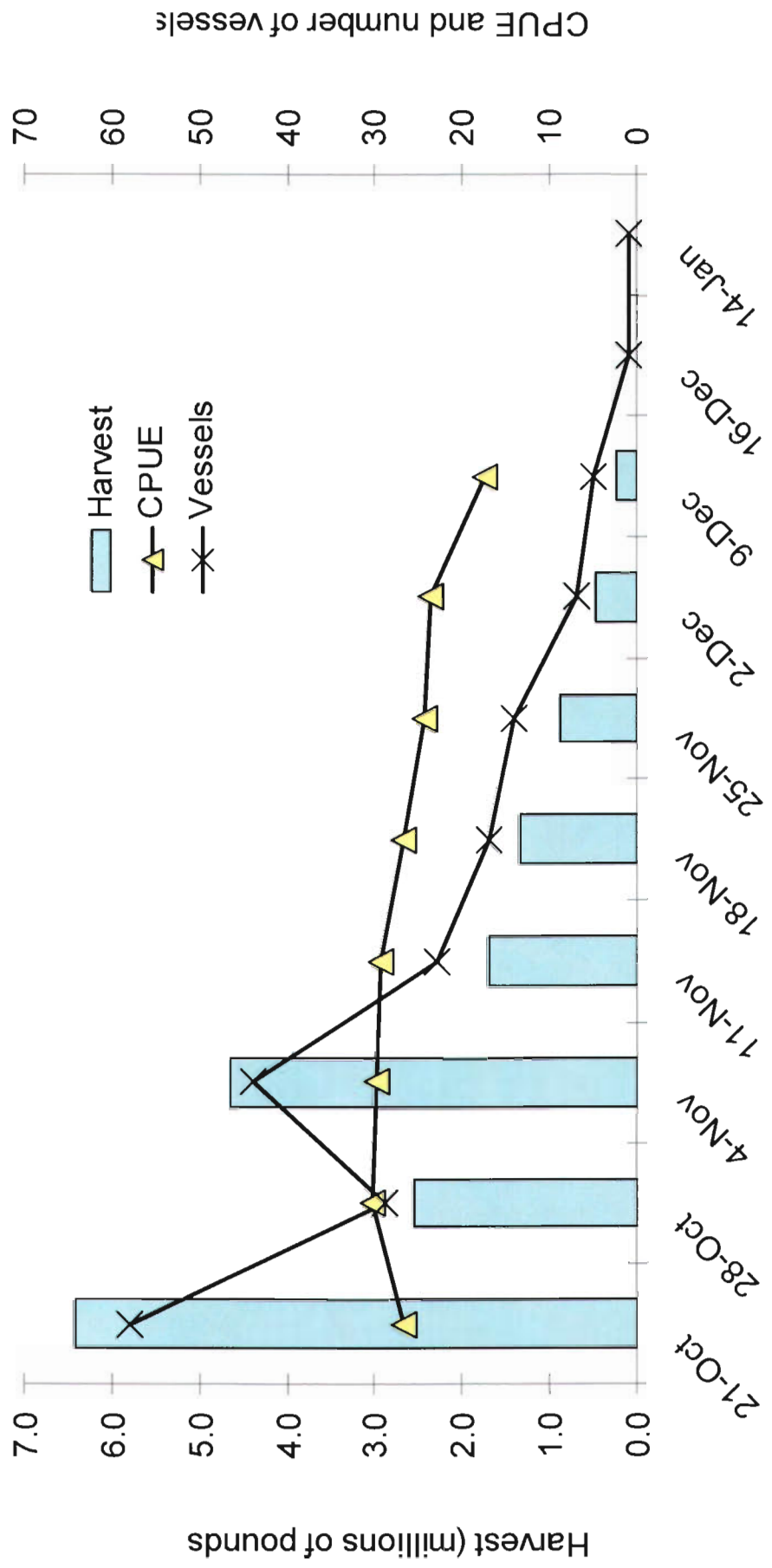
^cNumber of legal crabs retained per pot lift.

^dPercentage of total harvest.

Bristol Bay Red King Crab Fishery Effort Data, 1996-2007/08

| Year | Number of pots registered | | | Pot limit | Number of pots pulled | | | Average number of days fished |
|--------------------------------|---------------------------|------------|------------|------------|-----------------------|--------------|--------------|-------------------------------|
| | Fleet | Vessel | Vessel | | Fleet | Vessel | Vessel | |
| 1996 | 39,461 | 201 | 201 | 200/250 | 76,433 | 390 | 390 | 4 |
| 1997 | 27,499 | 107 | 107 | 100/125 | 90,427 | 353 | 353 | 4 |
| 1998 | 56,420 | 206 | 206 | 200/250 | 141,707 | 517 | 517 | 5 |
| 1999 | 42,403 | 165 | 165 | 160/200 | 146,997 | 572 | 572 | 5 |
| 2000 | 26,352 | 107 | 107 | 100/125 | 98,694 | 401 | 401 | 4 |
| 2001 | 24,571 | 107 | 107 | 100/125 | 63,242 | 275 | 275 | 3 |
| 2002 | 25,833 | 107 | 107 | 100/125 | 68,328 | 282 | 282 | 3 |
| 2003 | 46,964 | 186 | 186 | 200/250 | 128,430 | 510 | 510 | 5 |
| 2004 | 49,506 | 197 | 197 | 200/250 | 90,976 | 362 | 362 | 3 |
| 1996-2004 average | 37,668 | 154 | 154 | | 100,582 | 411 | 411 | 4 |
| 2005/06 | 15,713 | 177 | 177 | 450 | 99,573 | 1,119 | 1,119 | 26 |
| 2006/07 | 14,685 | 181 | 181 | 450 | 64,325 | 794 | 794 | 21 |
| 2007/08 | 11,615 | 157 | 157 | 450 | 101,734 | 1,375 | 1,375 | 26 |
| 2005/06-2007/08 average | 14,004 | 172 | 172 | 450 | 97,804 | 1,203 | 1,203 | 24 |

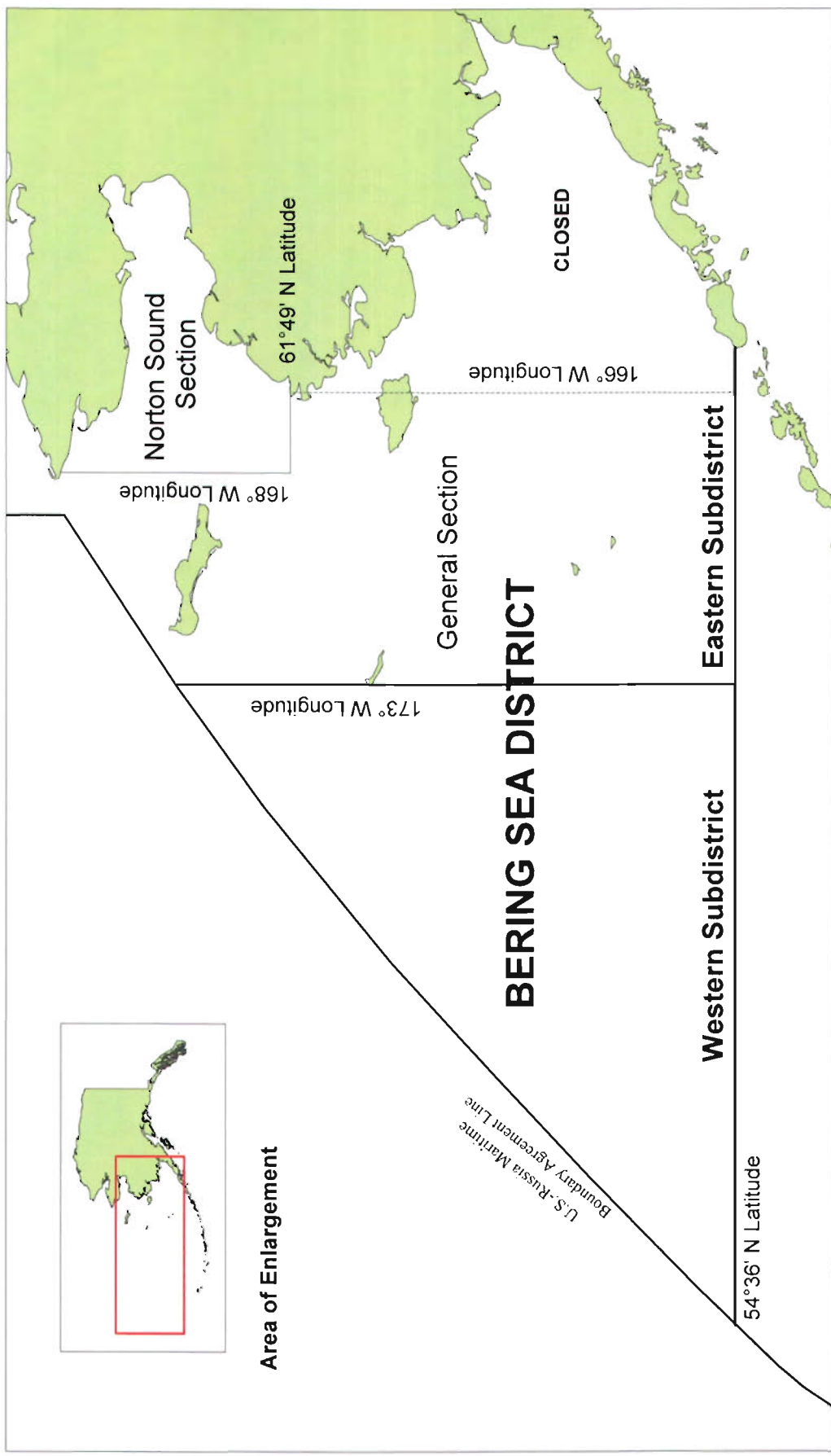
2007/08 Bristol Bay Red King Crab Fishery Harvest, Catch per Unit of Effort and Fleet Size by Week



Bristol Bay Red King Crab Stock Status

- Estimated spawning biomass and legal male abundance are at the highest levels since 1980.
- Estimated mature female abundance is at the highest level since 1981.
- Recruitment to the mature female size class is expected to be poor for at least the next two years, followed by two years of poor recruitment to the mature male size class.

Bering Sea District of Tanner Crab Registration Area J



Bering Sea Snow Crab Fishery Overview

- Domestic pot fishery began in the late 1970s.
- Harvest peaked in 1991, decreased in the mid-1990s and peaked again in 1998.
- Abundance severely decreased after the 1999 season.

Bering Sea Snow Crab Fishery Harvest Data, 1997-2006/07

| Year | TAC/GHL ^a | Number of | | Harvest ^b | CPUE ^c | Deadloss ^d |
|--------------------------------|----------------------|------------|------------|----------------------|-------------------|-----------------------|
| | | Vessels | Landings | | | |
| 1997 | 117.0 | 226 | 1,127 | 119,543,024 | 133 | 2.0% |
| 1998 | 225.9 | 229 | 1,767 | 243,492,577 | 209 | 1.2% |
| 1999 | 186.2 | 241 | 1,631 | 184,735,011 | 160 | 1.0% |
| 2000 | 26.4 | 229 | 288 | 30,774,838 | 137 | 1.1% |
| 2001 | 25.3 | 207 | 293 | 23,382,046 | 97 | 1.8% |
| 2002 | 28.5 | 191 | 403 | 30,233,494 | 76 | 1.9% |
| 2003 | 23.7 | 192 | 256 | 26,198,024 | 154 | 2.5% |
| 2004 | 19.3 | 189 | 240 | 22,170,150 | 157 | 1.0% |
| 2005 | 19.4 | 169 | 196 | 23,036,287 | 239 | 1.0% |
| 1997-2005 average | 74.6 | 208 | 689 | 78,173,939 | 156 | 1.5% |
| 2005/06 | 33.5 | 78 | 310 | 33,256,146 | 204 | 1.0% |
| 2006/07 | 32.9 | 69 | 274 | 32,699,874 | 332 | 1.2% |
| 2005/06-2006/07 average | 33.2 | 74 | 292 | 32,978,010 | 259 | 1.1% |

^aMillions of pounds.

^bPounds.

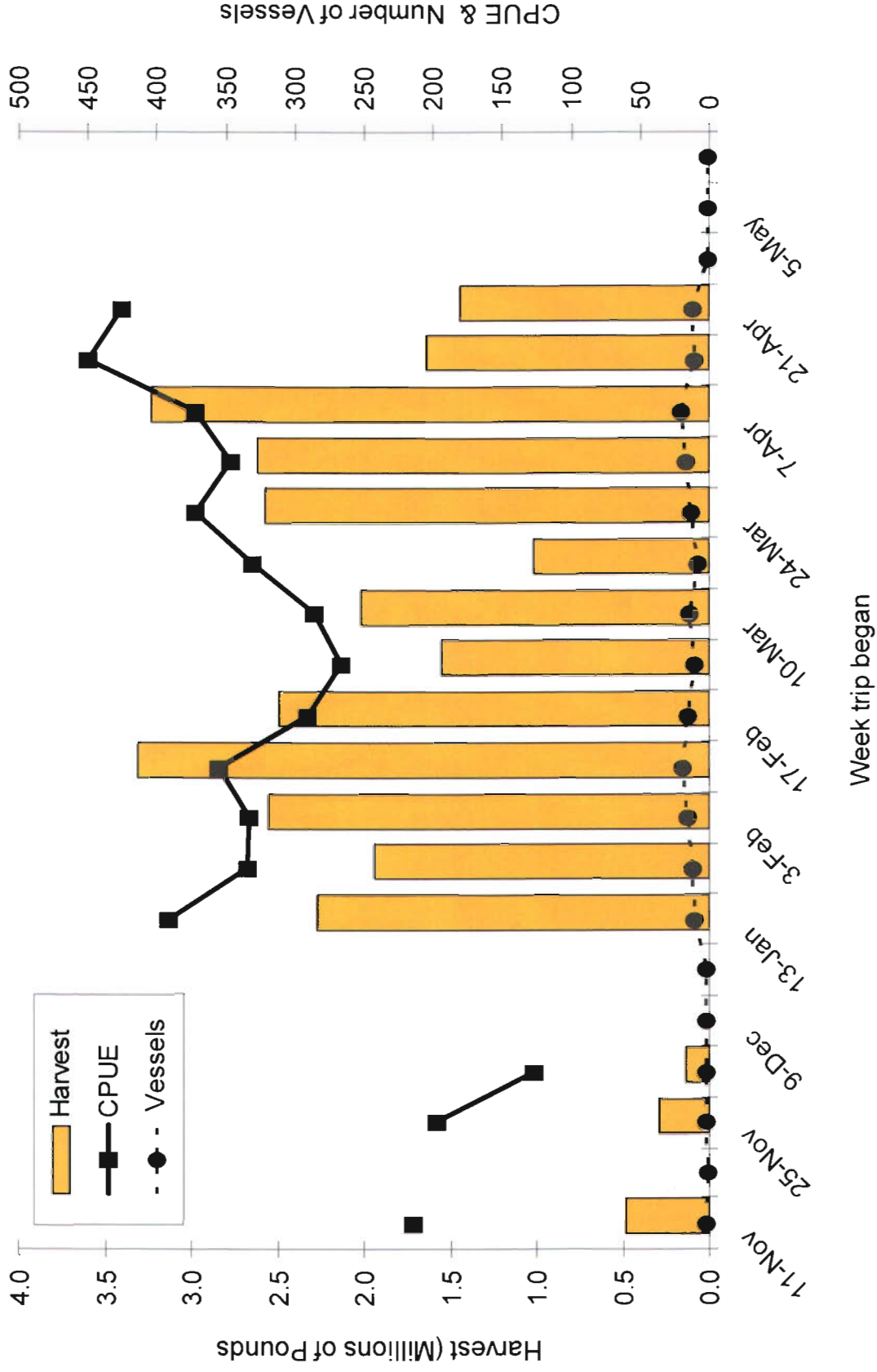
^cNumber of legal crabs retained per pot lift.

^dPercentage of total harvest.

Bering Sea Snow Crab Fishery Effort Data, 1997-2006/07

| Year | Number of pots registered | | Pot limit | Number of pots pulled | | Average number of days fished |
|--------------------------------|---------------------------|------------|------------|-----------------------|--------------|-------------------------------|
| | Fleet | Vessel | | Fleet | Vessel | |
| 1997 | 47,036 | 208 | 200/250 | 754,140 | 3,337 | 65 |
| 1998 | 47,909 | 209 | 200/250 | 891,219 | 3,892 | 64 |
| 1999 | 50,173 | 208 | 200/250 | 899,308 | 3,732 | 66 |
| 2000 | 43,407 | 190 | 200/250 | 170,064 | 743 | 7 |
| 2001 | 40,379 | 195 | 200/250 | 176,930 | 855 | 30 |
| 2002 | 37,807 | 198 | 200/250 | 308,132 | 1,613 | 24 |
| 2003 | 20,452 | 107 | 100/120 | 139,279 | 725 | 9 |
| 2004 | 14,444 | 76 | 70/90 | 110,087 | 582 | 8 |
| 2005 | 12,840 | 76 | 70/90 | 69,863 | 413 | 5 |
| 1997-2005 average | 34,939 | 168 | | 391,002 | 1,879 | 31 |
| 2005/06 | 13,734 | 176 | 450 | 108,320 | 1,389 | 42 |
| 2006/07 | 10,851 | 157 | 450 | 80,112 | 1,161 | 35 |
| 2005/06-2006/07 average | 12,293 | 167 | 450 | 94,216 | 1,282 | 39 |

2006/07 Bering Sea Snow Crab Fishery Harvest, Catch per Unit of Effort and Fleet Size by Week



Bering Sea Snow Crab Stock Status

- Estimated spawning biomass has shown an increasing trend since 2002.
- Model estimates indicate that the biomass of mature crabs is at the highest level since 1999.
- Model projections suggest that spawning biomass will continue to increase, but will not reach the rebuilt level by 2010.

Bering Sea Tanner Crab Fishery Overview

- Domestic pot fishery began in late-1960s.
- Harvest peaked in 1977 and then decreased leading to fishery closures in 1986 and 1987.
- Effort and harvest increased to another peak in the early 1990s and then decreased quickly leading to fishery closures from 1997 to 2004.

Bering Sea Tanner Crab Fishery Harvest Data, 1993-2006/07

| Year | TAC/GHL ^a | Number of | | Harvest ^b | CPUE ^c | Deadloss ^d |
|--------------------------------|----------------------|------------|----------------|----------------------|-------------------|-----------------------|
| | | Vessels | Landings | | | |
| 1993 | 19.8 | 296 | 862 | 16,891,320 | 13 | 1.5% |
| 1994 | 7.5 | 183 | 349 | 7,766,886 | 13 | 1.7% |
| 1995 | 5.5 | 196 | 256 | 4,233,061 | 8 | 1.1% |
| 1996 | 8.4 | 196 | 347 | 1,806,077 | 5 | 0.8% |
| 1997-2004 | | | Fishery closed | | | |
| 1993-1996 average | 10.3 | 218 | 454 | 7,674,336 | 11 | 1.3% |
| 2005/06 - west | 1.5 | 43 | 77 | 791,315 | 12 | 1.8% |
| 2006/07 - east | 1.7 | 37 | 58 | 1,266,286 | 20 | 0.7% |
| 2006/07 - west | 0.9 | 38 | 64 | 633,897 | 13 | 3.0% |
| 2006/07 - total | 2.6 | 53 | 122 | 1,900,183 | 17 | 1.4% |
| 2005/06-2006/07 average | 2.1 | 48 | 100 | 1,345,749 | 15 | 2.2% |

^aMillions of pounds.

^bPounds.

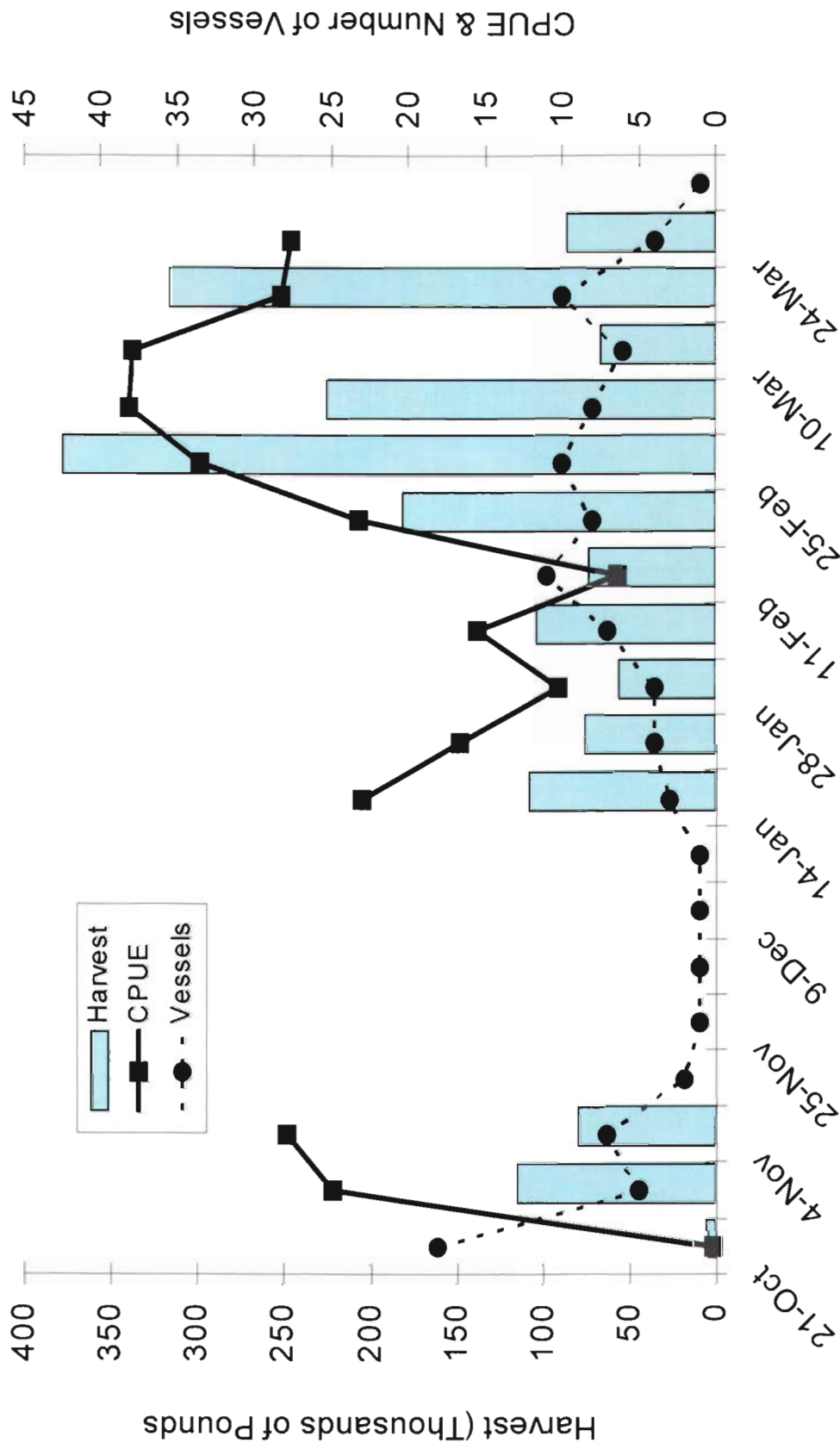
^cNumber of legal crabs retained per pot lift.

^dPercentage of total harvest.

Bering Sea Tanner Crab Fishery Effort Data, 1993-2006/07

| Year | Number of pots registered | | | Pot limit | Number of pots pulled | | | Average number of days fished |
|--------------------------------|---------------------------|------------|--------|----------------|-----------------------|--------------|--------|-------------------------------|
| | Fleet | Vessel | Vessel | | Fleet | Vessel | Vessel | |
| 1993 | 116,039 | 392 | | 200/250 | 576,464 | 1,948 | | 52 |
| 1994 | 38,670 | 211 | | 200/250 | 249,536 | 1,364 | | 20 |
| 1995 | 40,827 | 208 | | 200/250 | 247,853 | 1,265 | | 16 |
| 1996 | 68,602 | 350 | | 200/250 | 149,275 | 762 | | 15 |
| 1997-2004 | | | | Fishery closed | | | | |
| 1993-1996 average | 66,035 | 303 | | | 305,782 | 1,404 | | 26 |
| 2005/06 - west | 545 | 136 | | 450 | 29,693 | 691 | | 34 |
| 2006/07 - east | - | - | | - | 26,351 | 712 | | - |
| 2006/07 - west | - | - | | - | 22,841 | 601 | | - |
| 2006/07 - total | 4,140 | 180 | | 450 | 49,192 | 928 | | 20 |
| 2005/06-2006/07 average | 2,343 | 49 | | 450 | 32,019 | 667 | | 27 |

2006/07 Bering Sea Tanner Crab Fishery Harvest, Catch per Unit of Effort and Fleet Size by Week



Week trip began

Bering Sea Tanner Crab Stock Status

- Recruitment to legal male size-class expected to continue at or above recent levels for the next several years.
- Recruitment to mature female size-class expected to decrease.
- Legal male size-class continues to be predominantly old or older shelled crabs.

Saint Matthew Island Section Blue King Crab

Overview

- Fishery closed since 1999.
- All state waters around Saint Matthew and Hall Islands closed to commercial fishing.
- 2007 abundance estimates for all size and sex categories increased from the 2006 estimates.
- Mature male biomass threshold met in 2007, but 2007 calculated TAC of 1.8 million pounds does not meet the harvest strategy minimum of 2.7 million pounds.
- Precision of trawl survey estimates is generally poor, but both pot and trawl survey catches indicate a positive trend in abundance.

Questions,
Comments?
Thank You.



Report to the Alaska Board of Fisheries on the Aleutian Islands King and Tanner Crab Fisheries

Barbi J. Failor-Rounds
Alaska Department of Fish and Game
March 2008



Oral Report Tab 2, RC 2

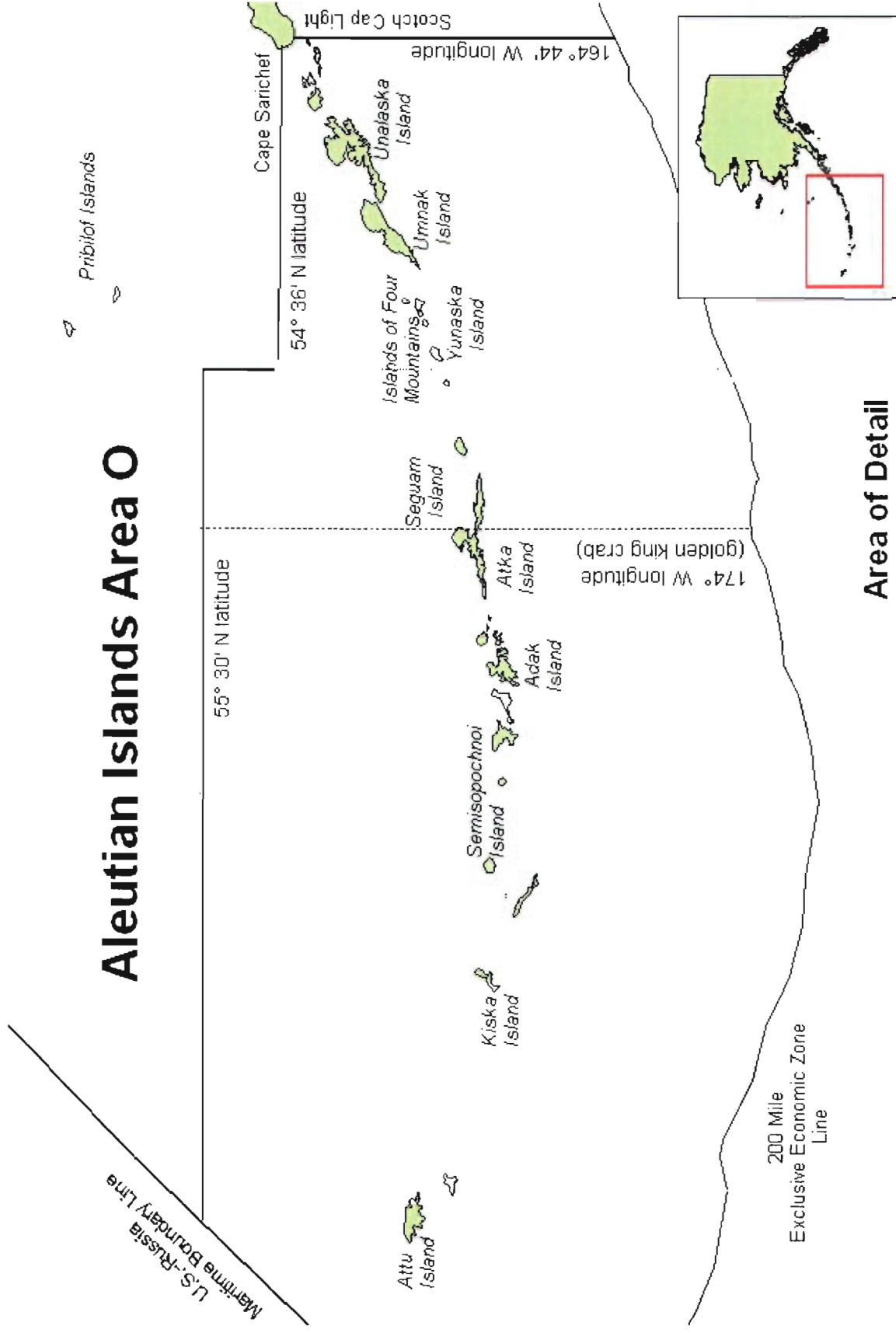
Written Report Tab 10, RC 2

Staff Comments Tab 22, RC 2

Aleutian Islands Crab Fisheries

- ▶ KING CRAB
 - Aleutian Islands golden king crab
- ▶ TANNER CRAB
 - Eastern Aleutian District (EAD) Tanner crab

King Crab Registration Area O – Aleutian Islands



Area of Detail

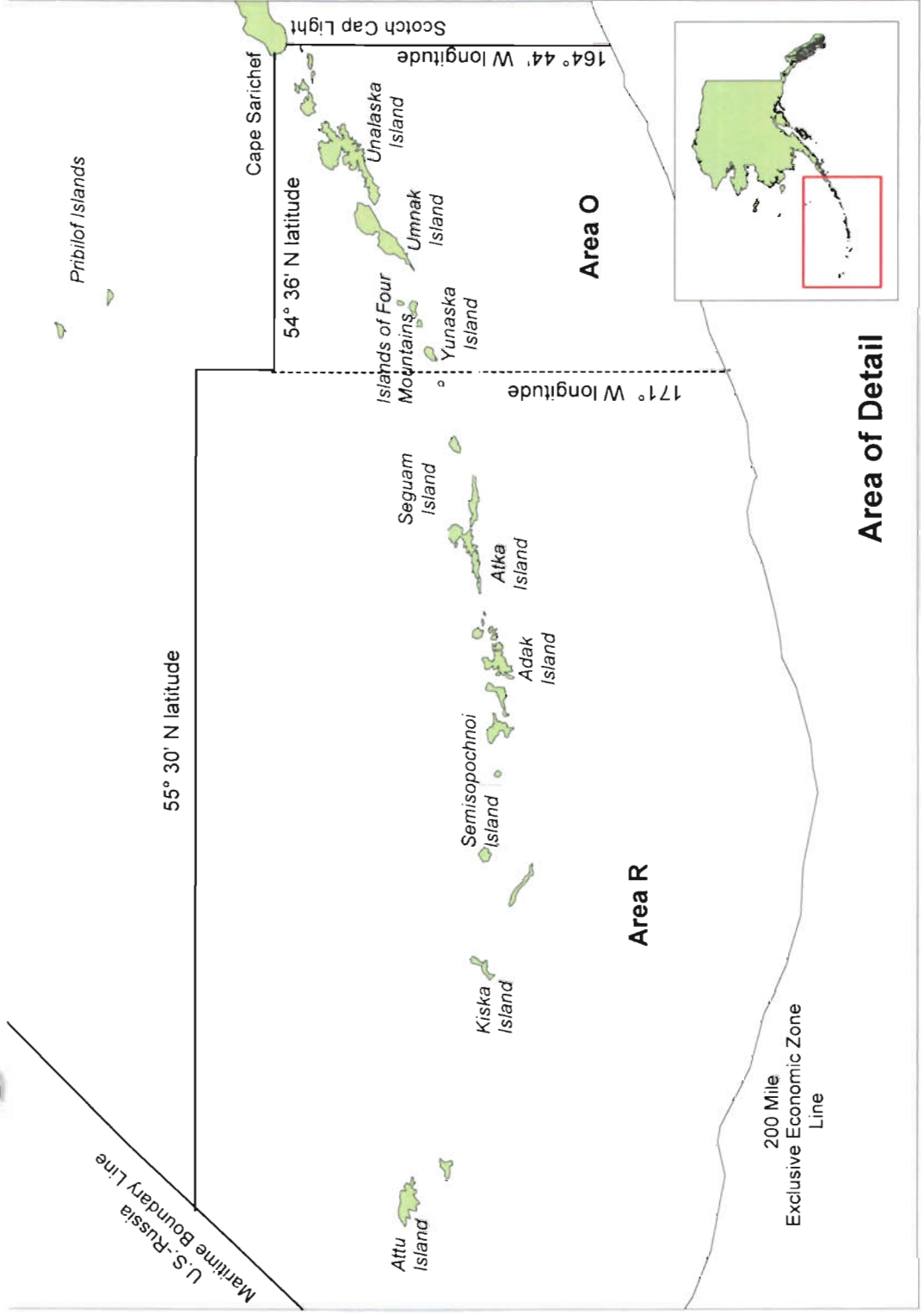
Aleutian Islands King Crab Proposals

- ▶ PROPOSAL 382 – 5 AAC 39.145 Escape Mechanism for Shellfish and Bottomfish Pots
- ▶ PROPOSAL 383 – 5 AAC 34.xxx New Section
- ▶ PROPOSAL 384 – 5 AAC 39.675 Crab Pot Gear Storage for Bering Sea/Aleutian Islands IFQ, CDQ, and Adak Community Allocation Crab Fisheries

-
- - Aleutian Islands Golden King Crab
 - Fishery Overview

- ▶ Initial harvests of golden king crab incidental to red king crab
- ▶ Directed harvest began in the 1981/82 season

Aleutian Islands King Crab Registration Areas O and R



Aleutian Islands Golden King Crab Fishery Overview Continued

- ▶ Management measures implemented beginning with the 1996/97 season:
 - Dutch Harbor and Adak Registration Areas combined to form Aleutian Islands Area O
 - East and West dividing line moved from 171° to 174° W longitude
 - Conservative GHs established for stocks east and west of 174° W longitude
 - All vessels required to carry an observer at all times while targeting golden king crab

Aleutian Islands Golden King Crab Fishery Overview Continued

- ▶ Conservative GHs established for stocks east and west of 174° W longitude
 - Board directed ADF&G to manage conservatively both east and west of 174° W longitude
 - ▶ 3.2 million pound eastern quota:
 - Arrived at by doubling average harvest over previous 5 seasons in the Dutch Harbor area (east of 171° W longitude)
 - Reduced to 3.0 million pounds after 1997/98 season due to a trend of declining CPUE during 1997/98 season coupled with information from tag returns
 - ▶ 2.7 million pound western quota:
 - Arrived at on basis of preceding 5-year average harvest in the waters west of 174° W. longitude

Aleutian Islands Golden King Crab Fishery Overview Continued

- ▶ Crab rationalization (CR) program implemented in August 2005
 - Season: August 15 – May 15
 - Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) fisheries east of 174° W long
 - IFQ and Adak Community Allocation (ACA) fisheries west of 174° W long
 - Observer coverage requirement changes

Aleutian Islands Golden King Crab Pre-rationalization and Rationalized Fishery Effort Data, 1997/98 - 2006/07

| Year | Locale | Number of pots registered | | Number of pots pulled | | Season length ^a |
|------------------------------|-----------------|---------------------------|--------|-----------------------|--------|----------------------------|
| | | Fleet | Vessel | Fleet | Vessel | |
| 1997/98 - 2004/05 average | East of 174° W. | 11,071 | 659 | 68,609 | 4,279 | 42 |
| | West of 174° W. | 6,968 | 871 | 73,997 | 10,098 | 265 |
| | TOTAL | 18,039 | | 137,410 | | |
| 2005/06 - 2006/07 average | East of 174° W. | 8,492 | 1,310 | 22,842 | 3,547 | 273 |
| | West of 174° W. | 5,450 | 1,817 | 25,041 | 8,347 | 273 |
| | TOTAL | 9,567 | | 47,883 | | |

^aDays.

Aleutian Islands Golden King Crab Pre-rationalization and Rationalized Fishery Harvest Data, 1997/98 - 2006/07

| Year | Locale | TAC/GHL | Number of | | | | Harvest ^{b,c} | Deadloss ^c |
|------------------------------|-----------------|------------|----------------------|------------|------------------|------------------|------------------------|-----------------------|
| | | | Vessels ^a | Landings | Crabs | | | |
| 1997/98 - 2004/05 average | East of 174° W. | 3.0 | 16 | 47 | 682,764 | 3,042,782 | 65,111 | |
| | West of 174° W. | 2.7 | 8 | 81 | 626,658 | 2,547,981 | 50,397 | |
| | TOTAL | 5.7 | 18 | 129 | 1,309,422 | 5,590,763 | 115,508 | |
| 2005/06 - 2006/07 average | East of 174° W. | 2.7 | 7 | 32 | 570,685 | 2,629,896 | 27,551 | |
| | West of 174° W. | 2.4 | 3 | 37 | 513,772 | 2,193,379 | 23,134 | |
| | TOTAL | 5.1 | 8 | 68 | 1,084,457 | 4,823,274 | 50,685 | |

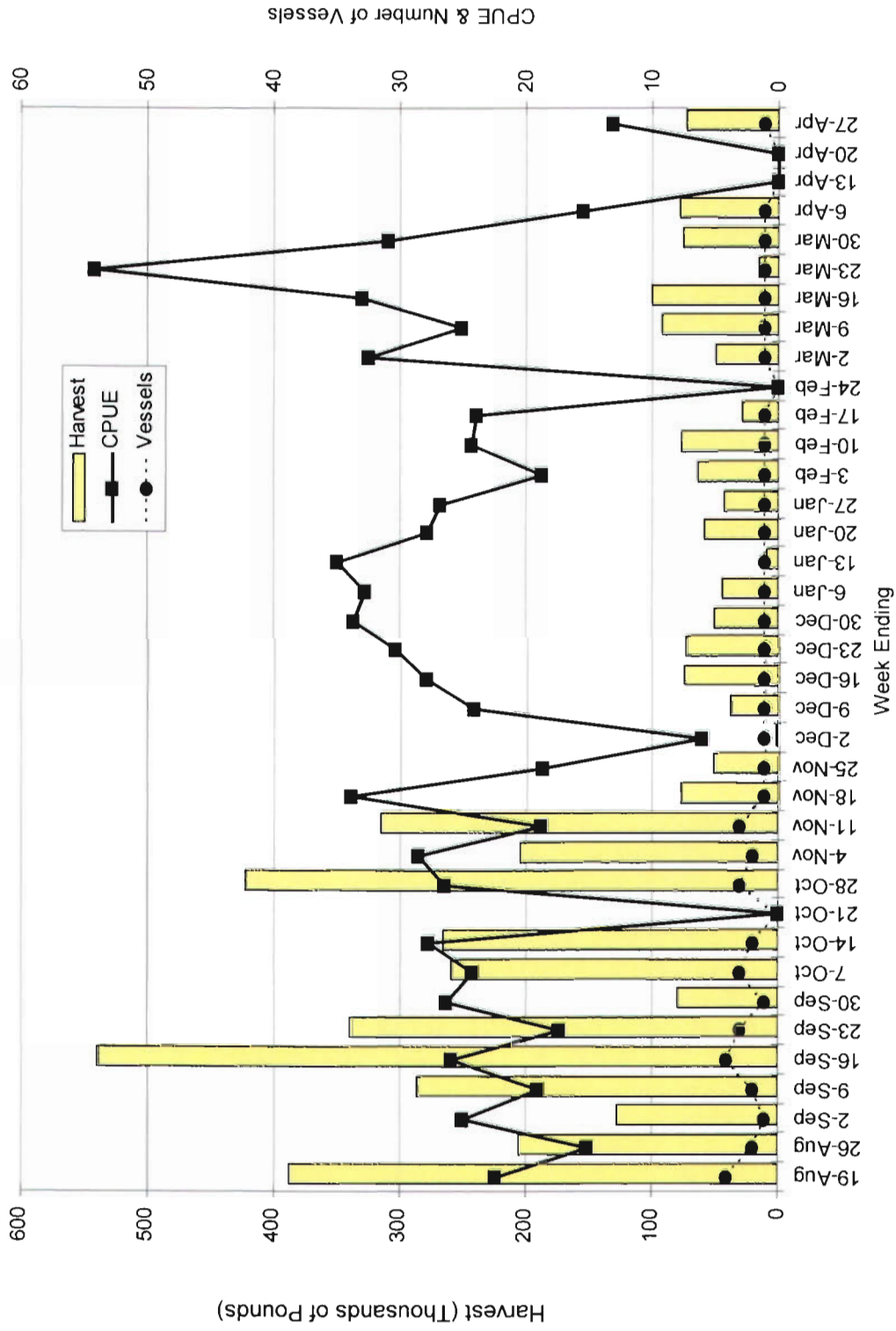
^aMany vessels fished both east and west of 174° W long., thus total number of vessels reflects registrations for entire Aleutian Islands.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

Aleutian Islands Golden King Crab IFQ Fishery Harvest, Catch Per Unit of Effort and Fleet Size by Week, 2006/07

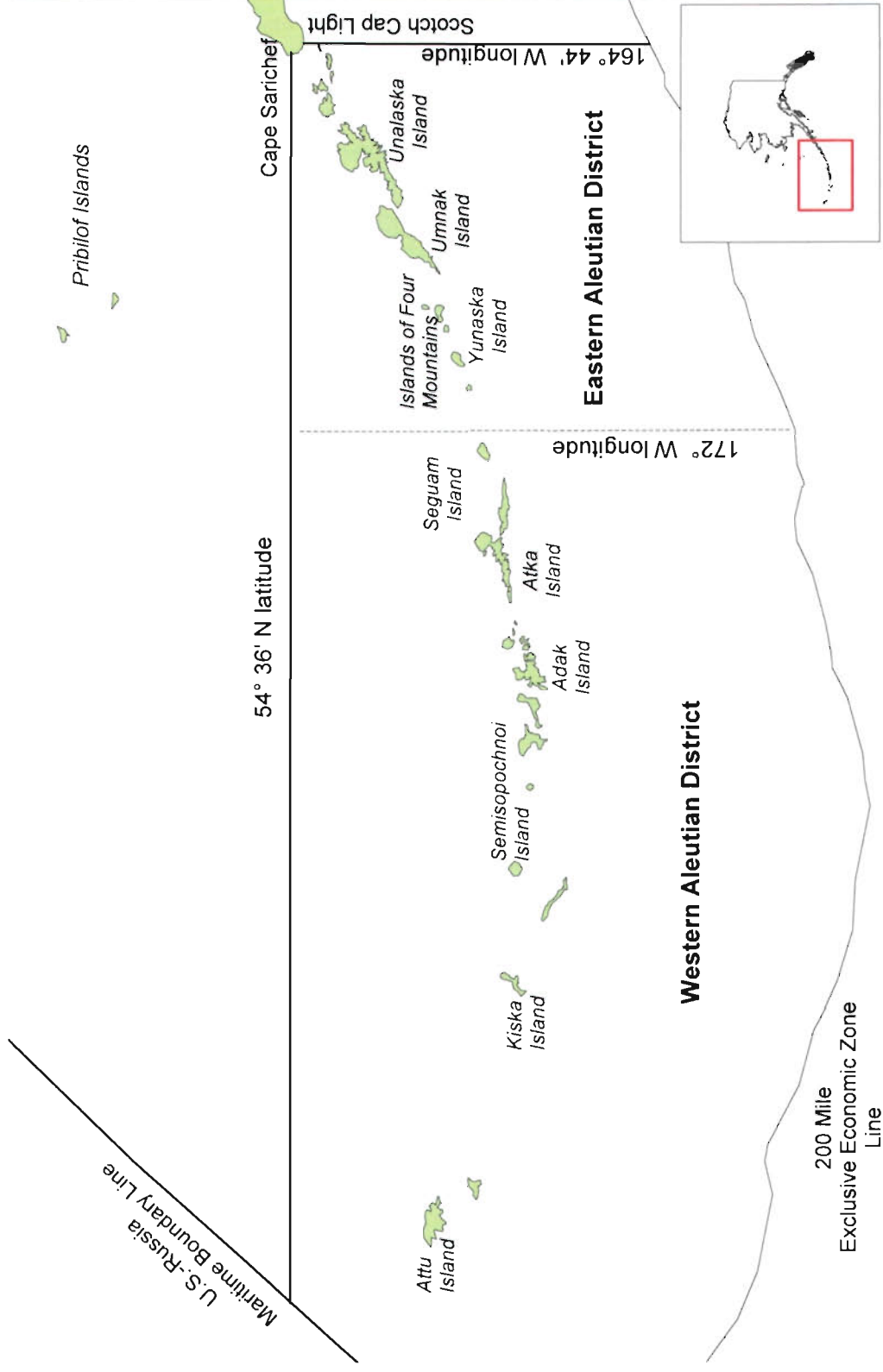


Aleutian Islands Golden King Crab

Stock Status

- ▶ No regulatory harvest strategy
- ▶ Currently no population assessment model
- ▶ A small portion of the commercially important area is surveyed on a triennial basis
- ▶ Relative abundance indicators may fluctuate from one year to the next
- ▶ Since the 1998/99 season harvest levels of 3.0 million pounds east of 174° W longitude and 2.7 million pounds west of 174° W longitude have been in effect

Tanner Crab Registration Area J – Eastern and Western Aleutian Districts



Area of Detail



Eastern Aleutian District Tanner Crab Proposals



▶ PROPOSAL 385 - 5 AAC 35.xxx Eastern

Aleutian District Tanner Crab Harvest
Strategy

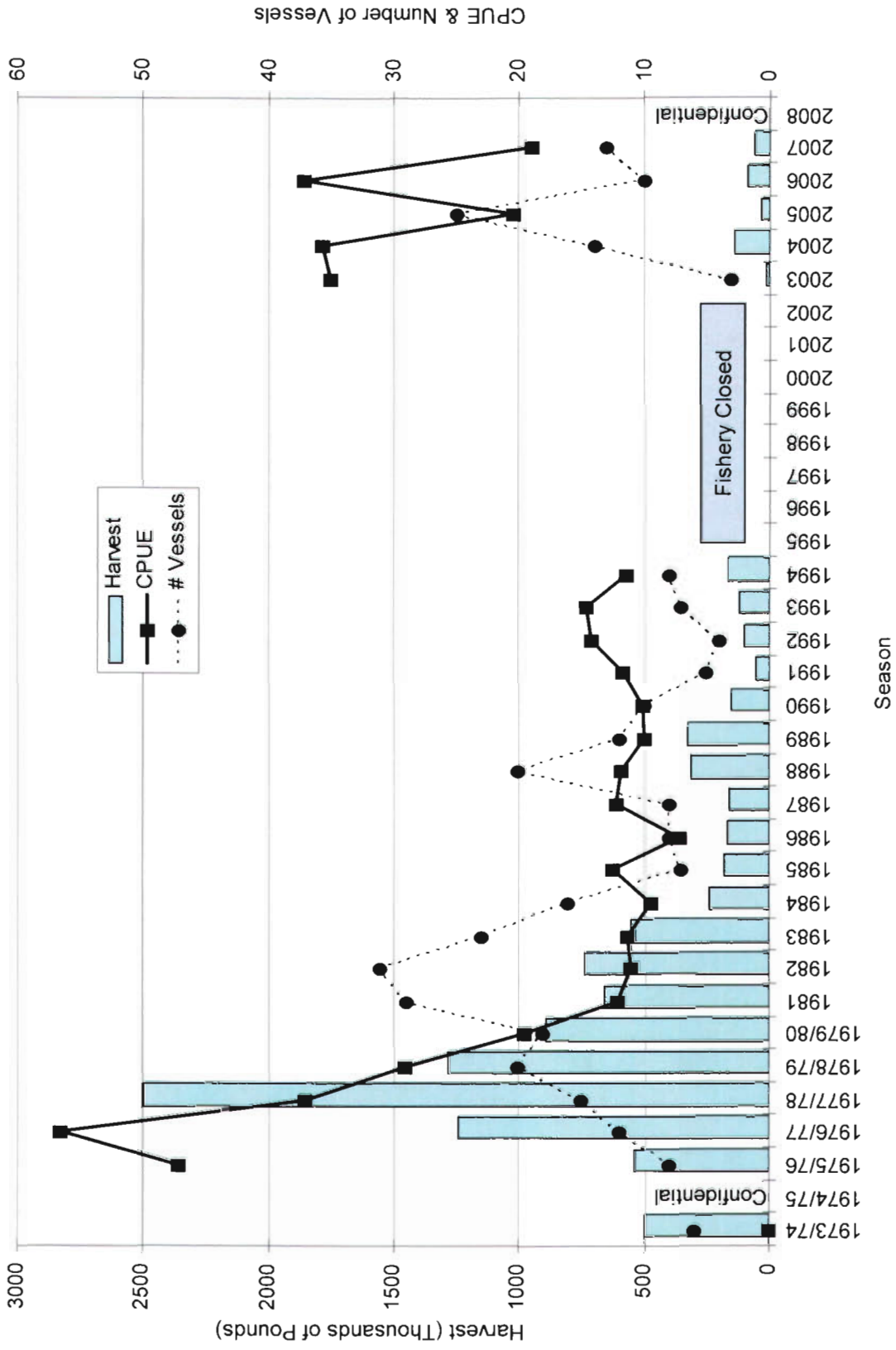
▶ PROPOSAL 386 - 5 AAC 35.505(c)

Description of Registration Area J Districts

Eastern Aleutian District Tanner Crab Fishery Overview

- ▶ Not included in Crab Rationalization
- ▶ Fishery opens January 15 by regulation
 - Biological closure is March 31 unless guideline harvest level (GHL) is reached earlier
- ▶ Maximum fishery pot limit of 300 pots, no more than 50 pots per vessel
- ▶ Fishery limited to vessels under 58 feet when the quota is less than one million pounds
- ▶ Mandatory daily catch reporting
- ▶ Pots may be operated only from 8:00 am to 5:59 pm daily

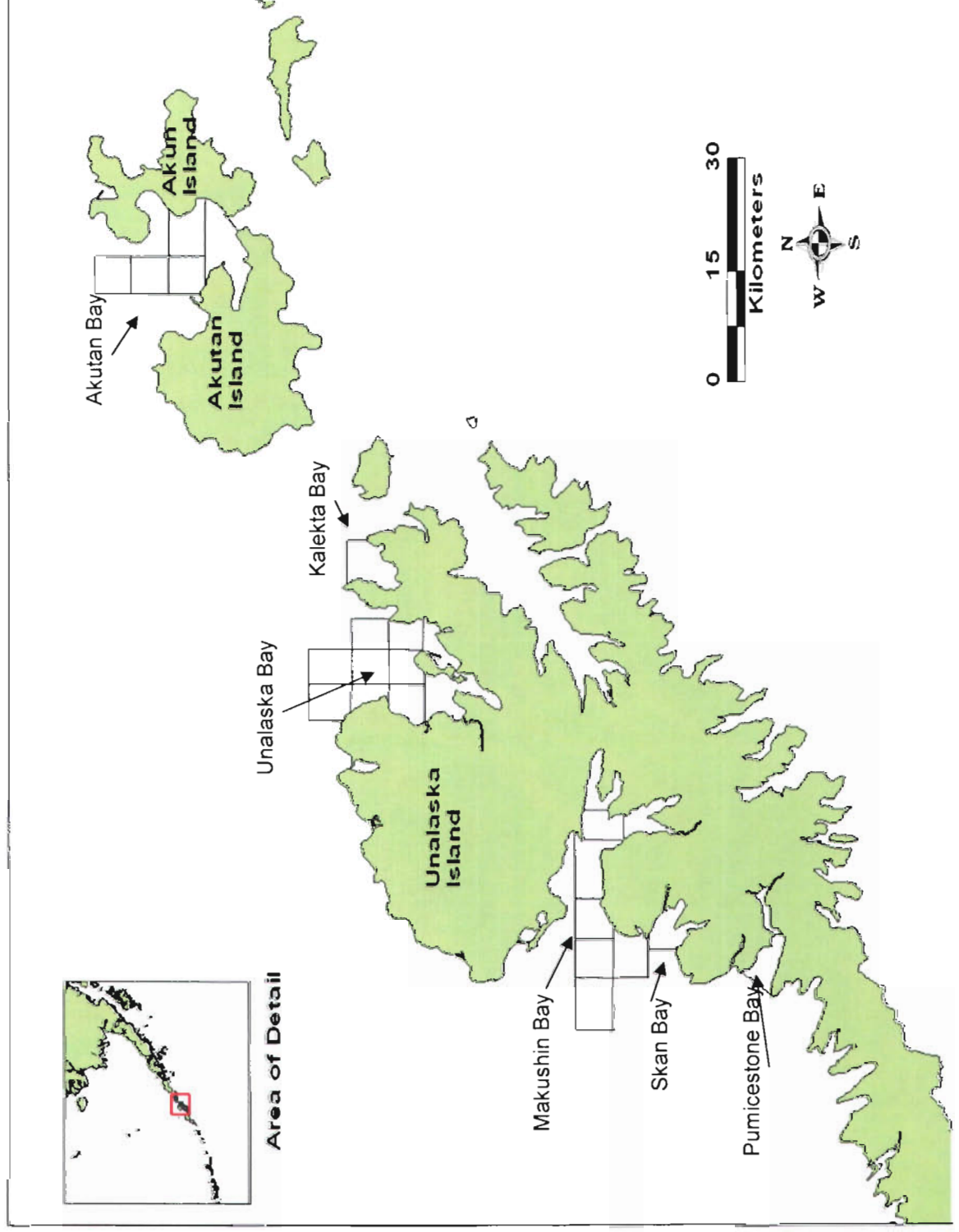
Eastern Aleutian District Tanner Crab Fishery Overview



- Eastern Aleutian District Tanner Crab Fishery Stock Status

- ▶ Pot surveys conducted in 1979, 1984, 1986, 1987 and 2003 in portions of the Eastern Aleutian District
- ▶ Beginning in 1990, triennial trawl surveys
- ▶ Since 2003, annual trawl survey of portions of the EAD

EAD Tanner Crab Trawl Survey Locations



Eastern Aleutian District Tanner Crab Fishery Stock Status Continued

- ▶ Legal male Tanner crab abundance in EAD continues to be above average
- ▶ Mature sublegal males are just below the preceding 4-yr average
- ▶ Immature males are above the preceding 4-yr average
- ▶ Total female abundance is the highest since the trawl survey began



Thank you.

Questions?

The Pribilof District Red King Crab Fishery

Oral Report: RC 2, Tab 3
Staff Comments: RC2, Tab 22

Douglas Pengilly
Alaska Department of Fish and Game
Kodiak

1

Outline of Presentation

Purpose: Provide background for consideration of Proposal 380 (Develop Pribilof red king crab management plan)

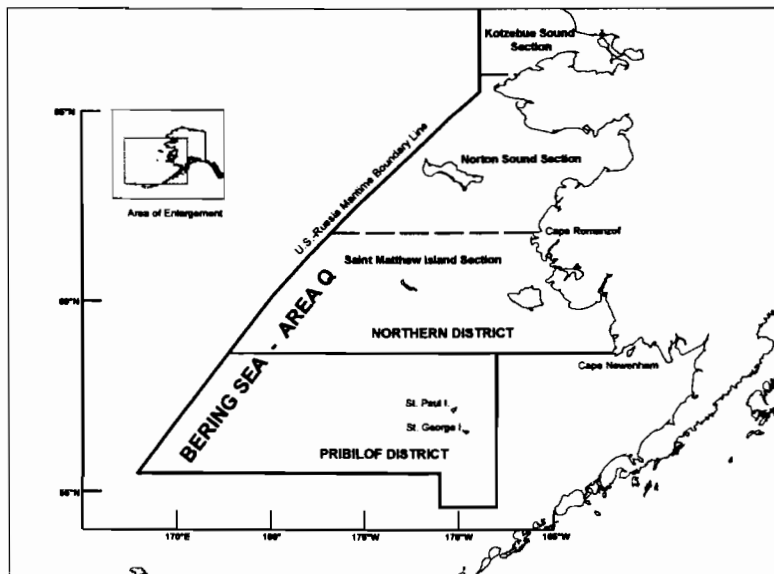
1. Overview of Pribilof red king crab stock and fishery
2. Overview of state/federal management regime
3. Overview of historic management practices
4. Overview of concerns and challenges for management
5. Summary

2

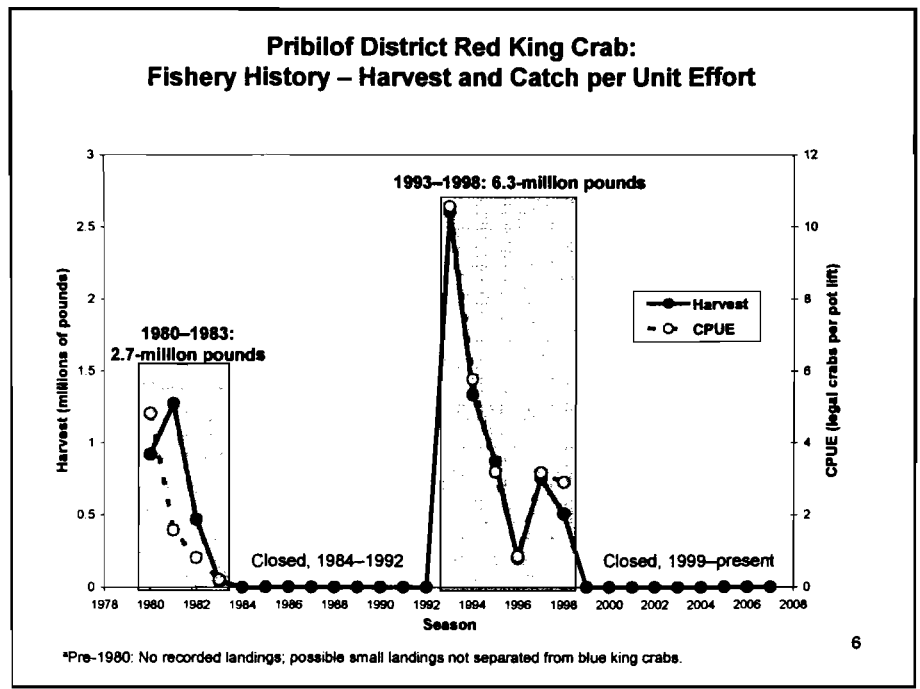
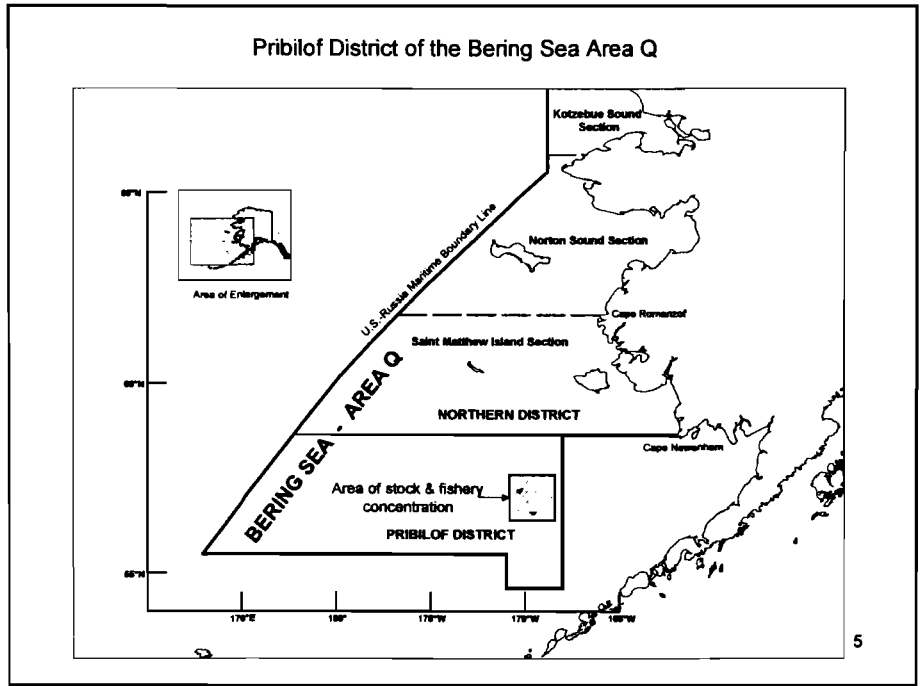
1. Overview of Pribilof red king crab stock and fishery

3

Pribilof District of the Bering Sea Area Q



4



Estimated Abundance and Assessment of Stock Trend

- Data from annual NMFS EBS trawl survey
 - Catch-survey analysis (CSA): ADF&G assessment model for Pribilof District red king crabs
 - Estimates abundance of males by size class
 - Female abundance not estimated by CSA
 - Data on females from trawl survey is too sparse

7

Pribilof Red King Crab: ADF&G CSA Abundance Estimates for 2007 (Legal-sized males, millions of crabs)

| Size-sex class | Point estimate | Lower 95% Confidence bound | Upper 95% Confidence bound |
|-------------------|----------------|-------------------------------|-------------------------------|
| Legal-sized males | 0.77 | 0.28 | 1.26 |

8

**Pribilof Red King Crab:
ADF&G CSA Abundance Estimates for 2007
(Legal-sized males, millions of crabs)**

| Size-sex class | Point estimate | Lower 95% Confidence bound | Upper 95% Confidence bound |
|-------------------|----------------|-------------------------------|-------------------------------|
| Legal-sized males | 0.77 | 0.28 | 1.26 |

Point estimate of legal male abundance = 0.77-million crabs

9

**Pribilof Red King Crab:
ADF&G CSA Abundance Estimates for 2007
(Legal-sized males, millions of crabs)**

| Size-sex class | Point estimate | Lower 95% Confidence bound | Upper 95% Confidence bound |
|-------------------|----------------|-------------------------------|-------------------------------|
| Legal-sized males | 0.77 | 0.28 | 1.26 |

Point estimate of legal male abundance = 0.77-million crabs
95% confidence interval is $\pm 64\%$ of the point estimate

10

Pribilof Red King Crab: ADF&G CSA Abundance Estimates for 2007 (Legal-sized males, millions of crabs)

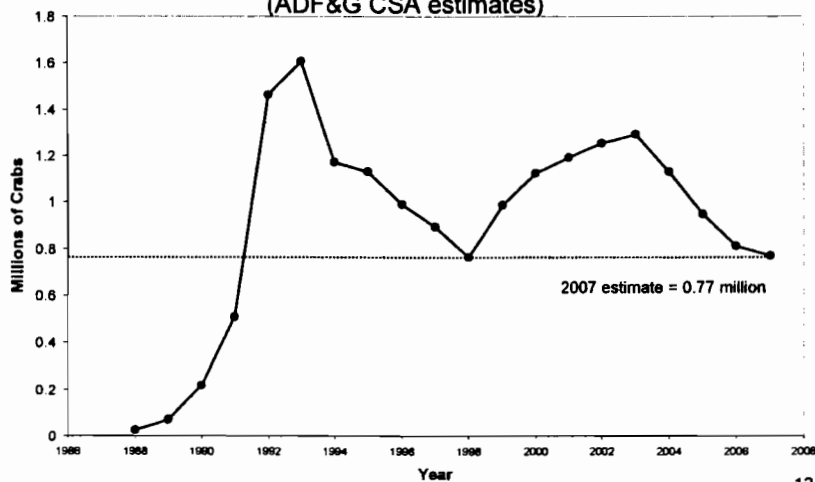
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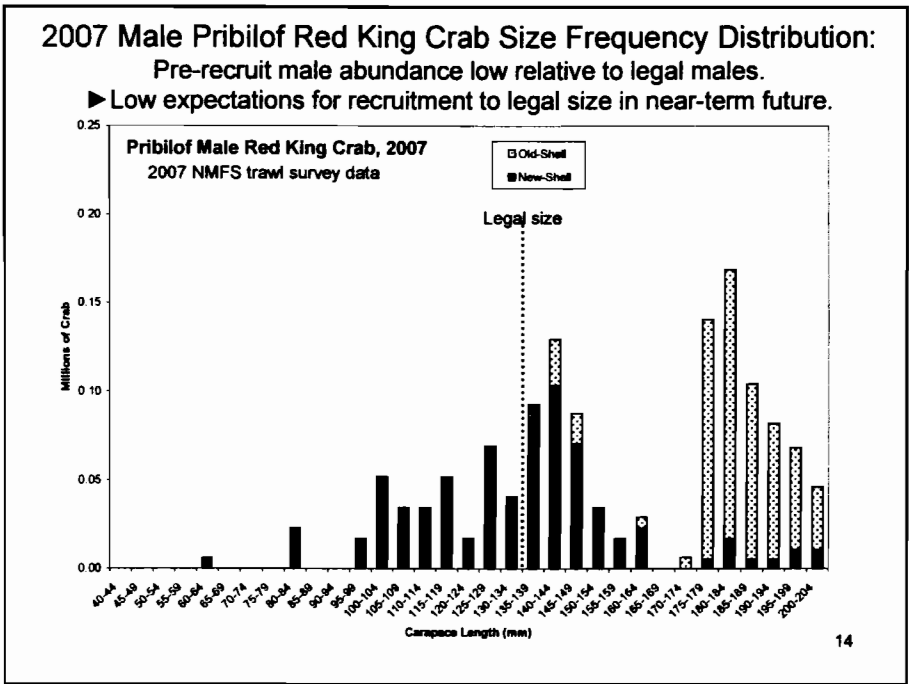
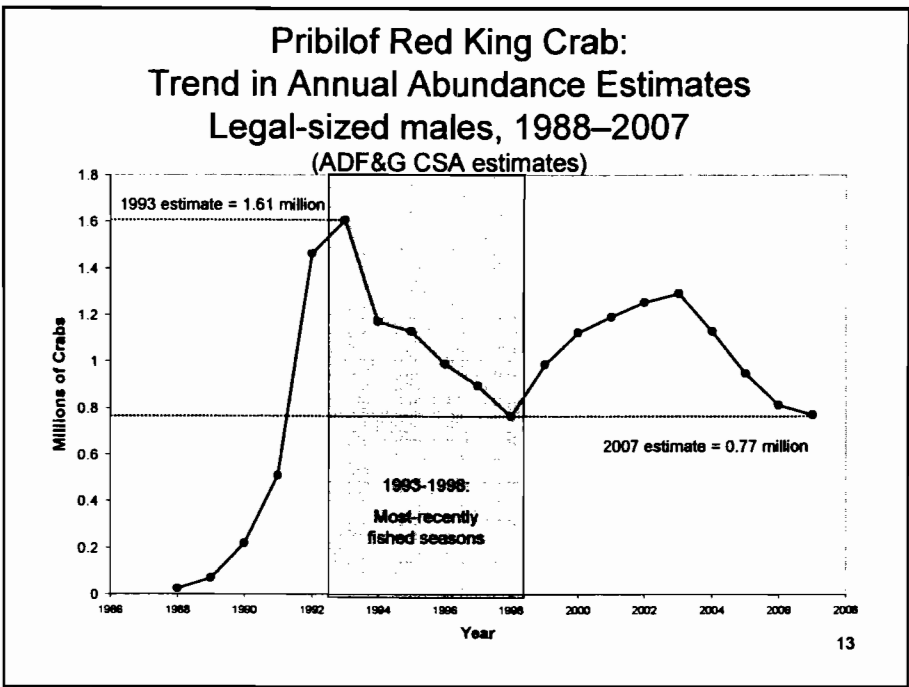
**► Poor precision of abundance estimates
(High uncertainty in abundance estimates)**

11

Pribilof Red King Crab: Trend in Annual Abundance Estimates Legal-sized males, 1988–2007 (ADF&G CSA estimates)



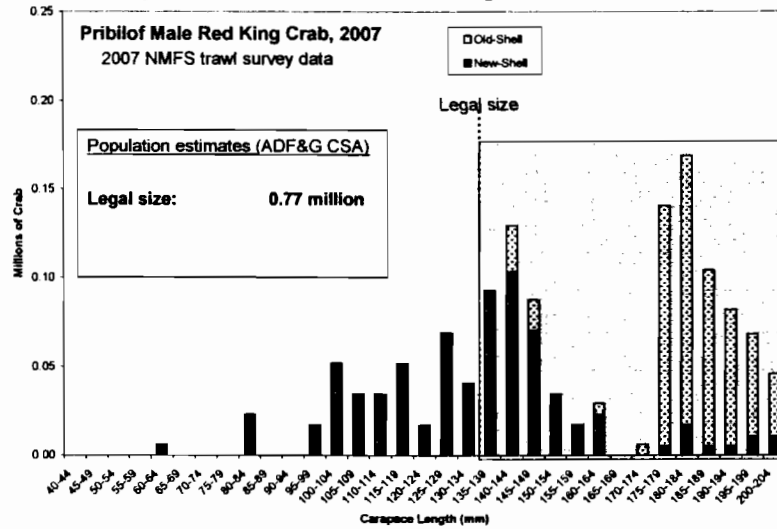
12



2007 Male Pribilof Red King Crab Size Frequency Distribution:

Pre-recruit male abundance low relative to legal males.

► Low expectations for recruitment to legal size in near-term future.

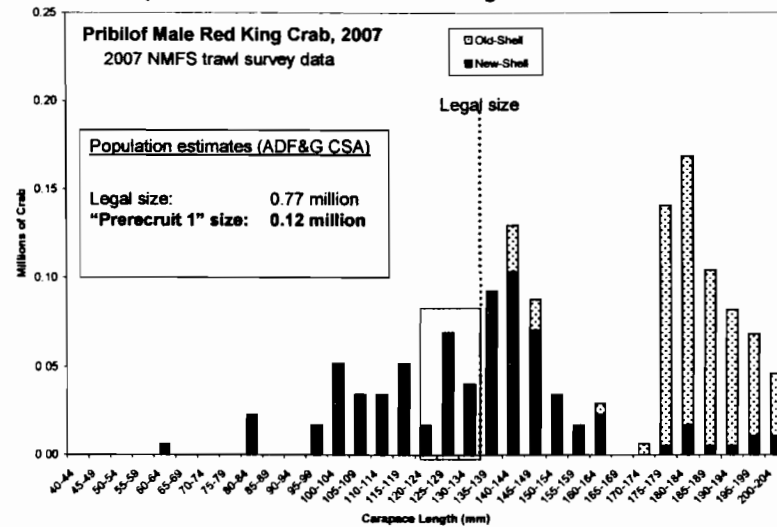


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2007 Male Pribilof Red King Crab Size Frequency Distribution:

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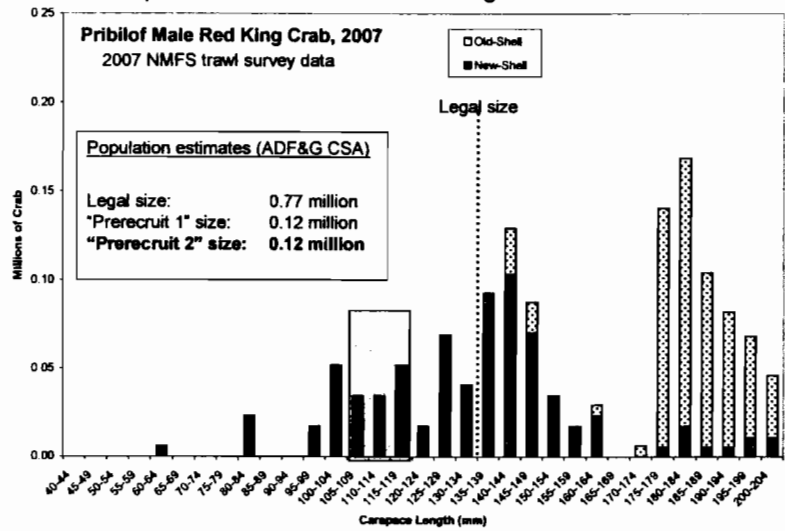


16

2007 Male Pribilof Red King Crab Size Frequency Distribution:

Pre-recruit male abundance low relative to legal males.

► Low expectations for recruitment to legal size in near-term future.



17

2. Overview of state/federal management regime

18

Pribilof District Red King Crab Fishery Management Regime and Regulations

Managed under:

Fishery Management Plan (FMP) for Bering Sea-Aleutian Islands (BSAI) King and Tanner Crabs

- Federal FMP
- Cooperative state-federal management regime
- FMP defers management to State of Alaska with federal oversight
 - State actions must be consistent with FMP, Magnuson-Stevens Act (MSA), other applicable federal laws

19

Pribilof District Red King Crab Fishery Management Regime and Regulations

Some relevant federal actions for BSAI crab:

- **BSAI Crab Rationalization Program**
 - Implemented in 2005
 - **Total allowable catch (TAC)** is established preseason
 - Distributed as **Individual Fishing Quotas (IFQs)**
 - No inseason closure of fishery based on fishery performance or other inseason data
- **Community Development Quota (CDQ)** program
 - 10% of TAC reserved as quota for CDQ program

20

Pribilof District Red King Crab Fishery Management Regime and Regulations

– **Overfishing Definitions**

- Required in FMP by Magnuson-Stevens Act (MSA)
- Define:
 1. Biomass below which a stock is classed as “**overfished**”
 2. Fishing rate that constitutes “**overfishing**” of a stock
- Pribilof **red** king crab is **not** classed as “overfished”
 - Pribilof **blue** king crab is classed as “overfished”
- MSA:
 - Management must avoid overfishing of stocks
 - Overfished stocks must be rebuilt
 - Management must avoid jeopardizing the rebuilding of overfished stocks
- Set constraints on harvest levels (TACs) established by the State

21

Pribilof District Red King Crab Fishery Management Regime and Regulations

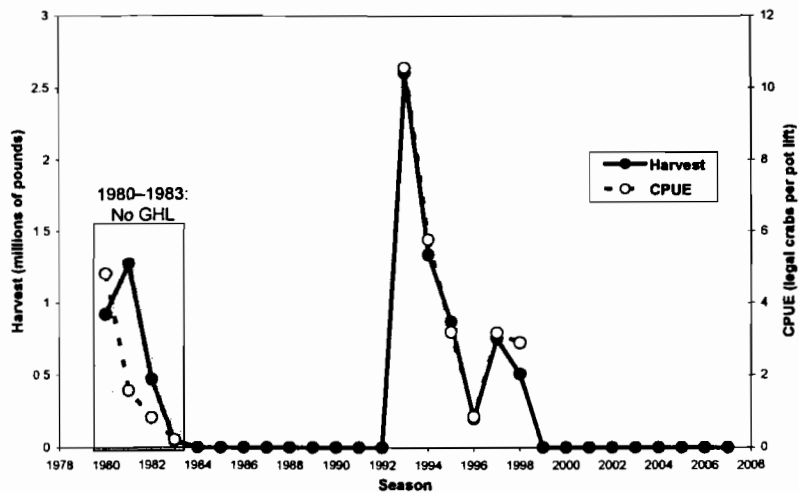
- State regulations in effect include:
 - Minimum legal size
 - Fishing season
 - Legal gear and required escape mechanisms
 - Pot limits
 - Observer coverage
- **No harvest strategy in regulation**
 - No established criteria for opening the fishery
 - No established “rules” for determining TAC

22

3. Overview of historic management practices

23

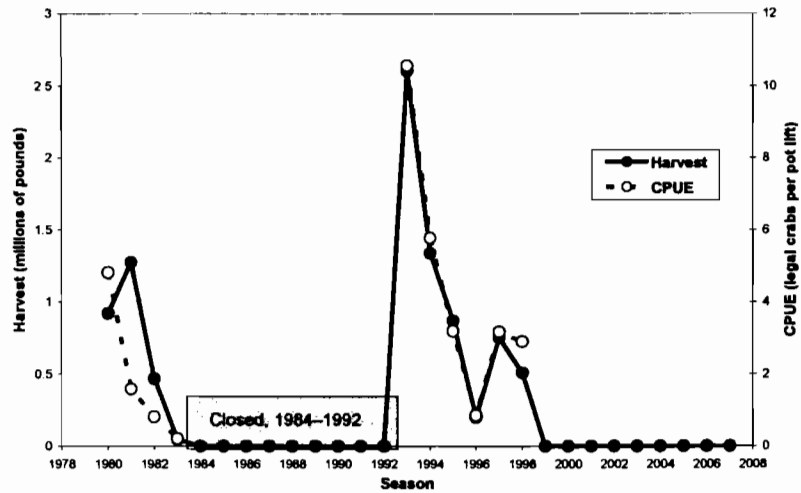
**Pribilof District Red King Crab:
History of Fishery Management, 1980–present***



*Pre-1980: No GHL established and no recorded landings.

24

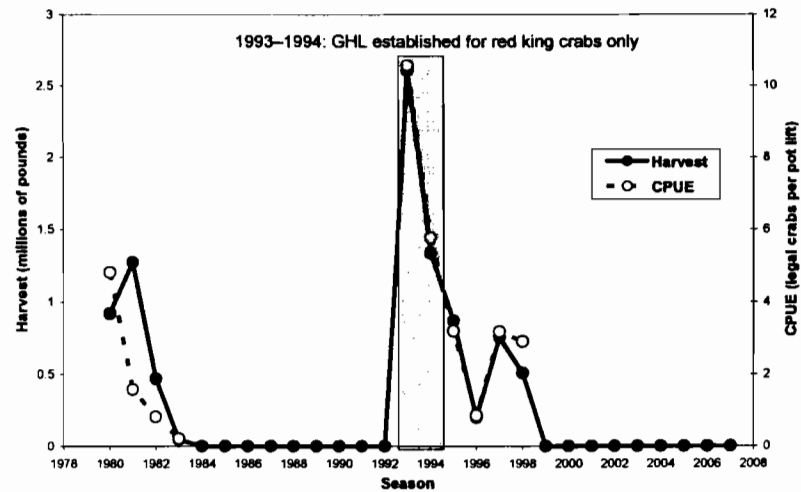
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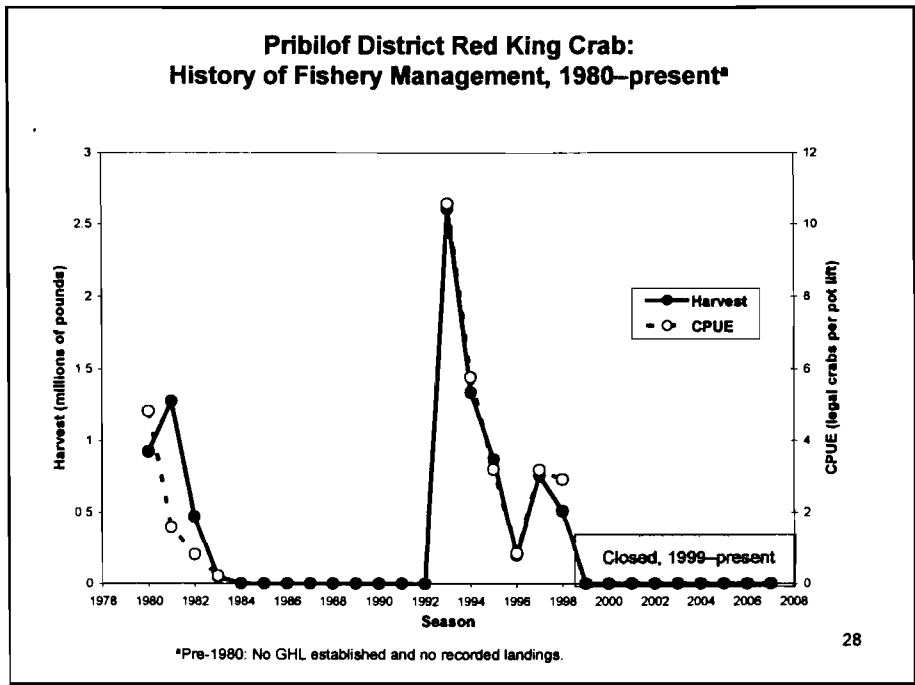
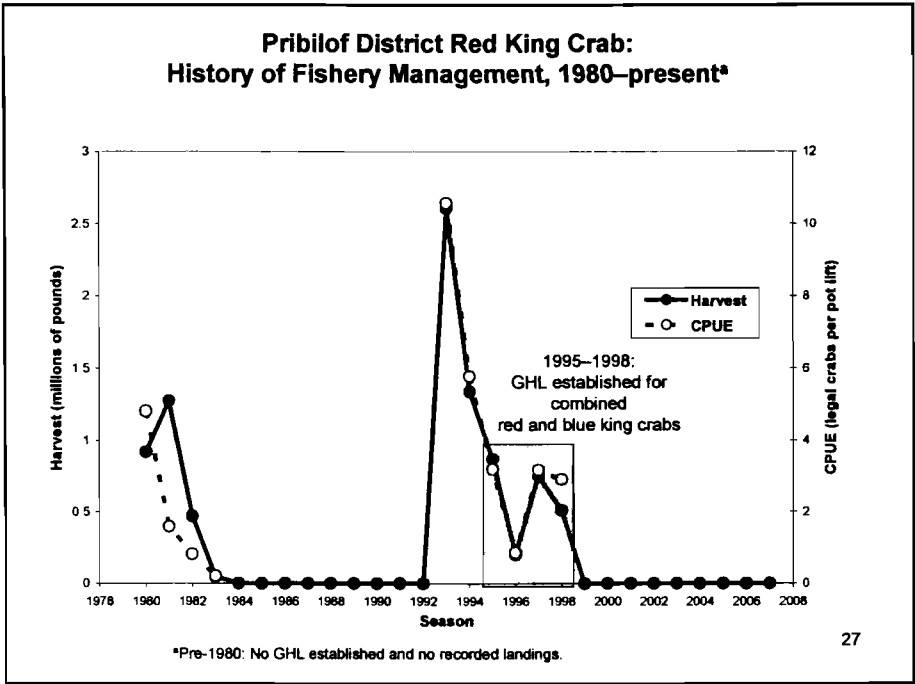
25

**Pribilof District Red King Crab:
History of Fishery Management, 1980–present***



*Pre-1980: No GHL established and no recorded landings.

26



4. Overview of concerns and challenges for management

- i. High uncertainty in Pribilof red king crab abundance estimates afforded by annual NMFS EBS trawl survey data**
 - How determine if fishery should be opened?
 - Does a "harvestable surplus" exist?
 - How determine TAC?
 - Can TAC be harvested without impacting stock sustainability?

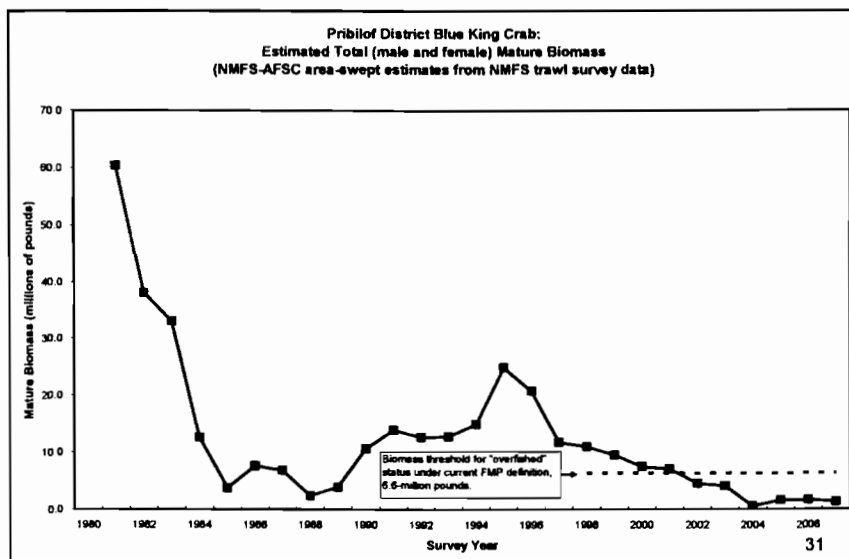
29

4. Overview of concerns and challenges for management

- ii. Concerns for bycatch of Pribilof District blue king crabs**

30

Overfished Status of Pribilof Blue King Crab Stock



Concerns for bycatch of Pribilof District blue king crabs

- Stock rebuilding plan adopted by BOF and NPFMC in 2003
 - Management measures that would increase bycatch must be analyzed to ensure rebuilding is not jeopardized
- Measures to protect stock from bycatch during other fisheries:
 - Closure of Pribilof red king crab fishery since 1999
 - Closure of four statistical areas for current Tanner and snow crab fisheries
- ADF&G goal: **No** bycatch of blue king crabs

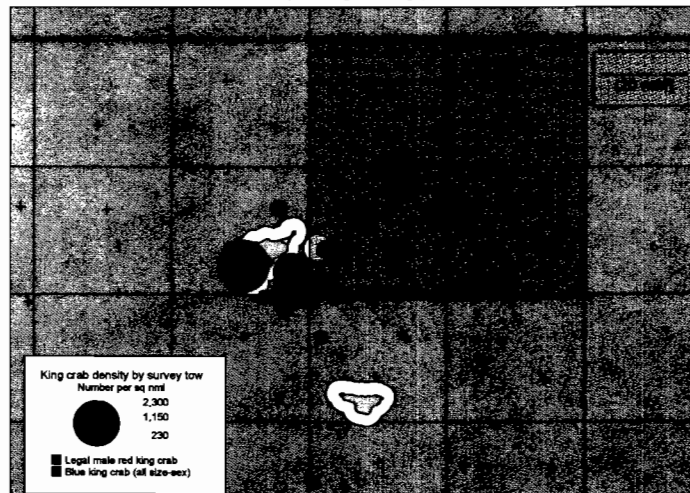
32

Is there potential for bycatch of blue king crabs during red king crab fishery?

- No data on bycatch from historic commercial Pribilof red king crab fishery
- Summer trawl survey data does not always show significant overlap in distribution of red and blue king crabs

33

2007 NMFS Trawl Survey (early July)



Distribution and density of blue king crabs relative to legal male red king crabs and statistical areas closed for blue king crab protection during current snow and Tanner crab fisheries (shaded).

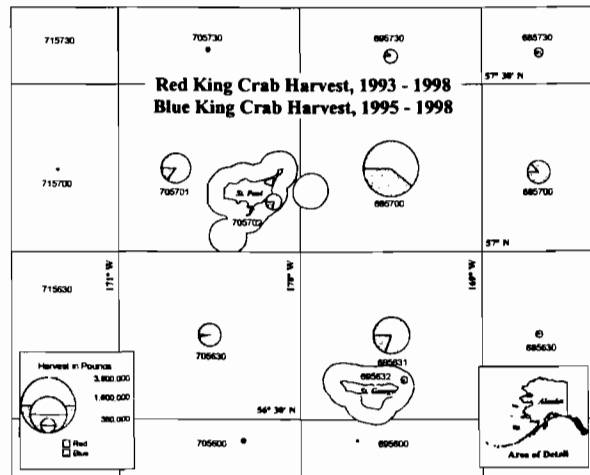
34

ADF&G believes potential is high for bycatch of blue king crab

1. No known mechanism to prevent entry of blue king crabs into pots fishing for red king crabs
2. Distribution of Pribilof blue king crabs overlaps broadly with distribution of legal male red king crabs during fishery season
 - Commercial fishery harvests by statistical area: 1993-1998
 - ADF&G pot survey data: fall 2003, fall 2005

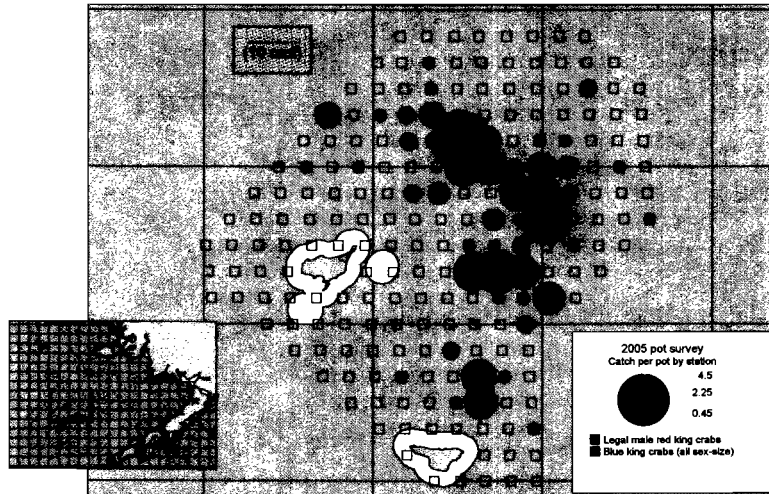
35

Red and blue king crab harvest in the Pribilof District by statistical area, 1993-1998



36

2005 Pribilof King Crab Pot Survey (September-October)



Catch and distribution of blue king crabs relative to legal male red king crabs.

37

5. Summary

- i. Pribilof red king crab fishery has sporadic history
 - Landings in only 10 years since 1980
 - 1980–1984 and 1993–1998
 - 9.0-million pounds total harvest since 1980
 - Closed since 1999
 - Two years when Pribilof District open with GHL only for directed red king crab fishing
 - 4 years opened as incidental to blue king crab
 - 4 years with combined red-blue king crab GHL
 - Poor fishery performance in most years when opened

38

5. Summary

- ii. Estimated abundance of Pribilof red king crab legal males in 2007 is lower than when fishery was last prosecuted (1993–1998)
 - Abundance estimated to be in decline
 - Poor expectations for future recruitment

39

5. Summary

- iii. Fishery is managed under federal FMP
 - State actions must be consistent with FMP, MSA, other applicable federal laws
 - Overfishing definitions in FMP
 - Overfishing definitions set constraint on TAC
 - BSAI Crab Rationalization Program
 - Establishment of TAC/IFQs effectively precludes inseason management

40

5. Summary

- iv. No harvest strategy for Pribilof red king crab fishery in regulation
 - No established criteria for determining fishery opening
 - No established “rules” for setting TAC

41

5. Summary

- v. Difficulty in establishing realistic, sustainable harvest level (TAC) for the fishery
 - High uncertainty in abundance estimates
 - History of poor fishery performance

42

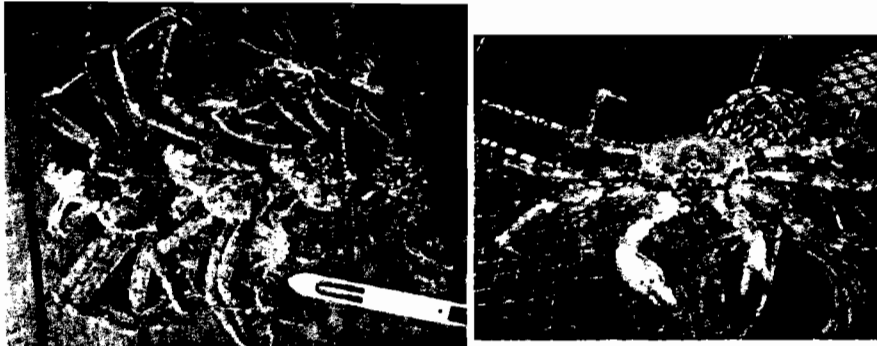
5. Summary

- vi. Concerns for Pribilof blue king crab stock
 - Pribilof blue king crab depressed, declared “overfished”
 - MSA and FMP: Avoid jeopardizing rebuilding of Pribilof blue king crab stock
 - Management measures that would increase bycatch must be analyzed to ensure rebuilding is not jeopardized
 - ADF&G believes risk of bycatch of blue king crabs during a red king crab fishery is high

43

End

Questions?



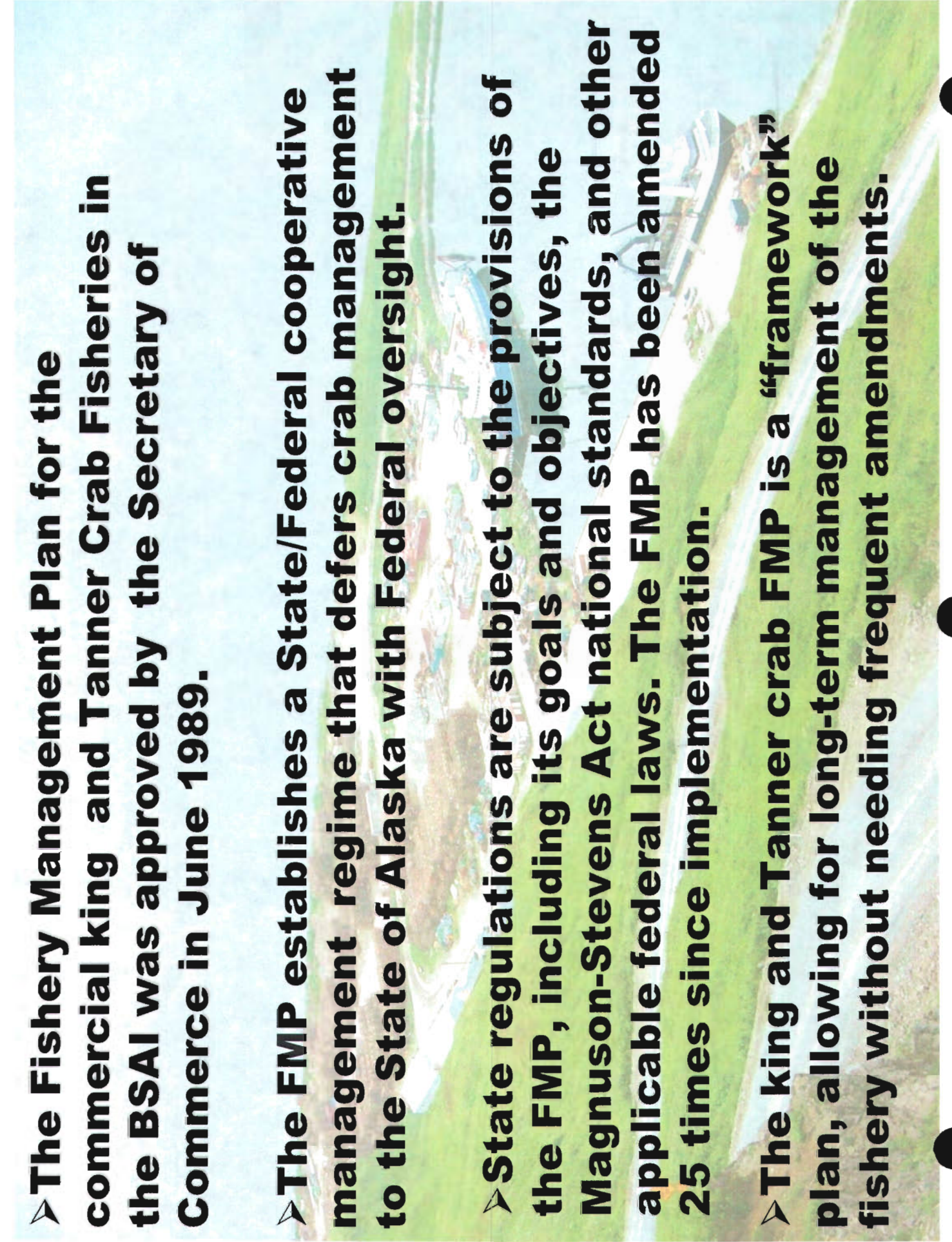
44



**Alaska Department of Fish and Game
Oral Report to the Alaska Board of Fisheries**

**Fishery Management Plan for the
BSAI King and Tanner Crabs
FMP Management Measures**

March 3-9, 2008

- 
- **The Fishery Management Plan for the commercial king and Tanner Crab Fisheries in the BSAI was approved by the Secretary of Commerce in June 1989.**
 - **The FMP establishes a State/Federal cooperative management regime that defers crab management to the State of Alaska with Federal oversight.**
 - **State regulations are subject to the provisions of the FMP, including its goals and objectives, the Magnuson-Stevens Act national standards, and other applicable federal laws. The FMP has been amended 25 times since implementation.**
 - **The king and Tanner crab FMP is a “framework” plan, allowing for long-term management of the fishery without needing frequent amendments.**



When adopting regulations, the Board must consider and discuss on the record:

1. FMP Management Goal and Objective

2. Magnuson-Stevens Act National Standards

3. Other applicable federal law

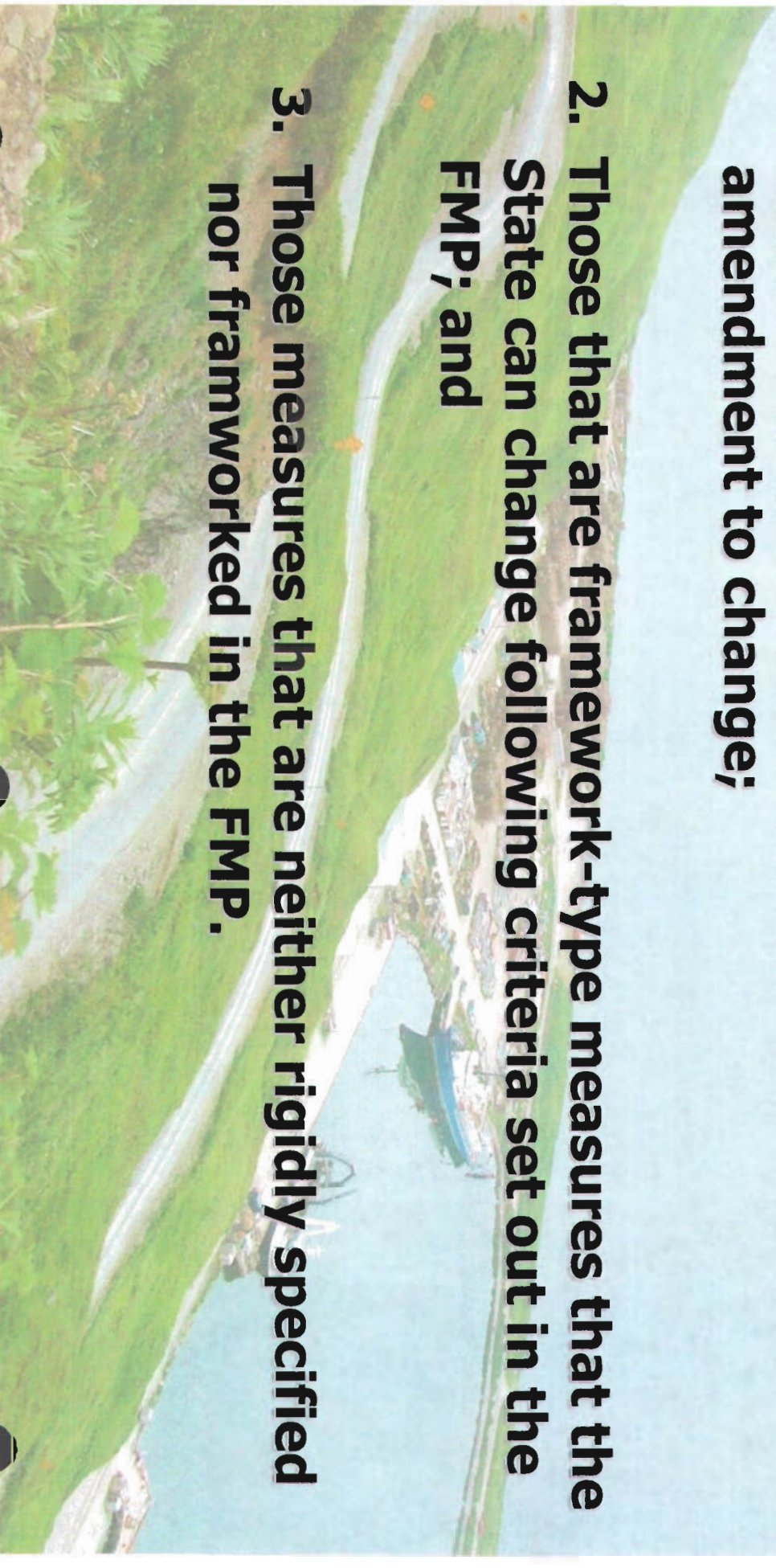
Regulations adopted for BSAI crab by the Board are subject to the Administrative Appeal Process for review by the Secretary of Commerce

FMP Management Objectives

- Biological Conservation Objective
- Economic and Social Goal Objective
- Gear Conflict Objective
- Habitat Objective
- Vessel Safety Objective
- Due Process Objective
- Research and Management Objective

The FMP defers much of the management of the BSAI crab fisheries to the State of Alaska using the following three categories of management measures:

- 1. Those that are fixed in the FMP and require a FMP amendment to change;**
- 2. Those that are framework-type measures that the State can change following criteria set out in the FMP; and**
- 3. Those measures that are neither rigidly specified nor frameworked in the FMP.**



FMP CATEGORIES

➤ **Category 1 (Fixed in FMP)**

- Legal Gear
- Permit Requirements
- Federal Observer Requirements
- Limited Access
- Norton Sound Superexclusive Registration Area

➤ **Category 2 (Frameworked in FMP)**

- Minimum Size Limits
- Guideline Harvest Levels
- Inseason Adjustments
- Districts, Subdistricts and Sections
- Fishing Seasons
- Sex restrictions
- Closed Waters
- Pot Limits
- Registration Areas

➤ **Category 3 (Discretion of State)**

- Reporting Requirements
- Gear Placement and Removal
- Gear Storage
- Gear Modifications
- Vessel Tank Inspections
- State Observer Requirements
- Bycatch Limits (in crab fisheries)
- Other

Category 1 (Fixed in FMP)

Legal Gear

Permit Requirements

Federal Observer Requirements

Limited Access

Norton Sound Superexclusive Registration Area



Category 2 (Frameworked in the FMP)

Minimum Size Limits

Guideline Harvest Levels

Inseason Adjustments

Districts, Subdistricts and Sections

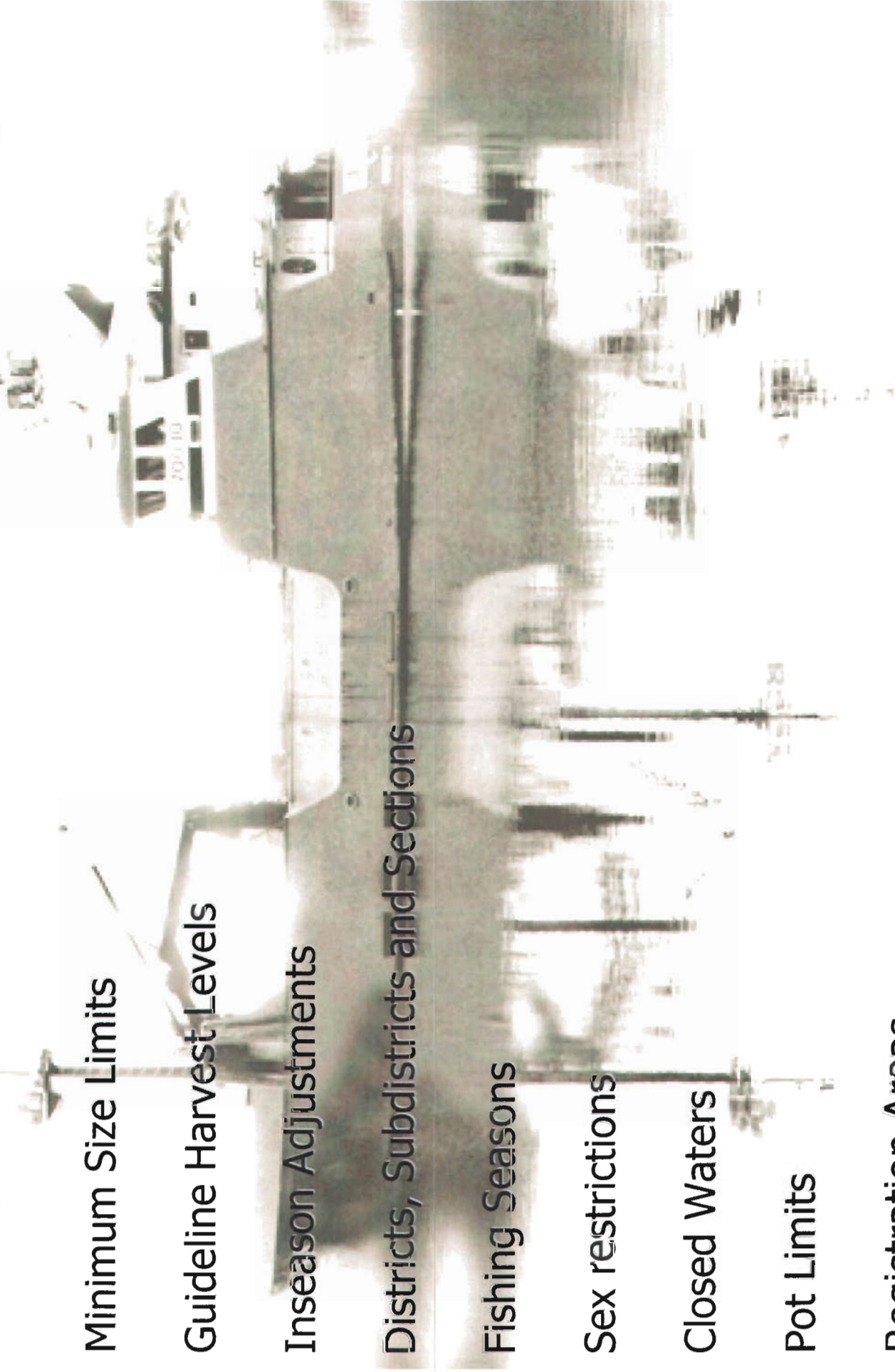
Fishing Seasons

Sex restrictions

Closed Waters

Pot Limits

Registration Areas



Category 3 (Discretion of State)

Reporting Requirements

Gear Placement and Removal

Gear Storage

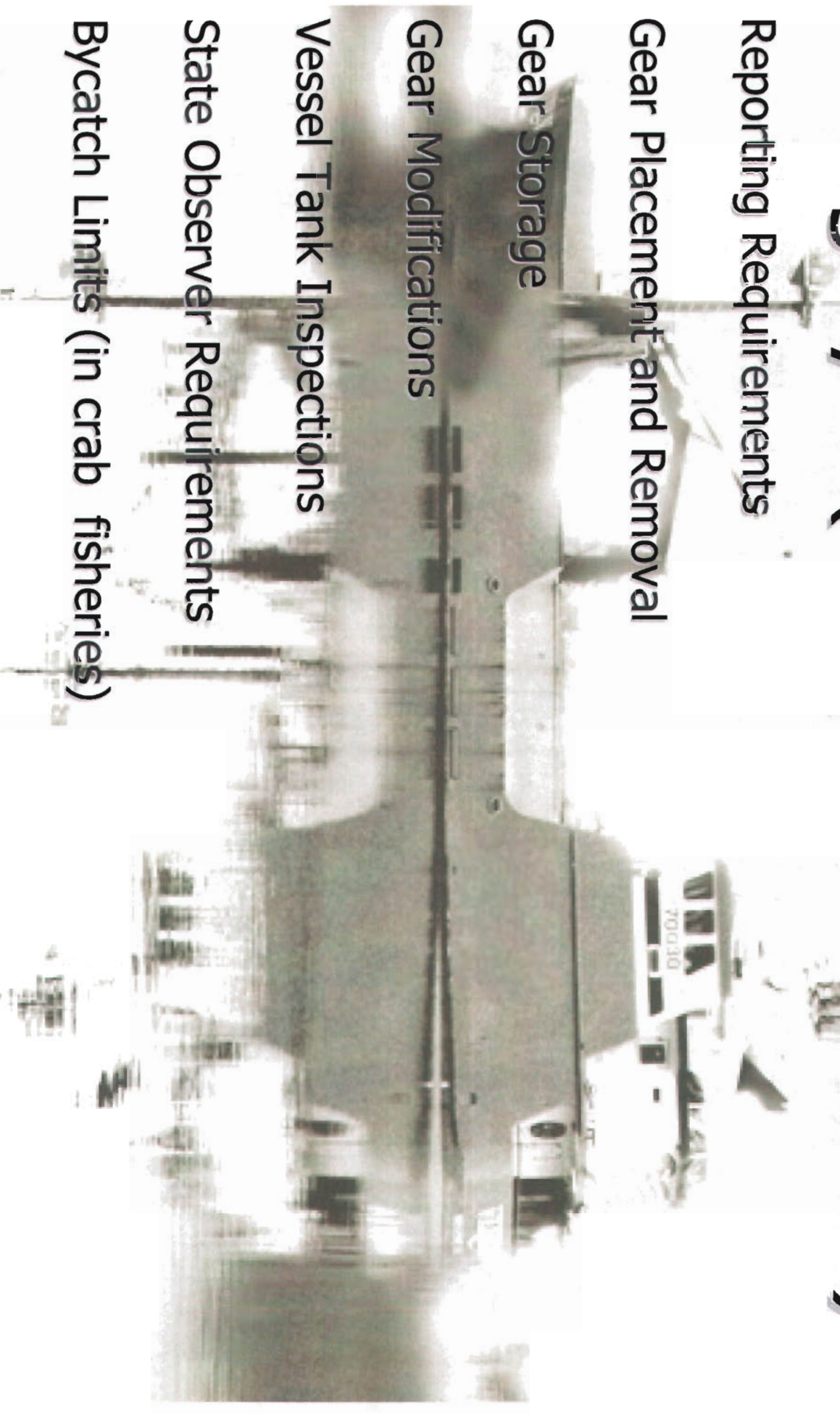
Gear Modifications

Vessel Tank Inspections

State Observer Requirements

Bycatch Limits (in crab fisheries)

Other



Example: POT LIMITS

The FMP authorizes the state to set pot limits under state regulations to attain biological conservation objectives and the economic and social objectives of the FMP. The following factors will be considered when establishing pot limits:

- **Total vessel effort relative to the GHL (or TAC)**
- **Probable concentrations of pots by area**
- **Potential for conflict with other fisheries**
- **Potential for handling mortality on target or nontarget species**
- **Adverse effects on vessel safety, including hazards to navigation**
- **Enforceability of pot limits**
- **Analysis of the effects on industry**

Pot limits must be designed in a nondiscriminatory manner.

Pot limits that are a function of vessel size can be developed to affect large and small vessels equally

NATIONAL STANDARDS OF THE MSFCMA

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry
2. Conservation and management measures shall be based upon the best scientific information available
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be
 - (a) fair and equitable to all such fishermen,
 - (b) reasonably calculated to promote conservation, and
 - (c) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

NATIONAL STANDARDS OF THE MSFCMA

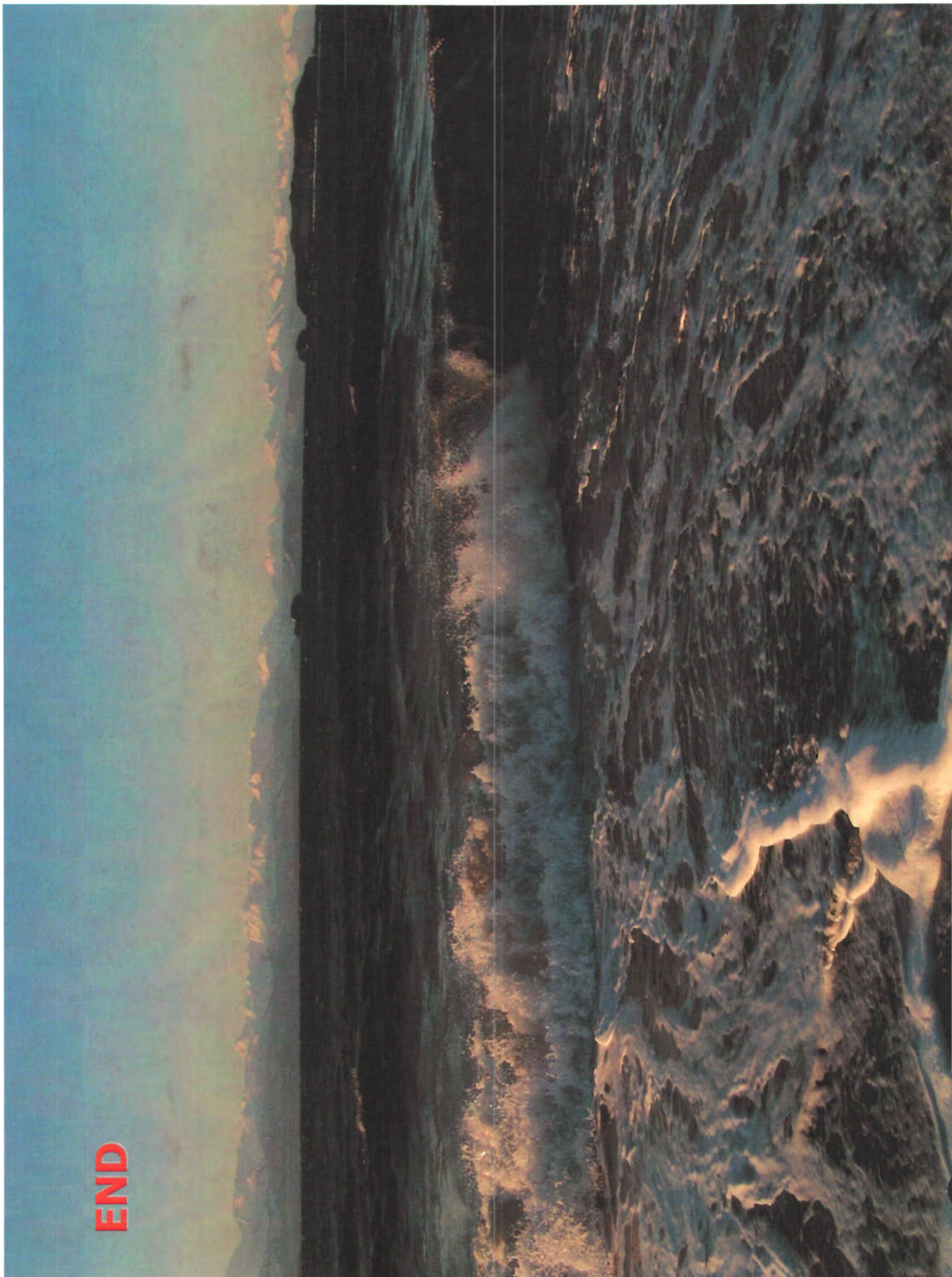
5. Conservation and management measures, shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches
7. Conservation and management shall, where practicable, minimize costs and avoid unnecessary duplication
8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to
 - (A) provide for the sustained participation of such communities, and
 - (B) to the extent practicable, minimize adverse economic impacts on such communities.

NATIONAL STANDARDS OF THE MSFCMA

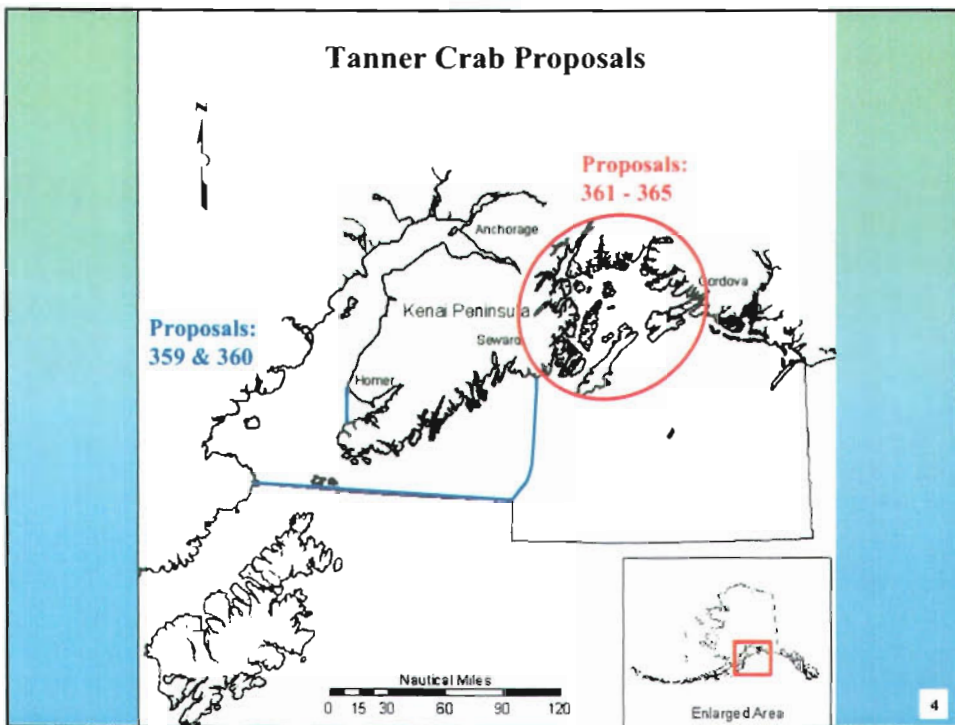
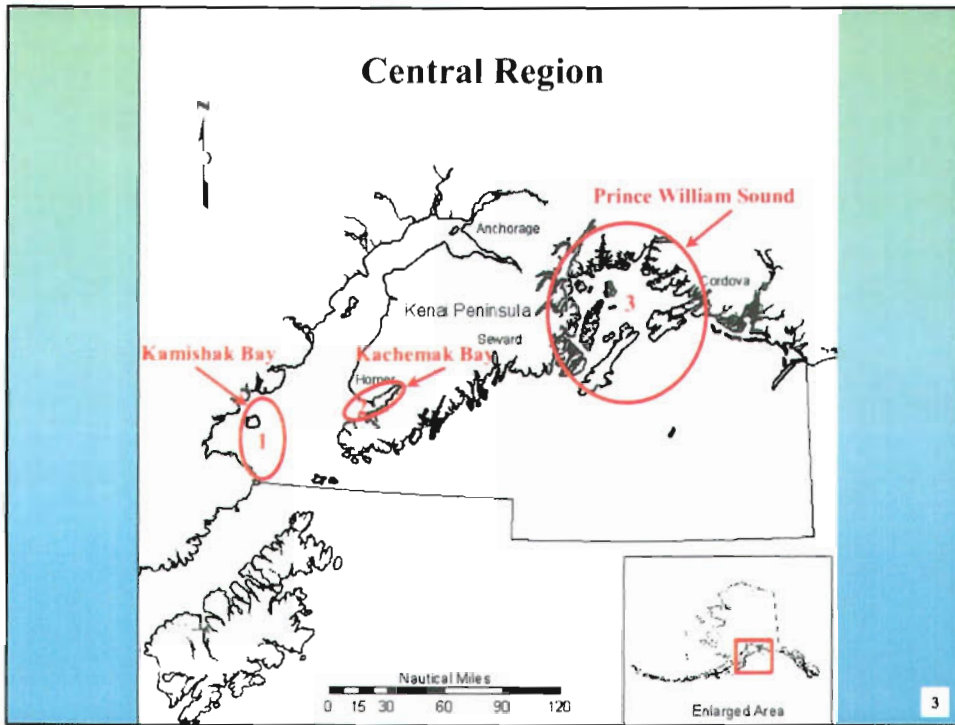


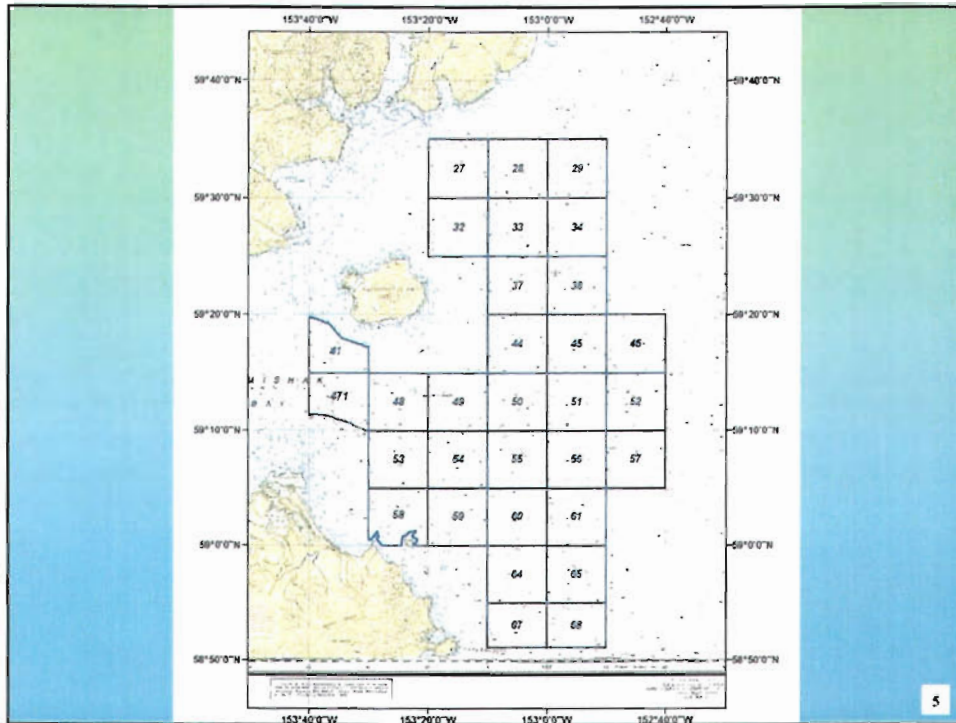
- 9. Conservation and management measures shall, to the extent practicable,
 - (A) minimize bycatch, and**
 - (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch****
- 10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea**

END

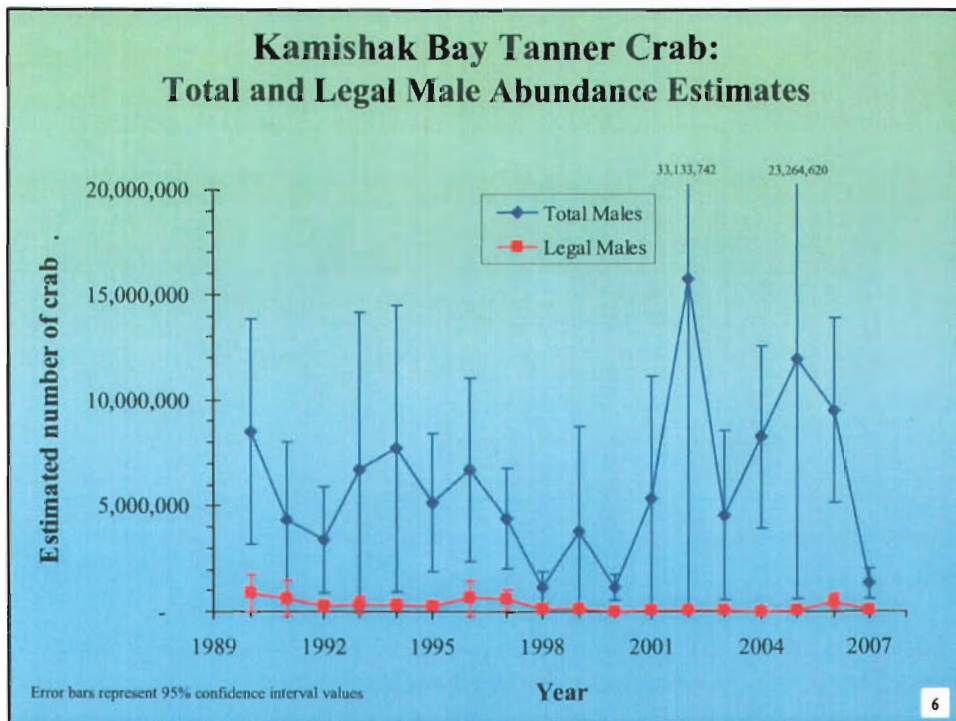




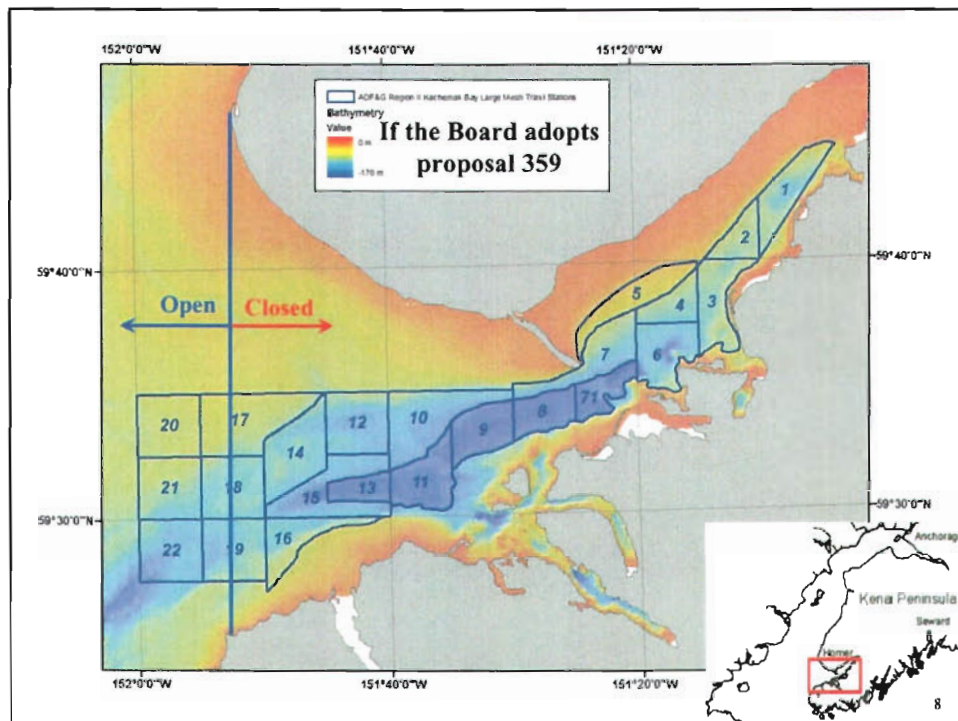
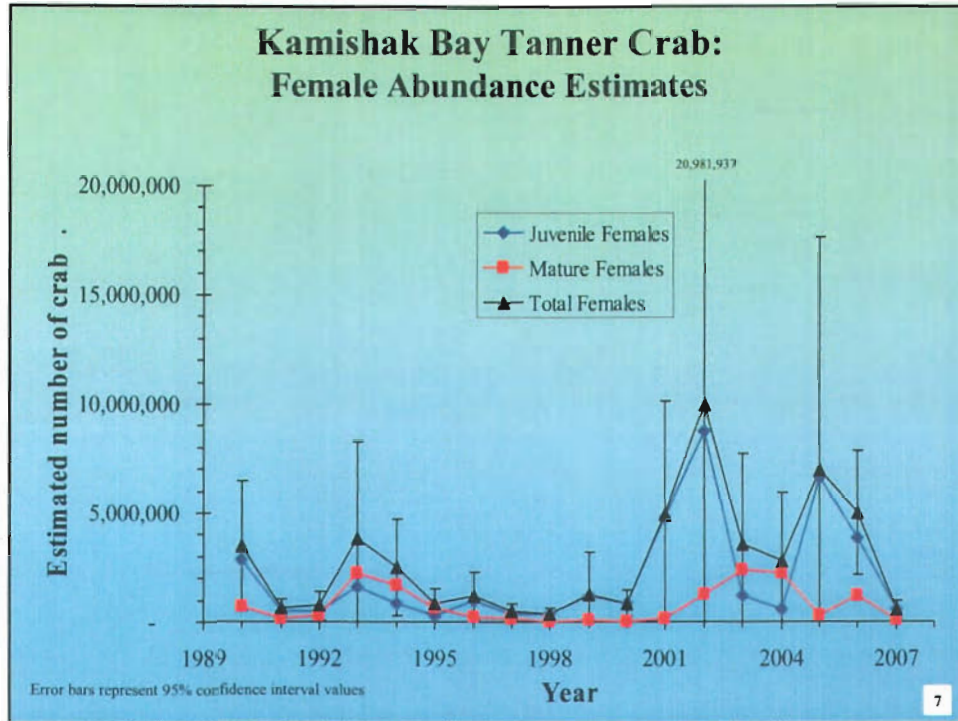


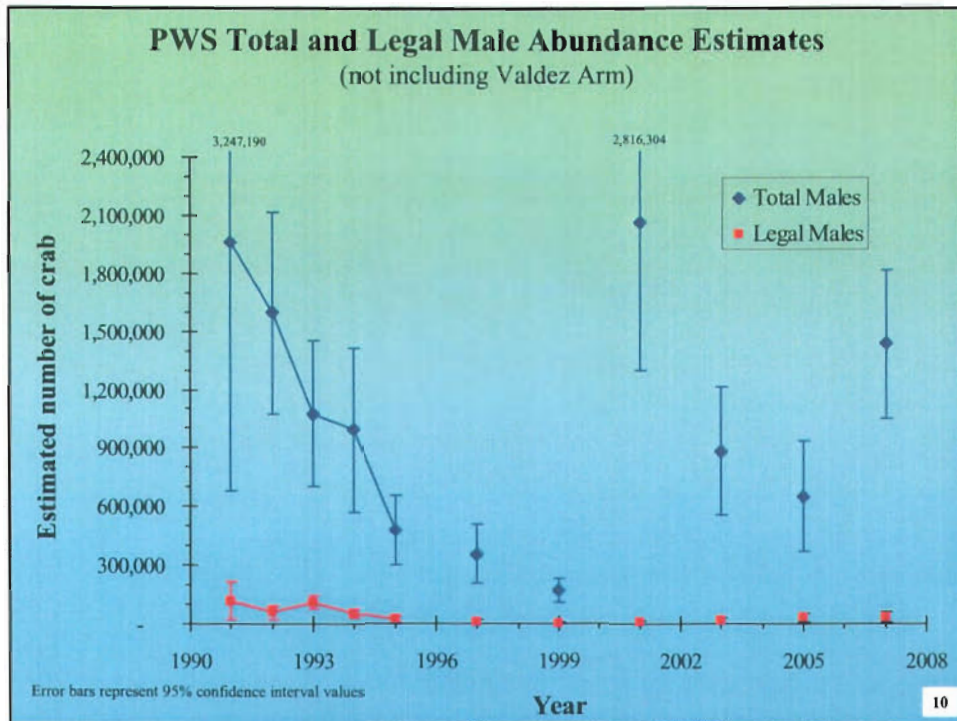
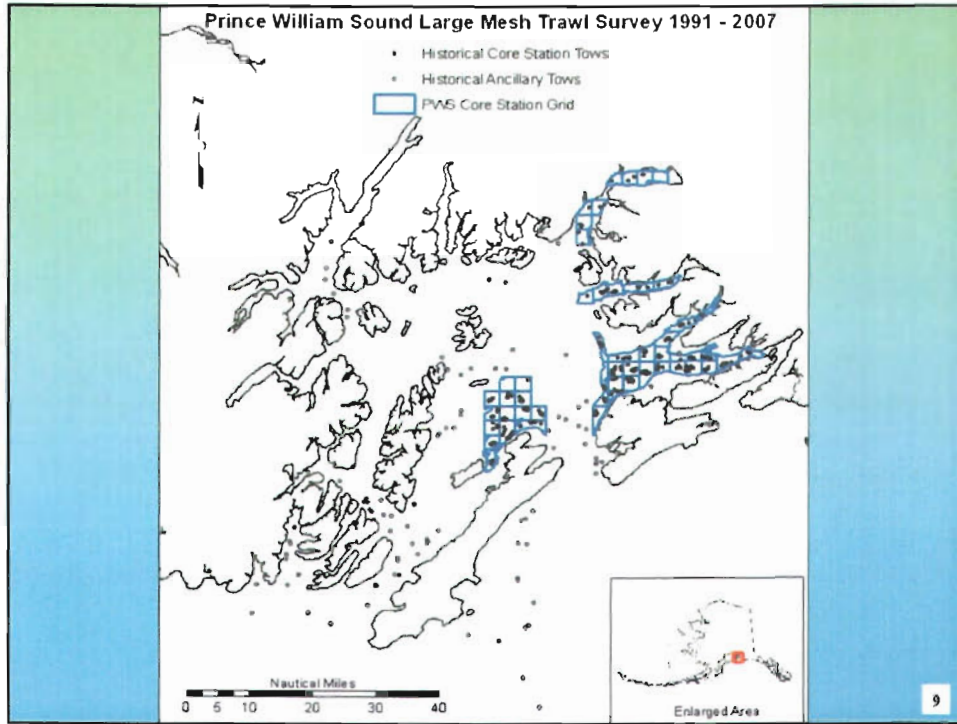


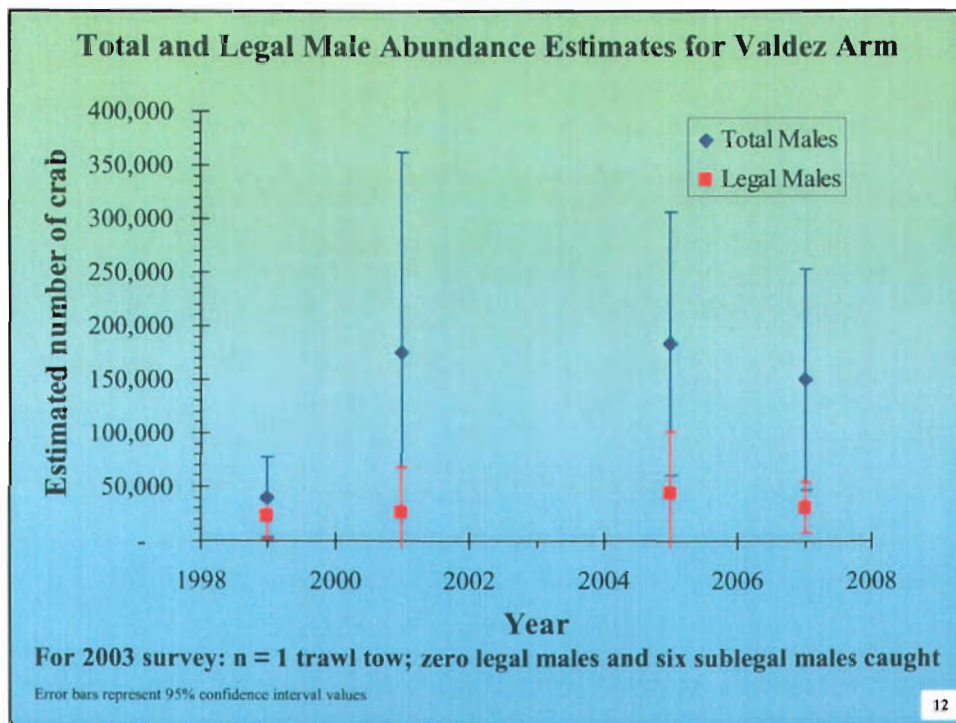
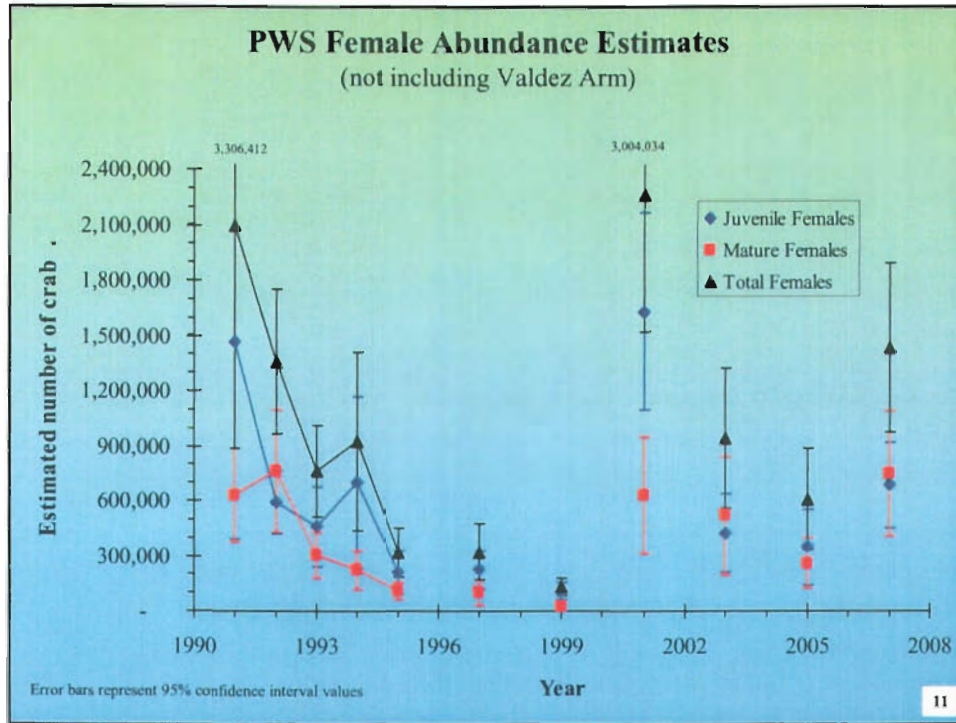
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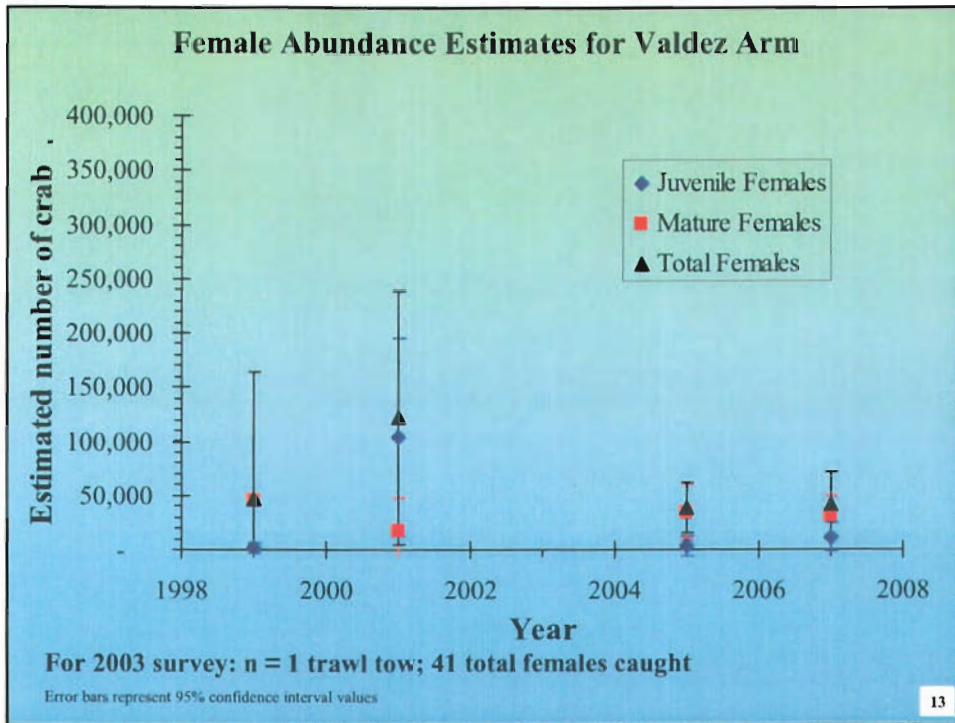


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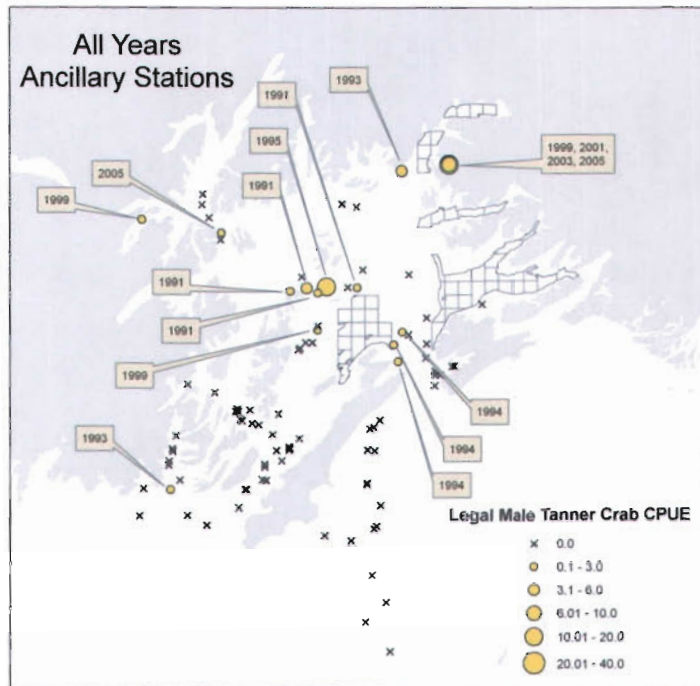


13

Tanner & King Crab catch in trawl survey core stations in the Northern and Hinchinbrook Districts (except Valdez Arm) of PWS

| Year | Number of Tows | Trawl Survey Catch Abundance | | | | |
|------|---|------------------------------|------------------|-------------------------------------|---------------|------------------|
| | | Female Tanner Crab | Male Tanner Crab | Mean Legal Male Tanner Crab Per Tow | Red King Crab | Golden King Crab |
| 1991 | 29 | 1,632 | 1,722 | 3.6 | 0 | 0 |
| 1992 | 37 | 1,512 | 1,776 | 1.9 | 2 | 0 |
| 1993 | 38 | 790 | 1,245 | 3.3 | 2 | 0 |
| 1994 | 38 | 904 | 1,088 | 1.4 | 2 | 0 |
| 1995 | 32 | 276 | 417 | 0.6 | 0 | 1 |
| 1996 | Biennial survey schedule initiated, no survey | | | | | |
| 1997 | 39 | 341 | 380 | 0.3 | 0 | 1 |
| 1998 | No Survey | | | | | |
| 1999 | 40 | 135 | 181 | 0.1 | 0 | 0 |
| 2000 | No Survey | | | | | |
| 2001 | 40 | 2,397 | 2,177 | 0.2 | 0 | 0 |
| 2002 | No Survey | | | | | |
| 2003 | 40 | 993 | 955 | 0.4 | 0 | 0 |
| 2005 | 40 | 642 | 687 | 0.8 | 1 | 0 |
| 2007 | 35 | 1,395 | 1,367 | 0.9 | 0 | 0 |

14

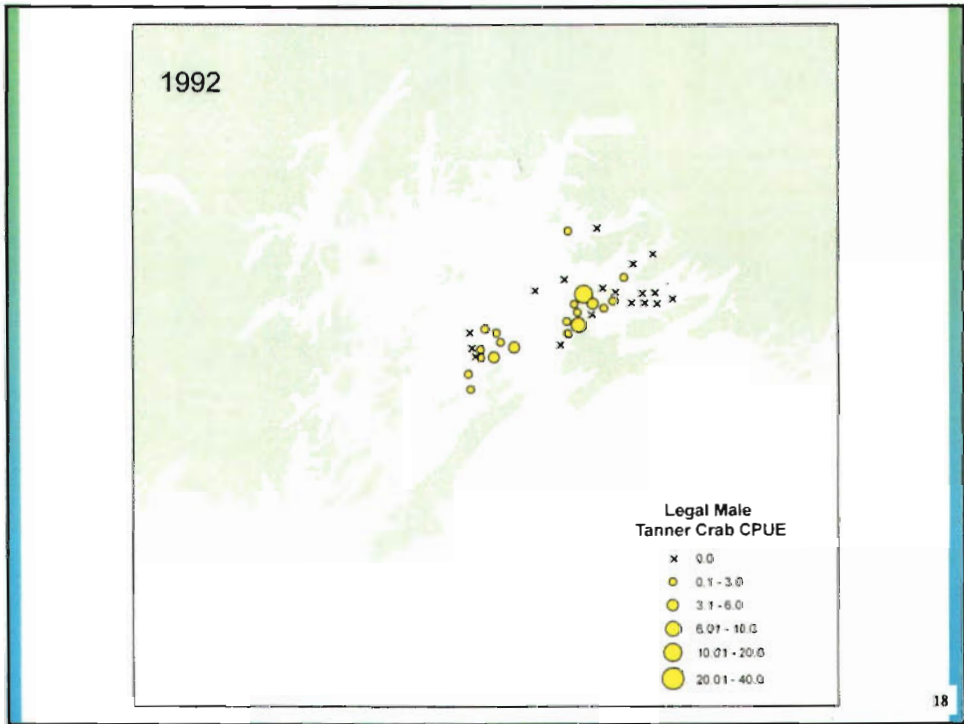
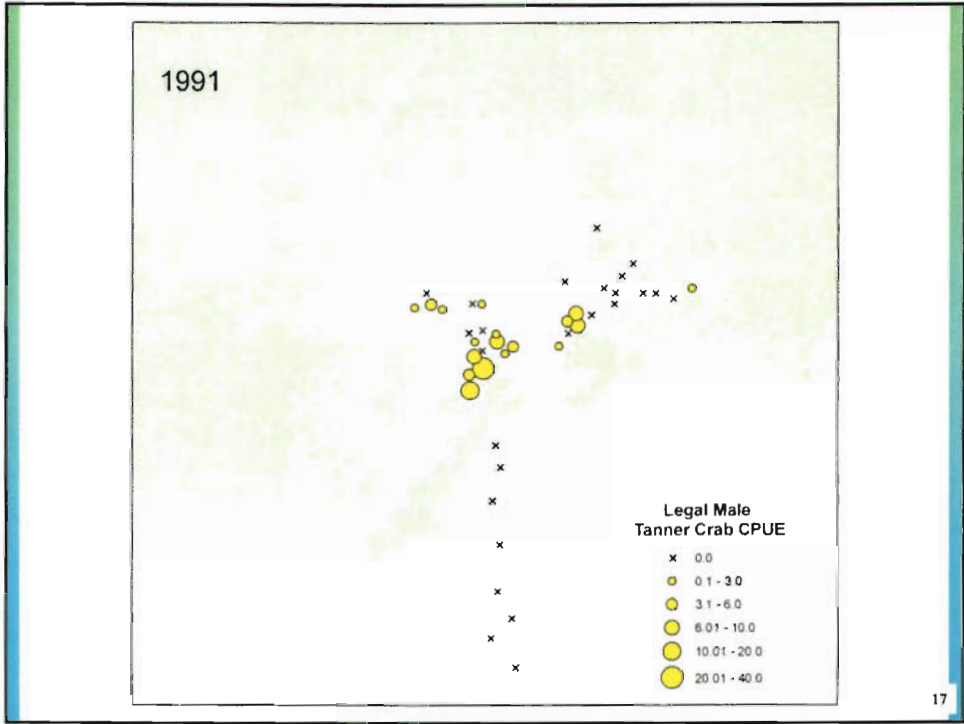


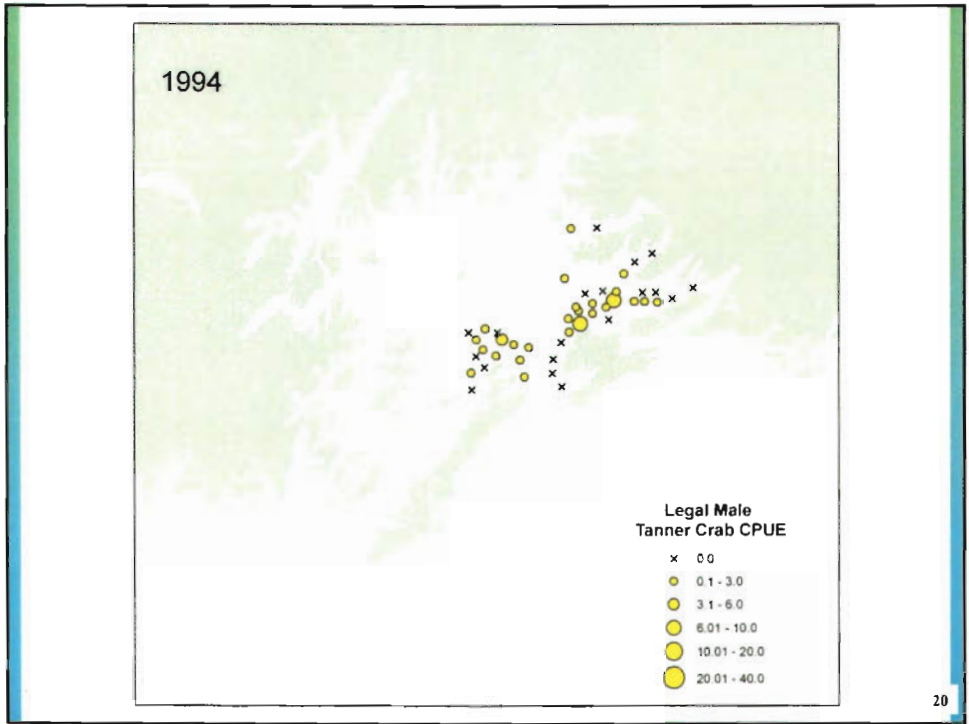
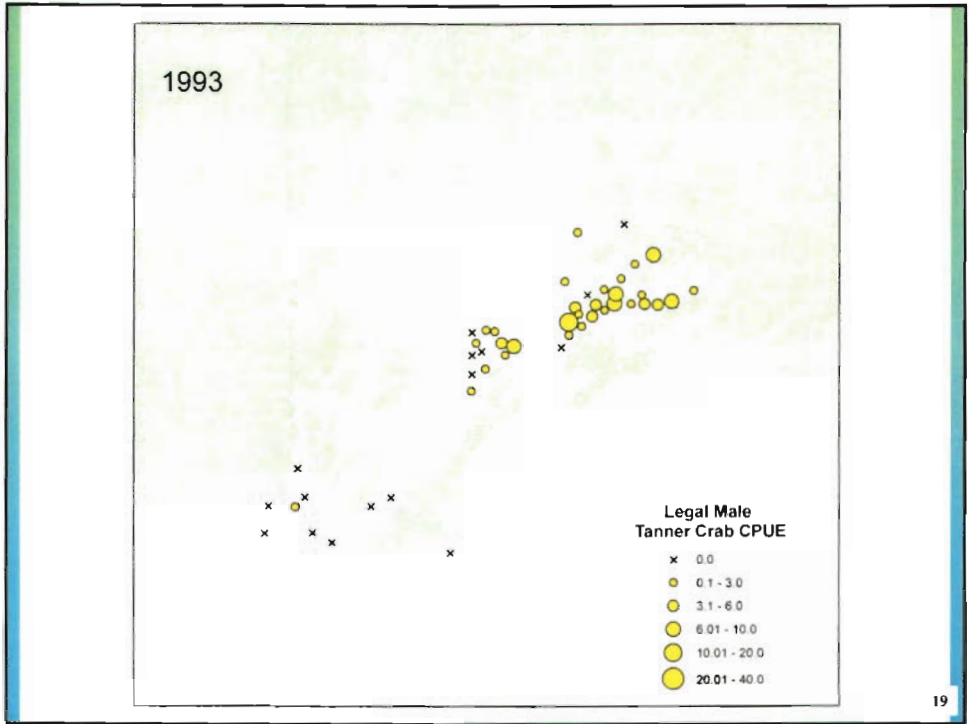
DEMOGRAPHICS OF TANNER CRAB IN PRINCE WILLIAM SOUND

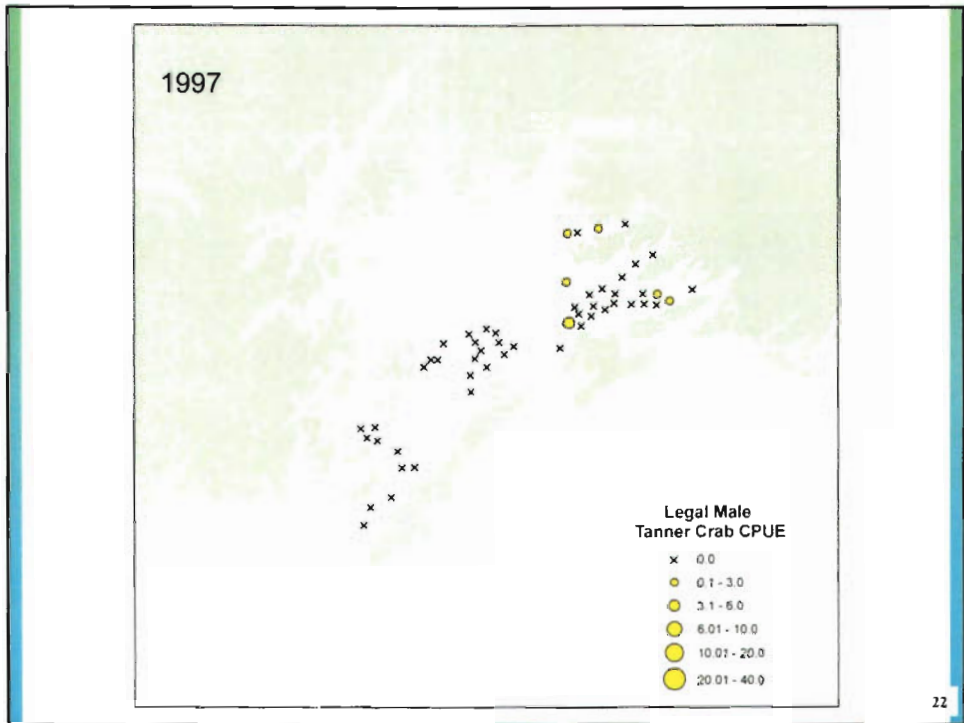
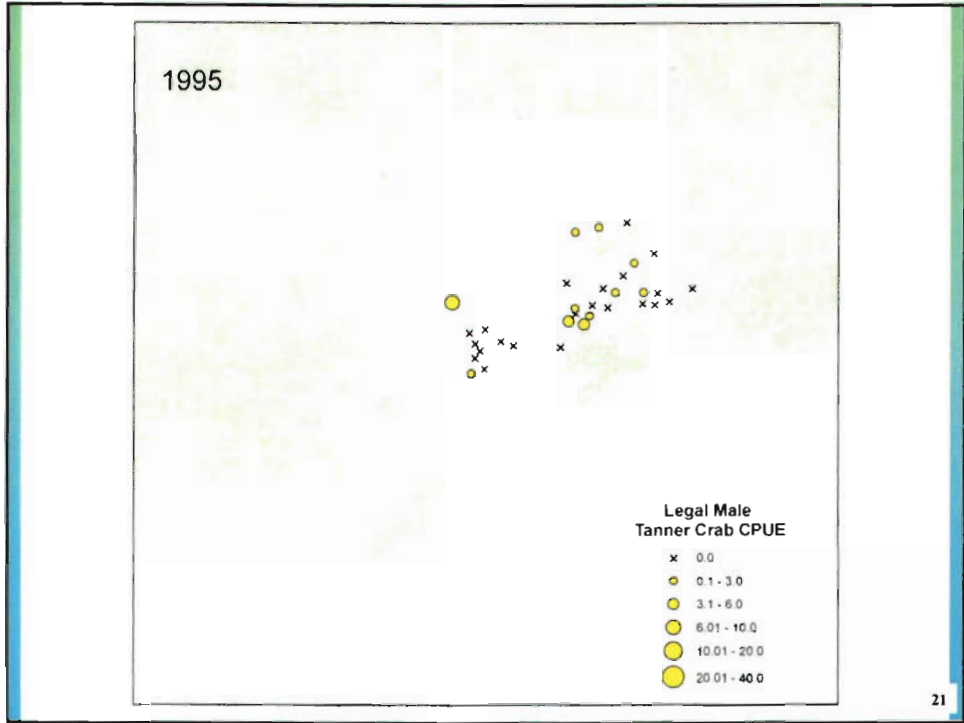
1) Legal Males

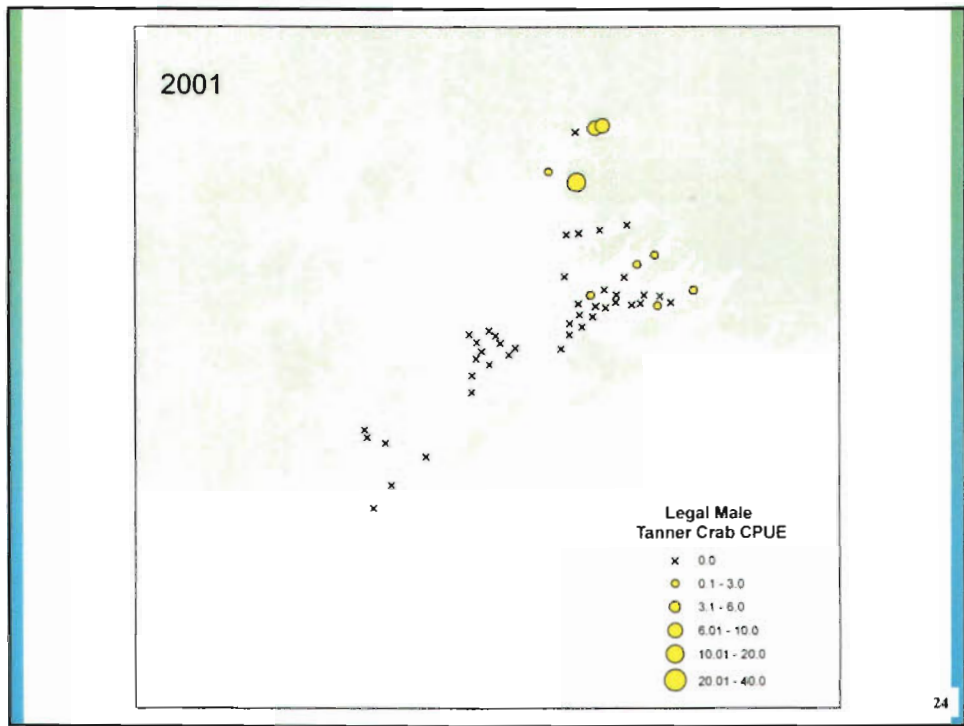
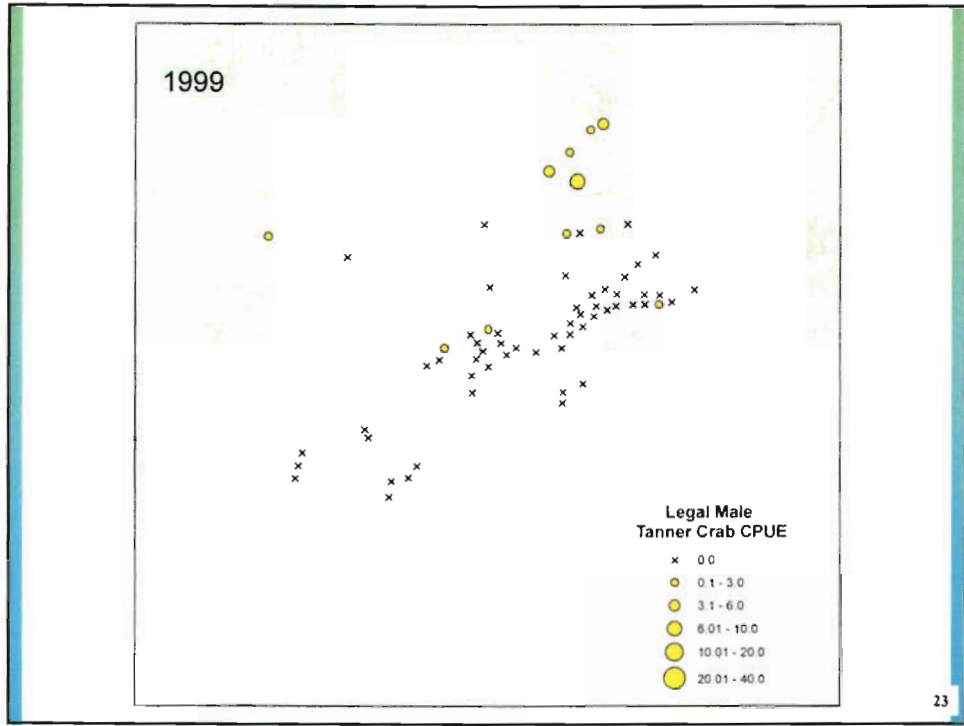
2) Prerecruit-1 (new shell)

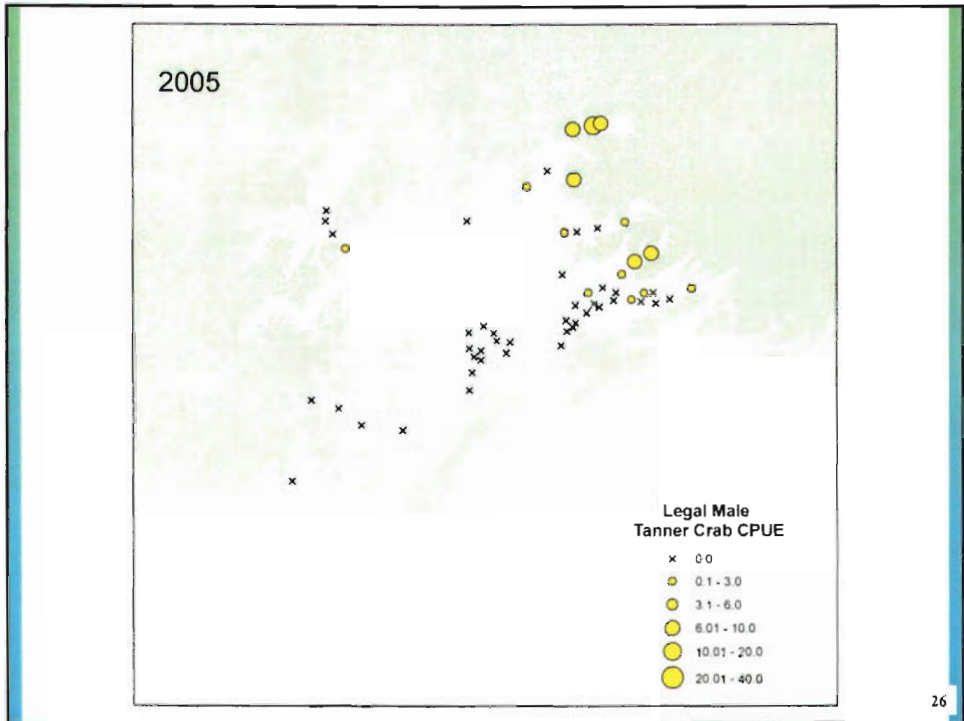
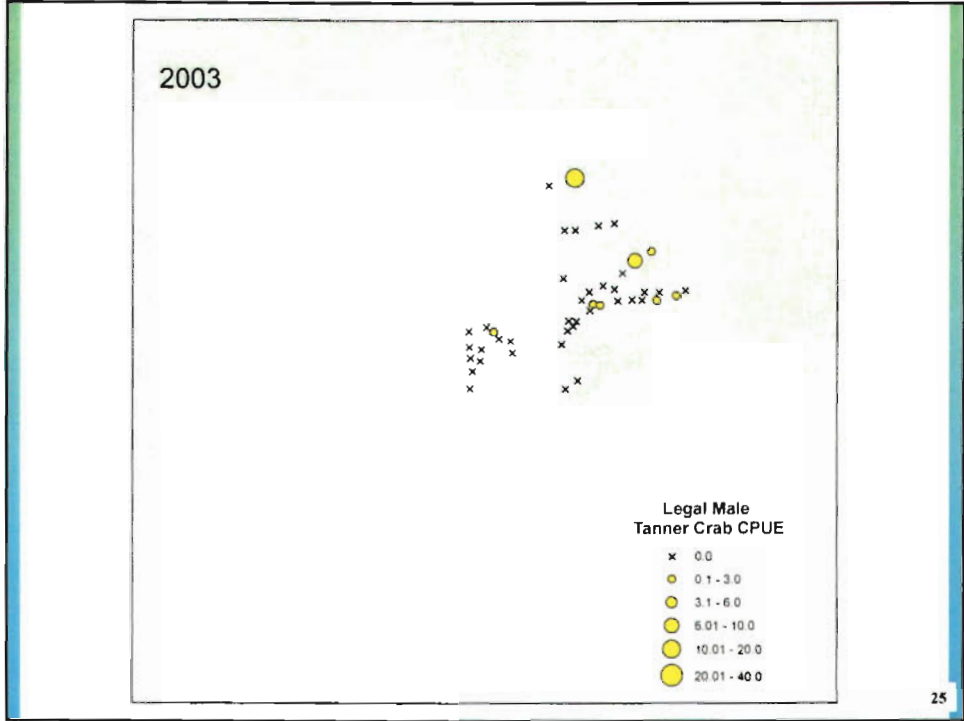
3) Mature Females

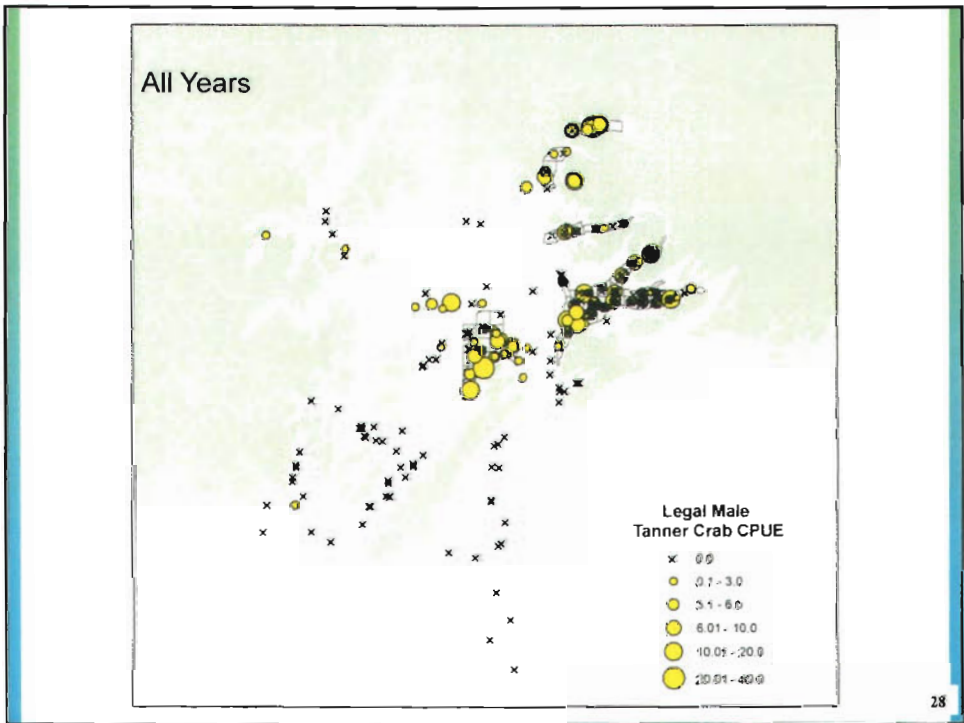
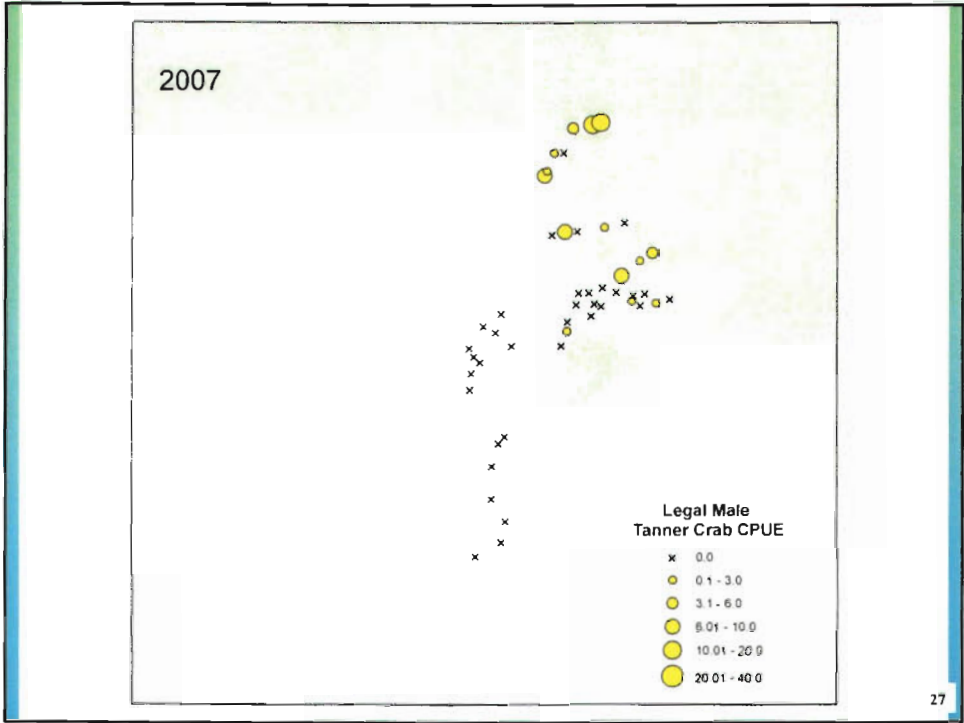


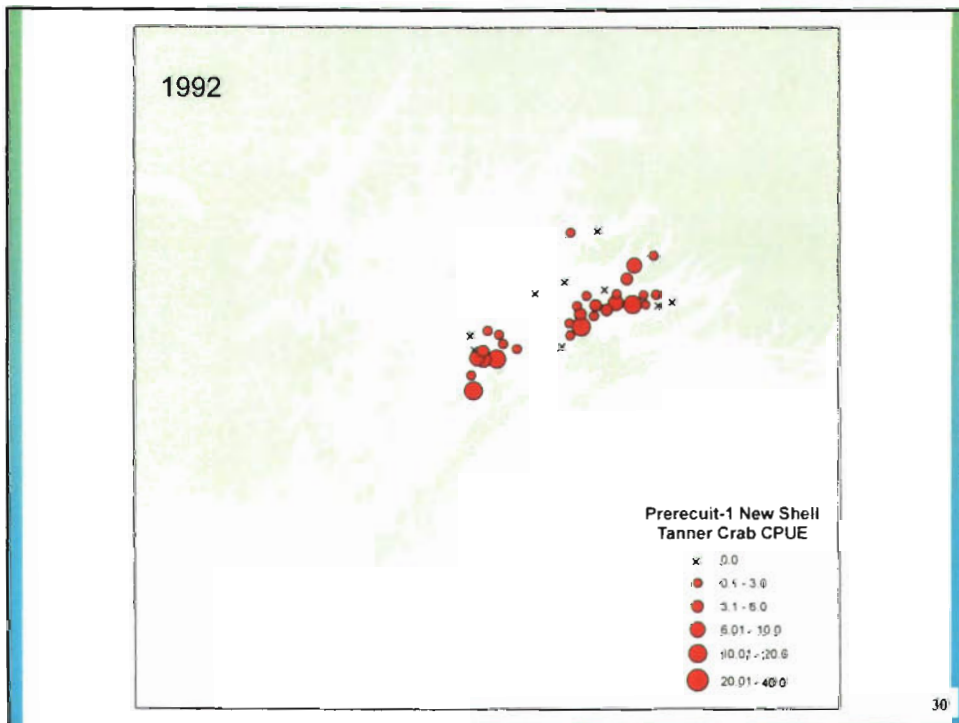
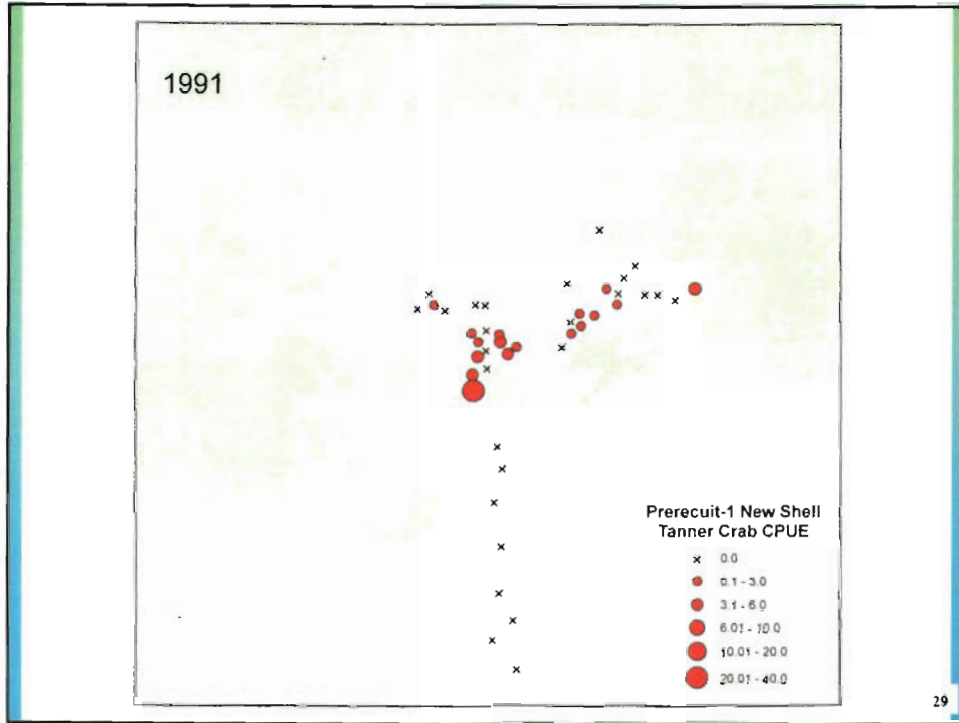


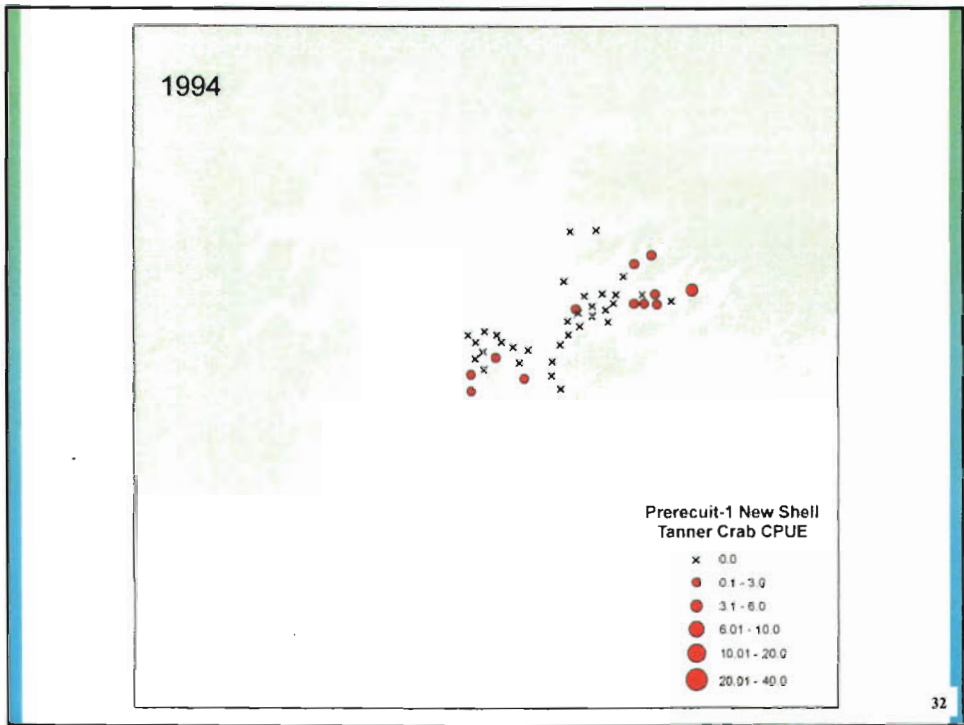
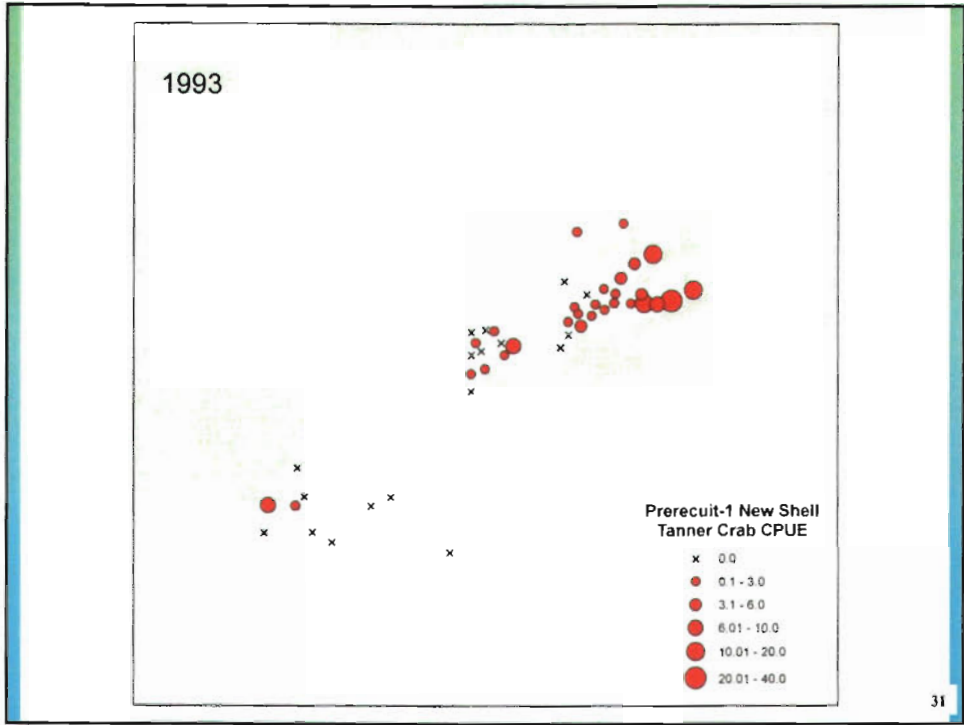


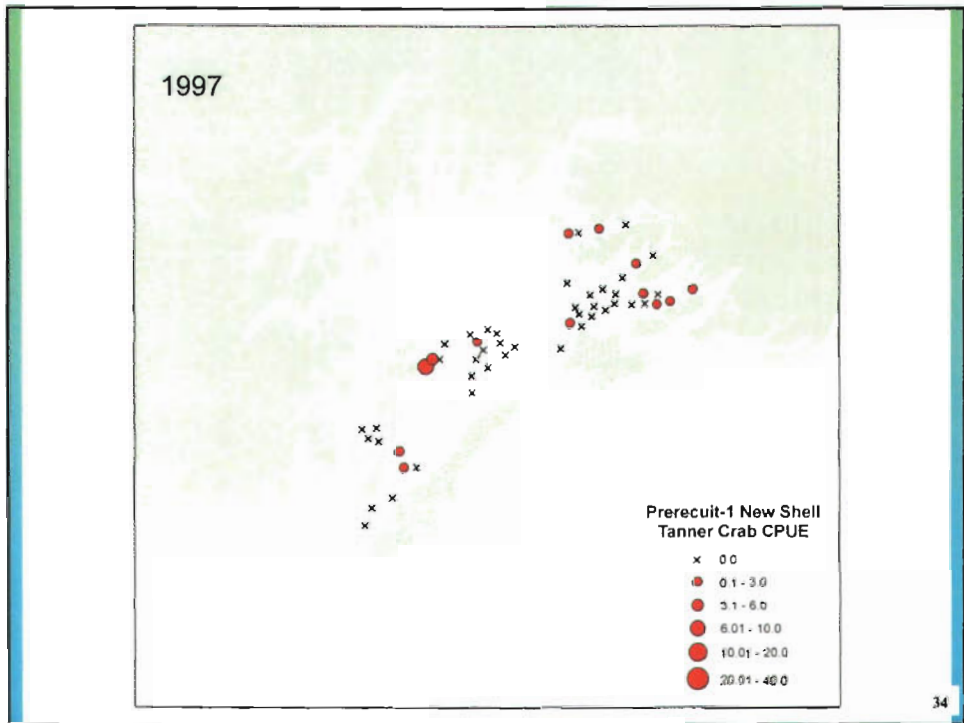
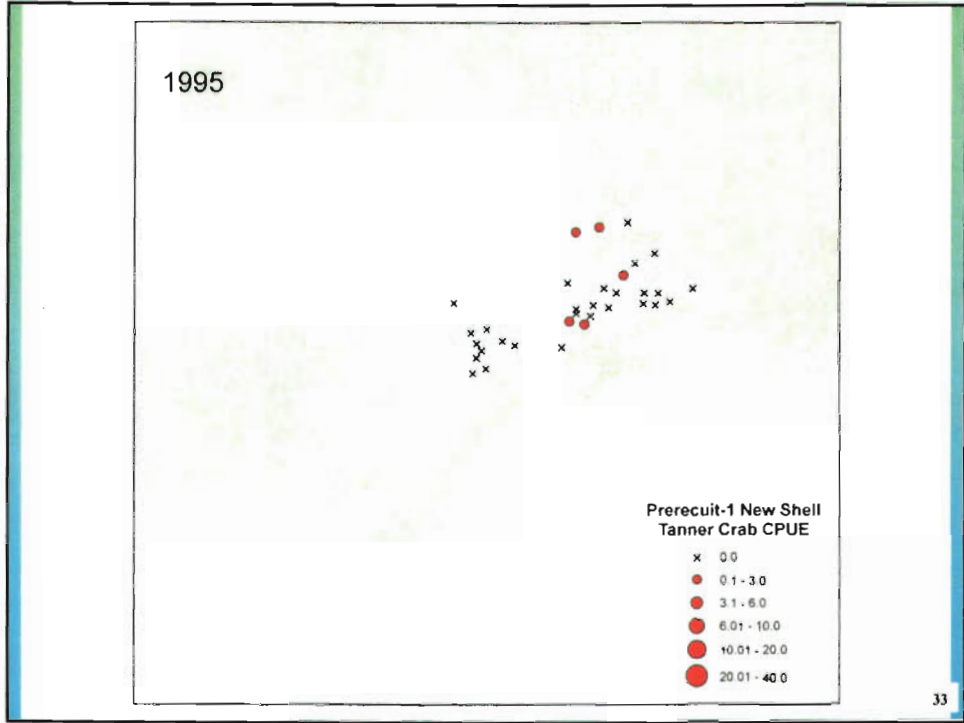


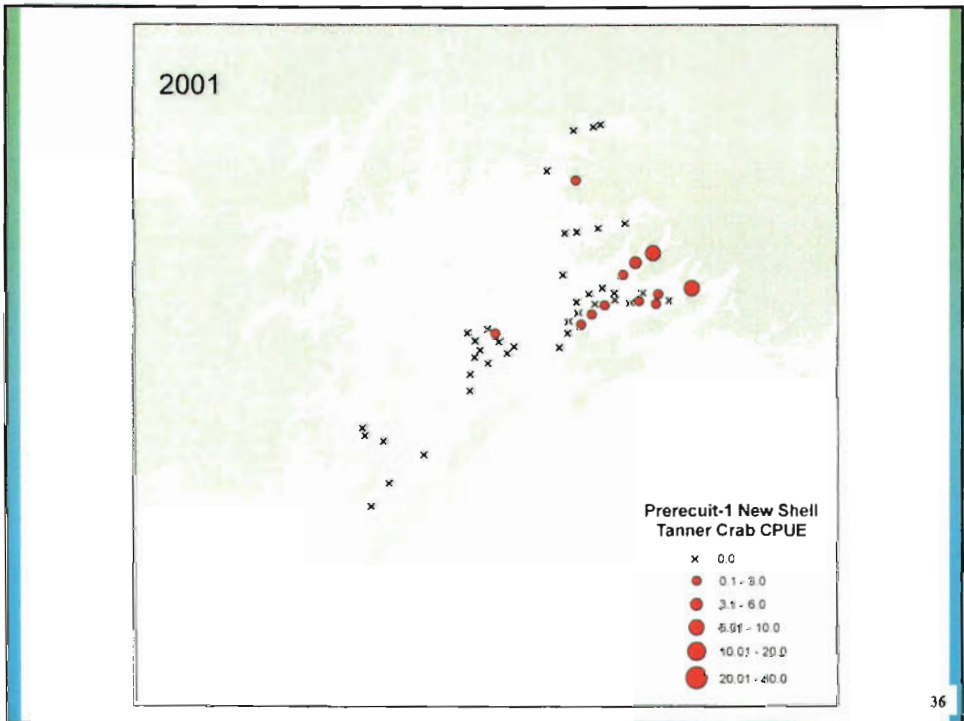
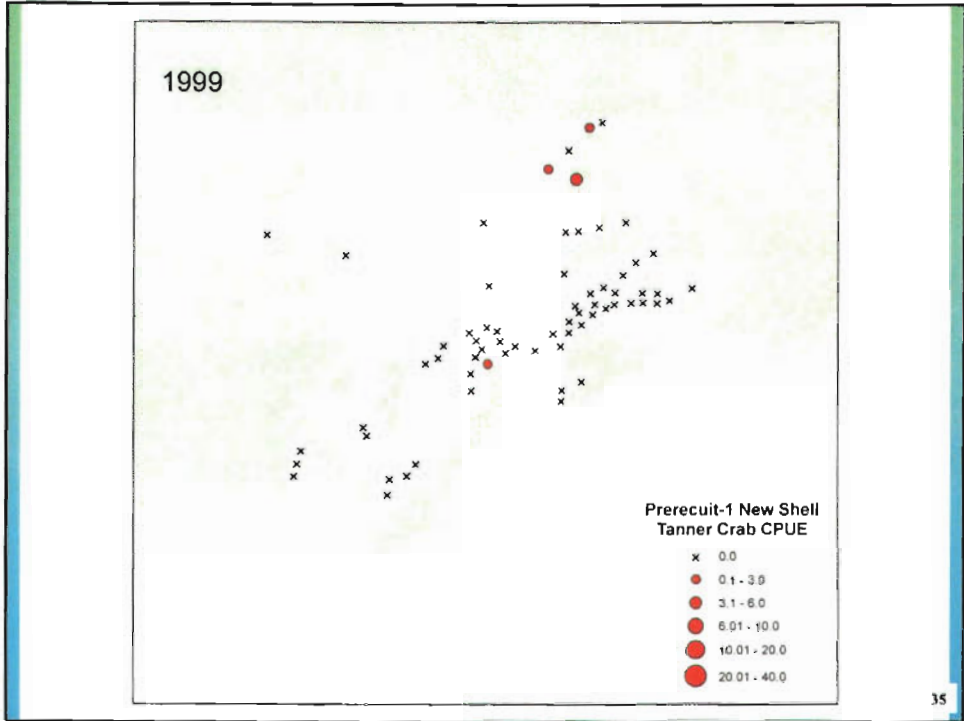


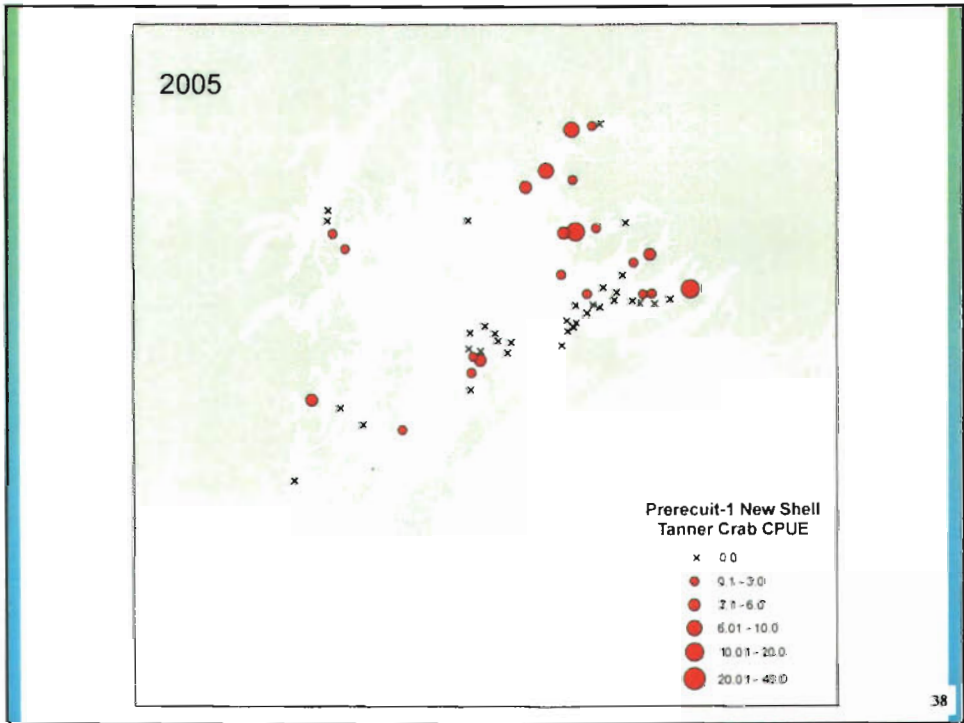
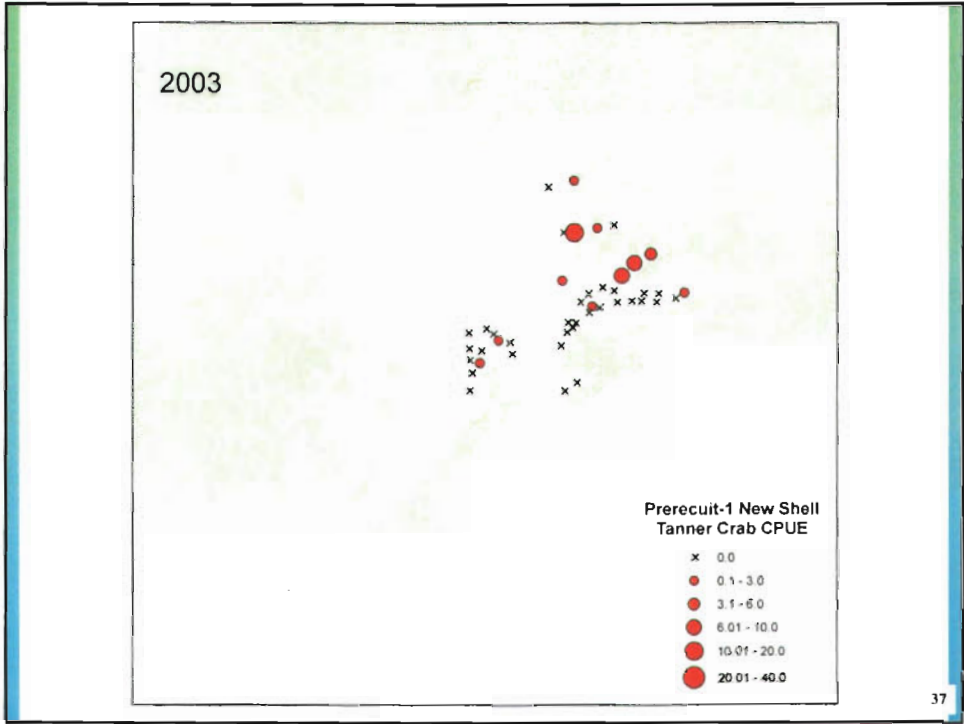


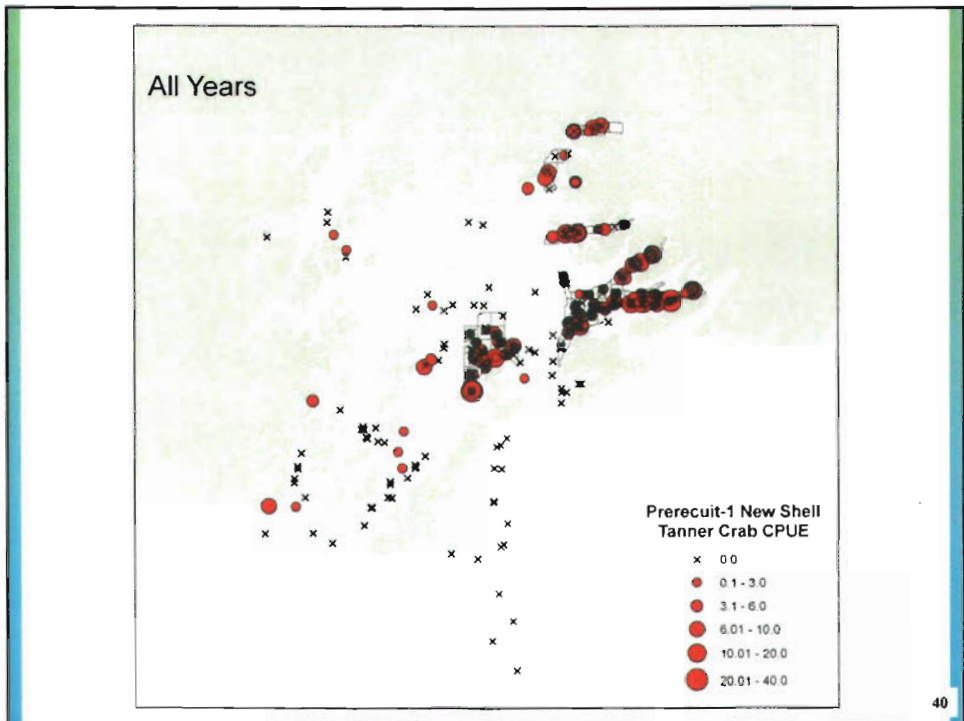
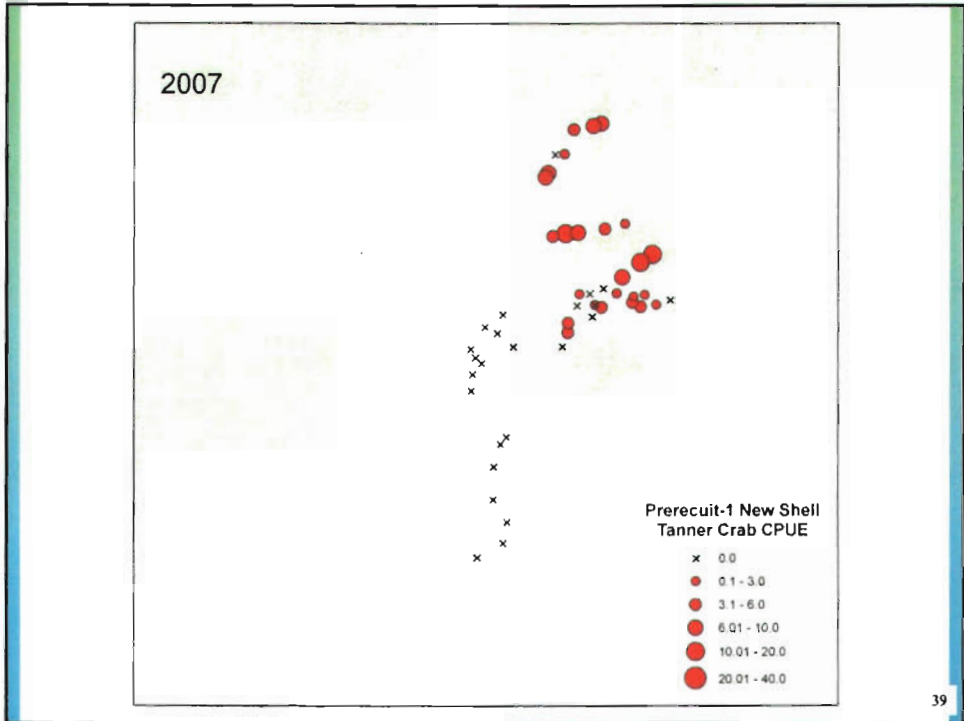


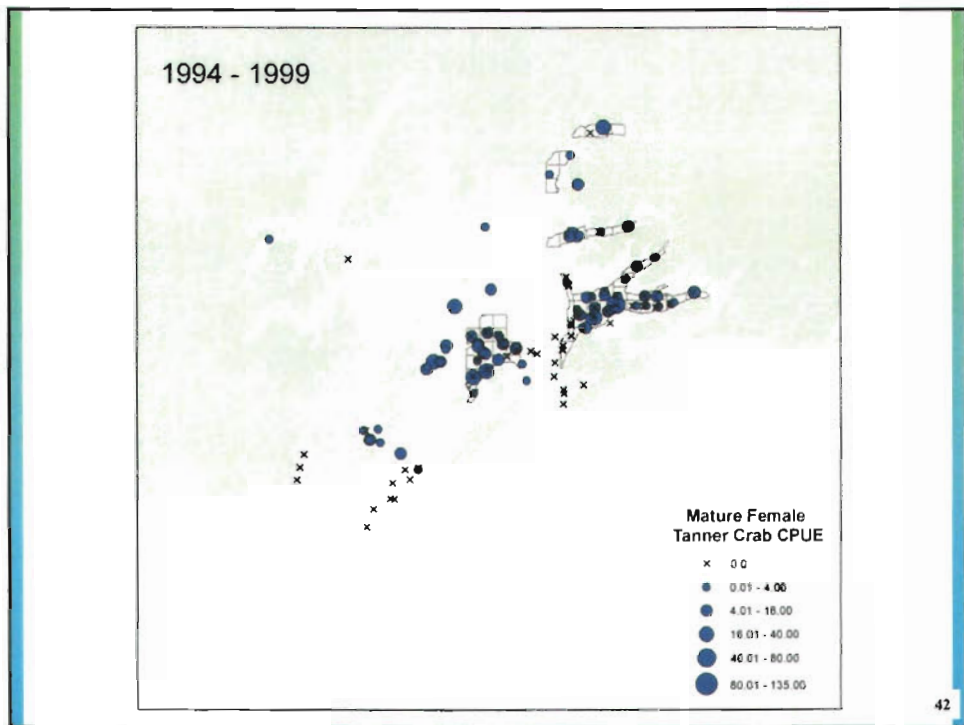
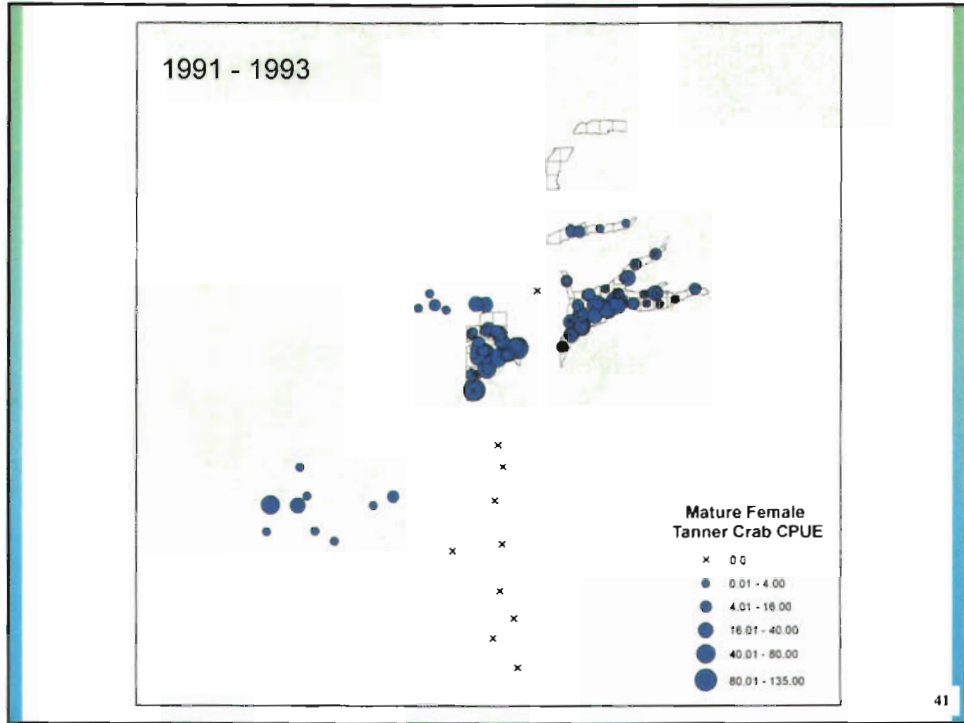


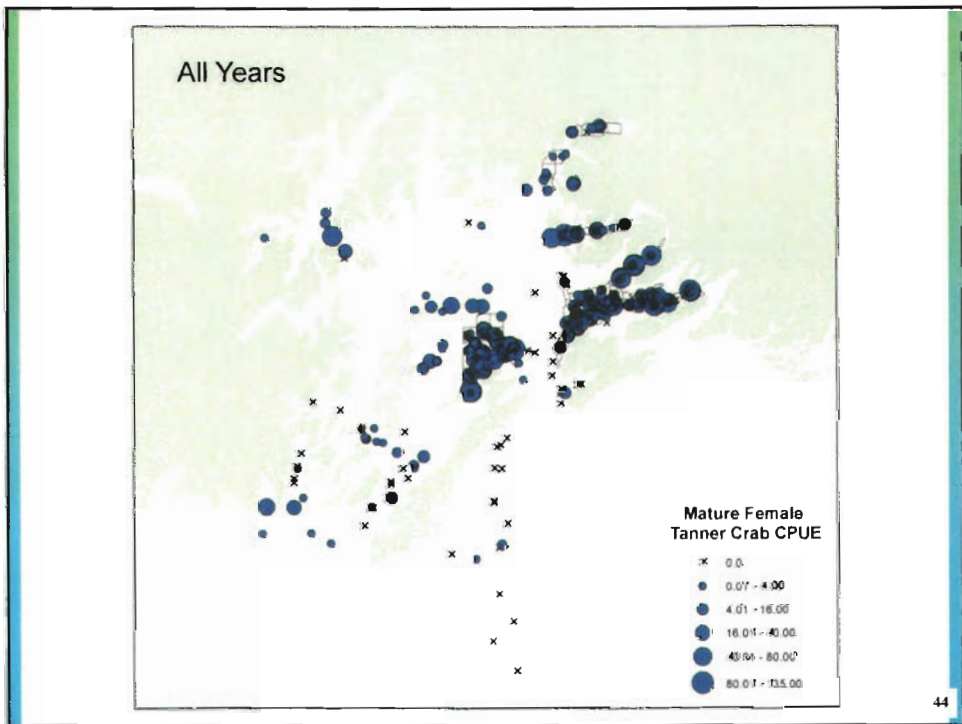
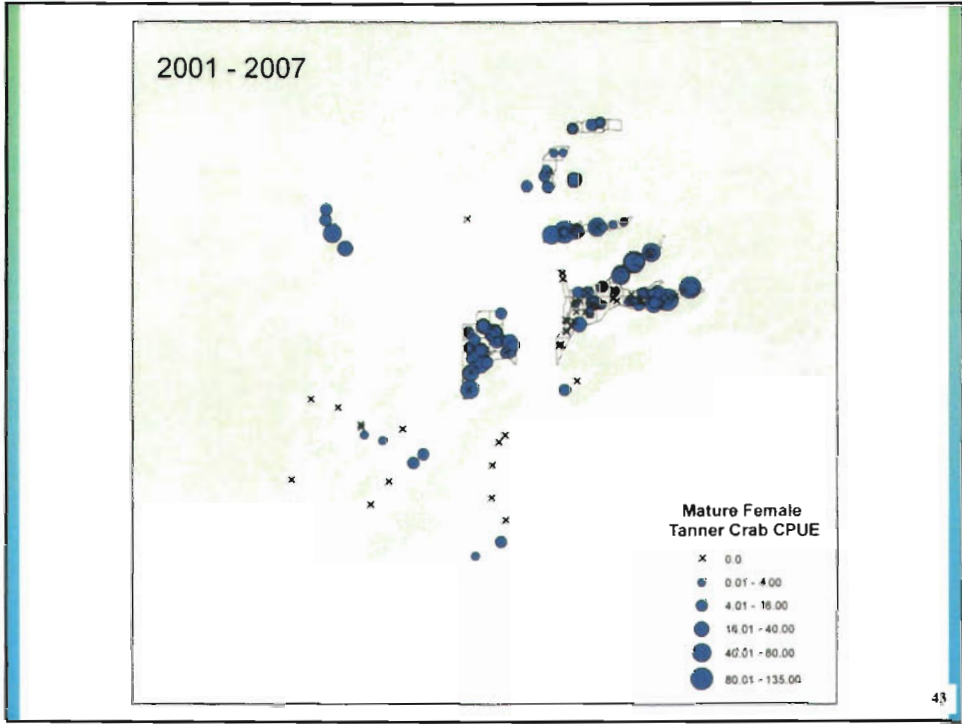


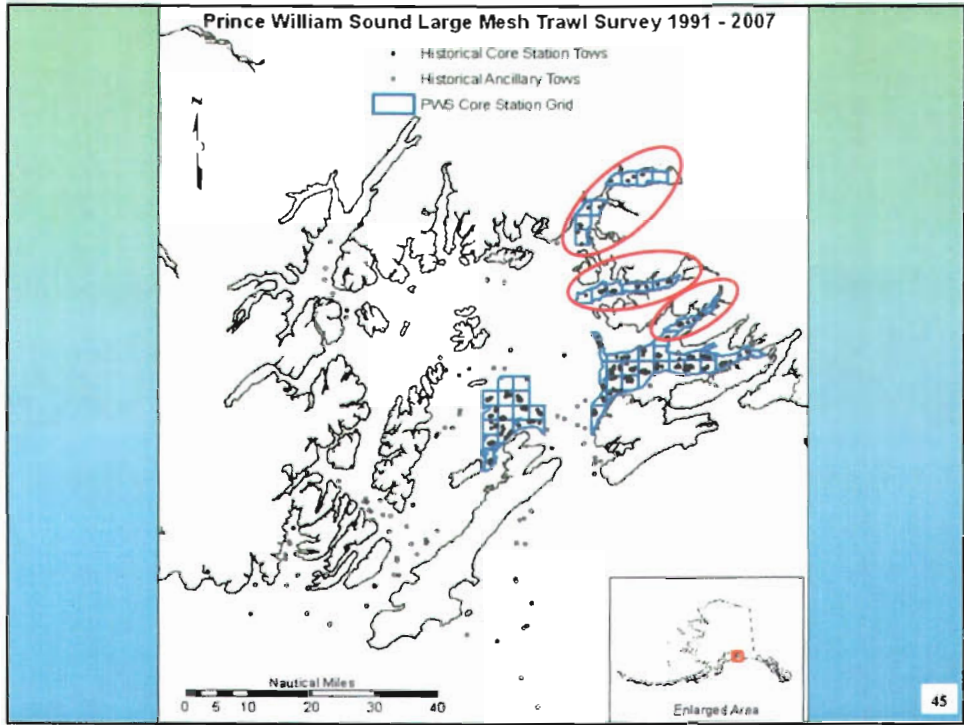


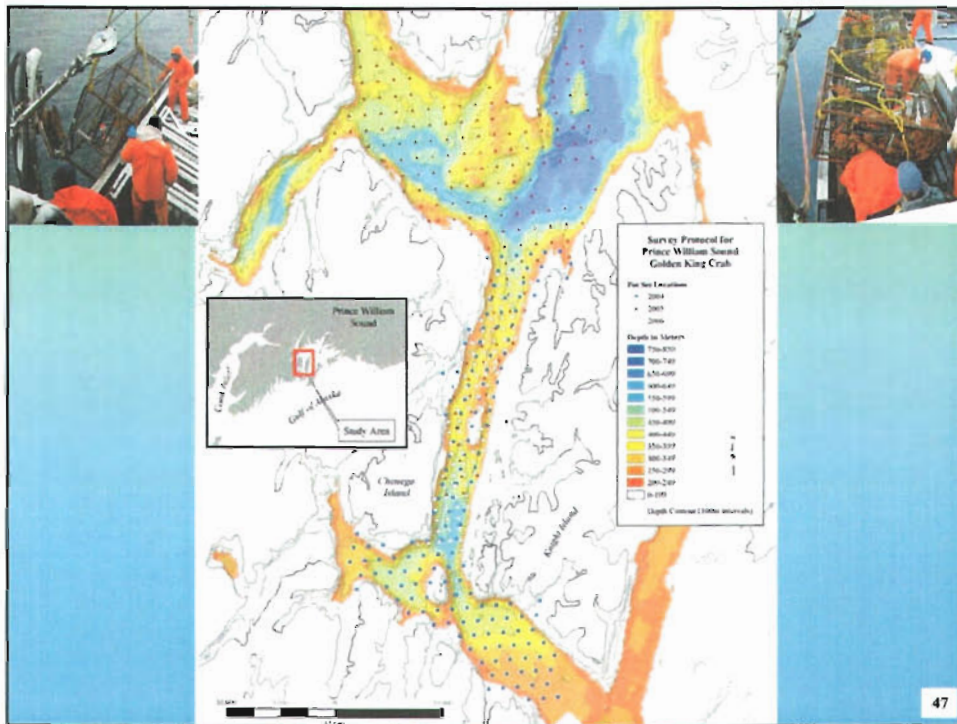












Mean Carapace Length, Width and Weight Measurements From Golden King Crab Caught in ADF&G Survey

(numbers in parentheses are standard errors; followed by 95% confidence interval values).

Legal males composed 93%, 98% & 96% of total male catch in 2004, 2005 & 2006, respectively

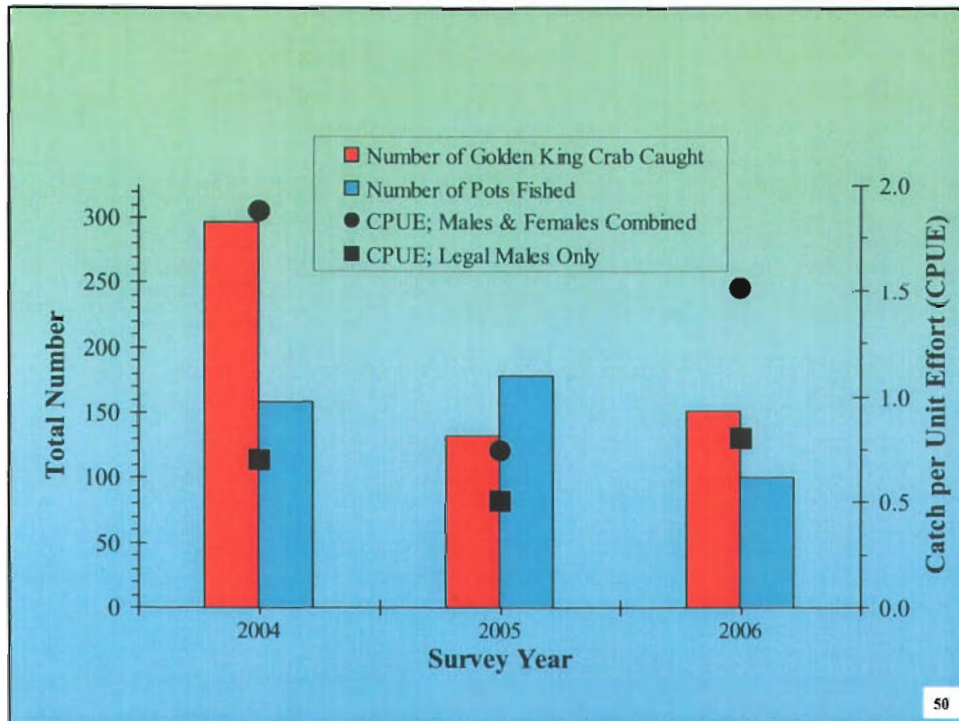
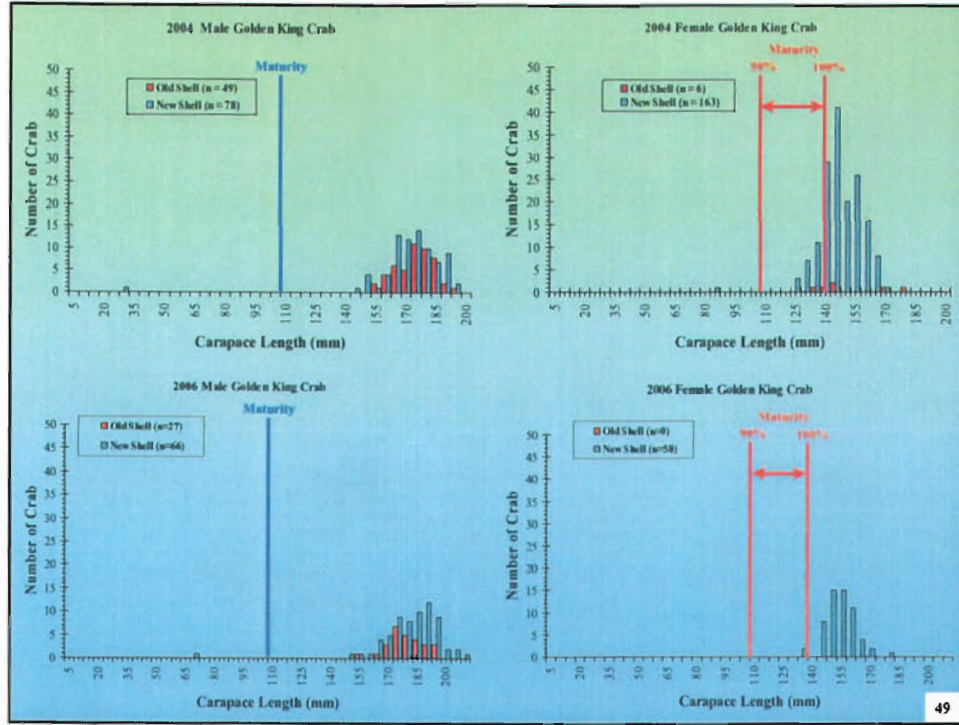
| Male Golden King Crab | 2004 | 2005 | 2006 |
|----------------------------------|--------------------------|--------------------------|-------------------------|
| Carapace Length (mm) | 171 (1.5; ± 2.9) | 176 (1.0; ± 2.0) | 179 (1.7; ± 3.4) |
| Biological Carapace Width (mm) | 186 (1.1; ± 2.2) | 191 (1.2; ± 2.3) | 195 (1.9; ± 3.8) |
| Legal Carapace Width (mm) | *195 (1.6; ± 3.2) | *201 (1.1; ± 2.2) | 204 (1.9; ± 3.8) |
| Weight (kg) | 3.5 (0.1; ± 0.1) | 3.7 (0.1; ± 0.2) | 4.1 (0.1; ± 0.2) |
| Female Golden King Crab | 2004 | 2005 | 2006 |
| Carapace Length (mm) | 145 (0.8; ± 1.6) | 148 (1.7; ± 3.4) | 152 (1.1; ± 2.2) |
| Biological Carapace Width (mm) | 150 (0.9; ± 1.8) | 153 (1.9; ± 3.7) | 158 (1.2; ± 2.4) |
| Weight (kg) | 1.7 (0.02; ± 0.05) | 1.9 (0.1; ± 0.1) | 2.0 (0.04; ± 0.08) |

*Estimated from correlative relationship between carapace length and legal carapace width measurements from 2006 survey's empirical data.

Females From ADF&G 2004-2006 Survey:

42% of mature females were egg-bearing in 2004, 60% were egg-bearing in 2005 survey and 69% were egg-bearing in 2006

48

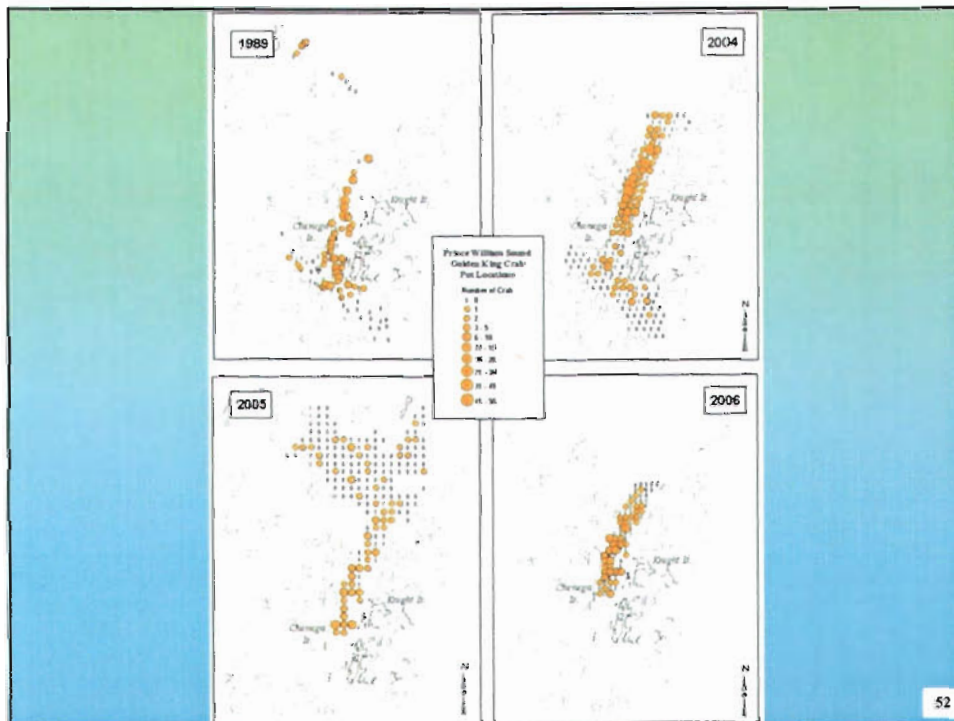


Available CPUE (crab per pot pull) From Two Statistical Areas* During the Golden King Crab Fishery in PWS, From the Entire Golden King Crab Fishery in PWS, From Legal Males Caught in an ADF&G 1989 Survey and the ADF&G 2004 - 2006 Survey.**

| Fishery Year | CPUE for statistical areas 20100 & 20305 | PWS Fishery Mean CPUE |
|--------------|--|-----------------------|
| 1982 | 0.6 | 0.7 |
| 1983 | 1.0 | 0.8 |
| 1985 | 2.3 | 1.4 |
| 1986 | 3.4 | 3.4 |
| 1987 | 2.5 | 2.4 |
| 1988 | 2.9 | 2.6 |
| ADF&G Survey | Legal Male CPUE | |
| 2004 | 0.7 | |
| 2005 | 0.5 | |
| 2006 | 0.8 | |
| ADF&G Survey | Legal Male CPUE | |
| 1989 | 1.0 | |

(from O'Clair et al. 1990)

* Two statistical areas shown encompass a slightly larger area of PWS than the ADF&G 2004-06 survey.
 ** O'Clair et al. (1990) survey was conducted as part of a State/Federal oil spill damage assessment study.



Catch per Unit Effort (CPUE) by Depth Stratum of Legal Males in ADF&G Golden King Crab Survey

| Depth Strata (m) | Legal Male CPUE | | |
|------------------|-----------------|------|------|
| | 2004 | 2005 | 2006 |
| 50-99 | 0.0 | - | - |
| 100-149 | 0.1 | - | 0.0 |
| 150-199 | 0.0 | 0.0 | 0.0 |
| 200-249 | 0.7 | 0.7 | 0.5 |
| 250-299 | 0.1 | 0.1 | 0.8 |
| 300-349 | 1.1 | 1.1 | 0.8 |
| 350-399 | 1.2 | 0.5 | 1.1 |
| 400-449 | 0.9 | 0.8 | 0.5 |
| 450-499 | 0.8 | 0.6 | 0.8 |
| 500-549 | 1.0 | 0.4 | 0.8 |
| 550-599 | 0.8 | 0.0 | *3.0 |
| 600-649 | - | 0.2 | - |
| 650-699 | - | 0.3 | - |
| 700-749 | - | 0.1 | - |
| 750-799 | - | 0.2 | - |

*Represents 3 crabs caught in the single pot set in that stratum

53

ACKNOWLEDGEMENTS



We thank the Alaska Board of Fisheries and members of the audience for their time and attention to this presentation

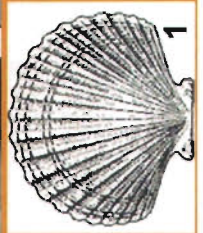
We are happy to address any questions you may have

54

Weathervane Scallop Fisheries In Alaska



By
Nicholas H. Sagalkin
Alaska Department of Fish and Game
211 Mission Road
Kodiak Alaska



RC - 2

Oral Report Tab 6, Written Report Tab 16 , Staff Comments Tab 22

Outline

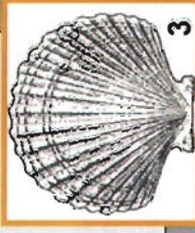
PURPOSE: PROVIDE BACKGROUND FOR PROPOSAL 402

- **Scallop Biology**
- **Scallop Fishery History**
- **Description of Fishing**
- **Map of Management Areas**
- **Map of Bed Locations**
- **Pertinent Regulations**
- **Harvest Data**
- **Effort Limitation**
- **Proposed State-Waters Management**



Biology

- Scallops found in mud, clay, silt & pebble substrates
- Located 20-125 fathoms, but most fishing occurs 40-60 fathoms
- Larvae free-drifting
- Adults form beds in relation to prevailing currents
- Live 12 + years



Scallop Fishery Chronology



Federal vessel moratorium → State vessel moratorium
1996 → 1997

“F/V Mr Big” Incident
No Federal Management Plan in effect
Excessive harvest in federal waters

1995

10 vessels

Fishery Expansion

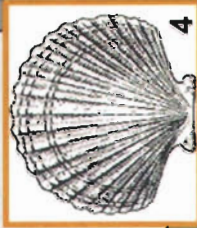
1993/94

Management Plan for Commercial Scallop Fisheries in Alaska

- limit gear
- observer requirements
- dredge size

2 vessels
Exploratory Fishery

1967



Scallop Fishery Chronology



Federal Management Plan –

All aspects of scallop management delegated to state except limited access in federal waters.

1998

Federal LLP in effect

Majority of vessels w/ LLP form coop.

2001

CFEC adopts vessel based limited entry (prior to moratoria expire)

2004

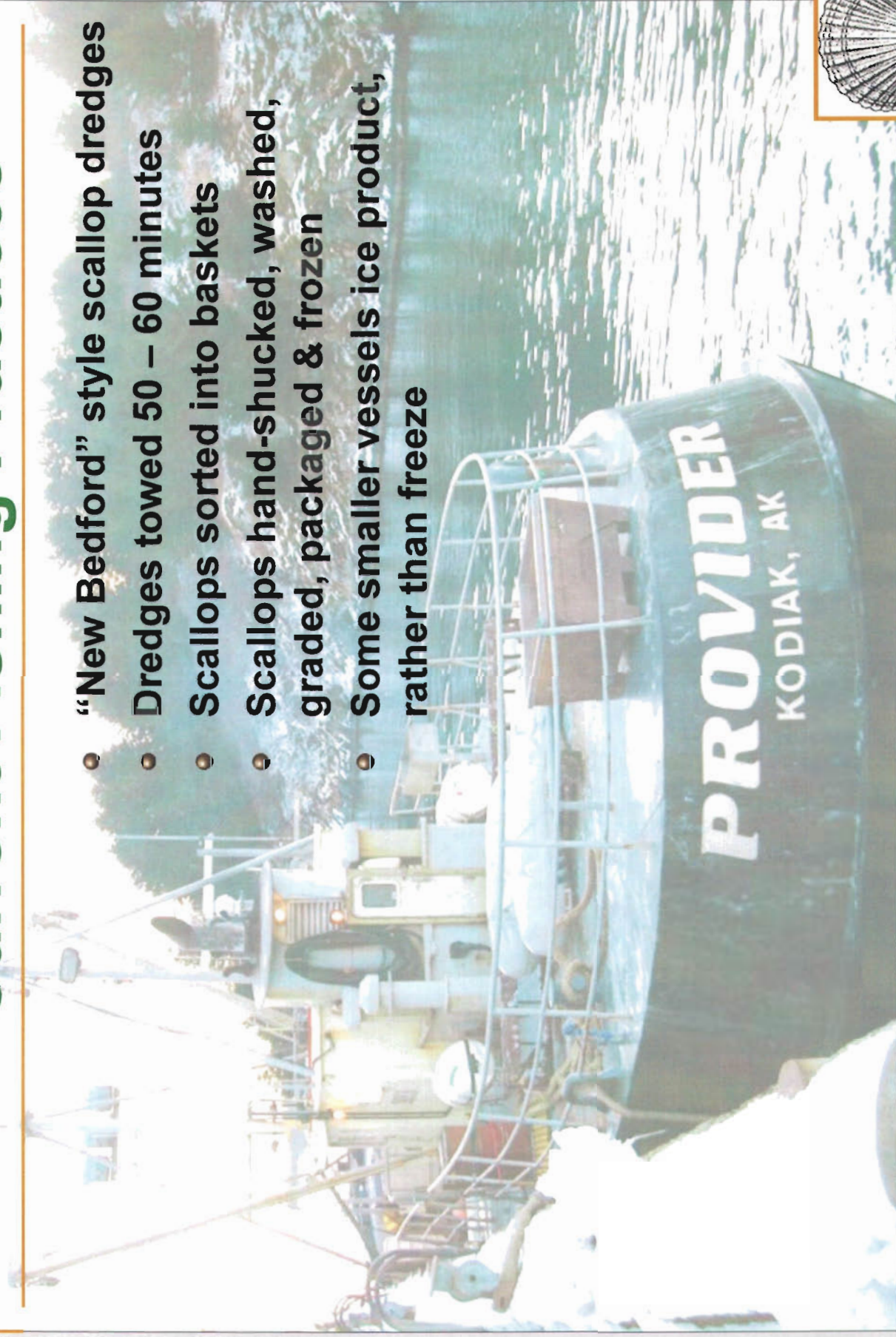
State's vessel limited entry will revert to open access unless extended by legislature

End of 2008

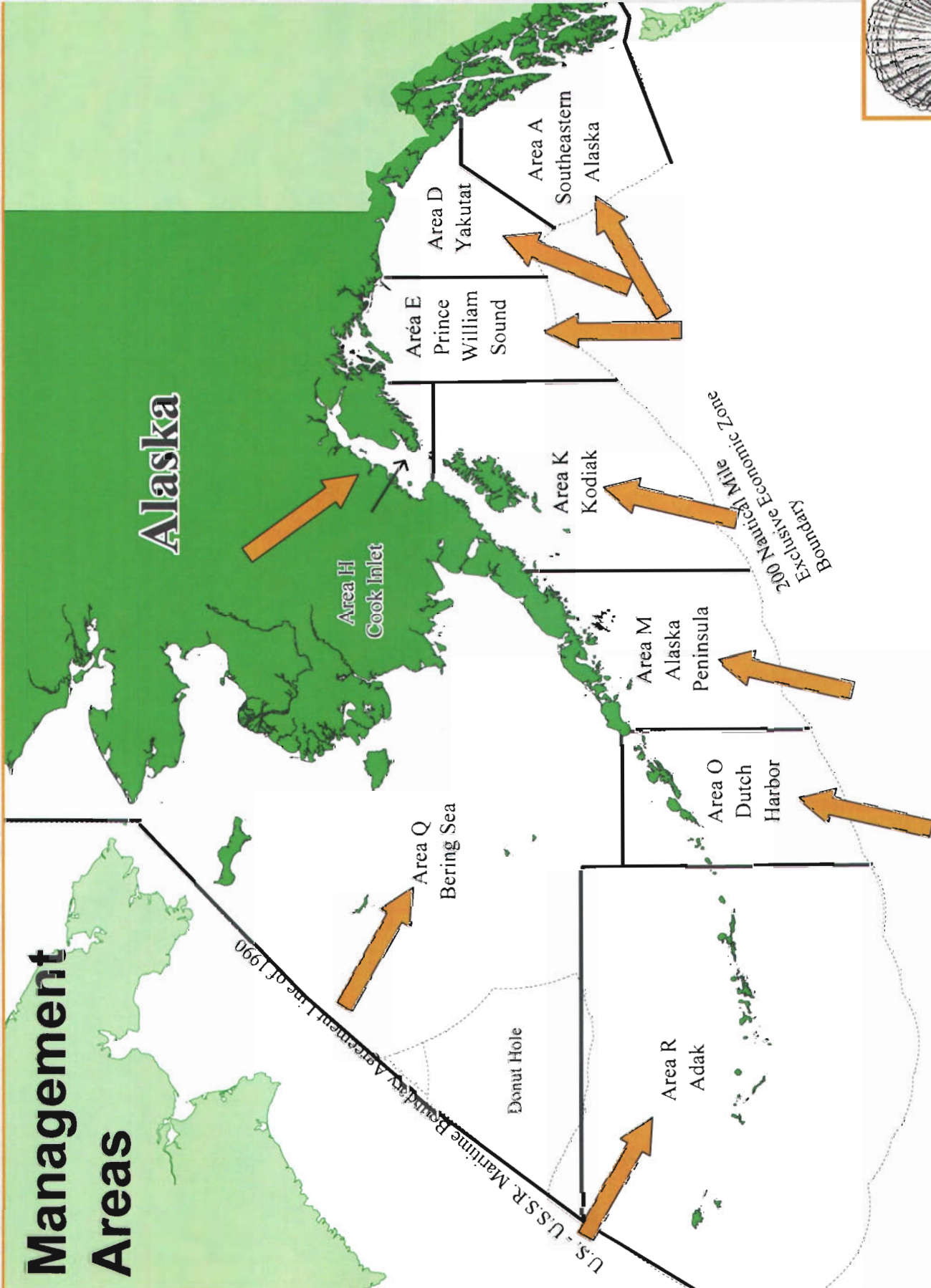


Current Fishing Practices

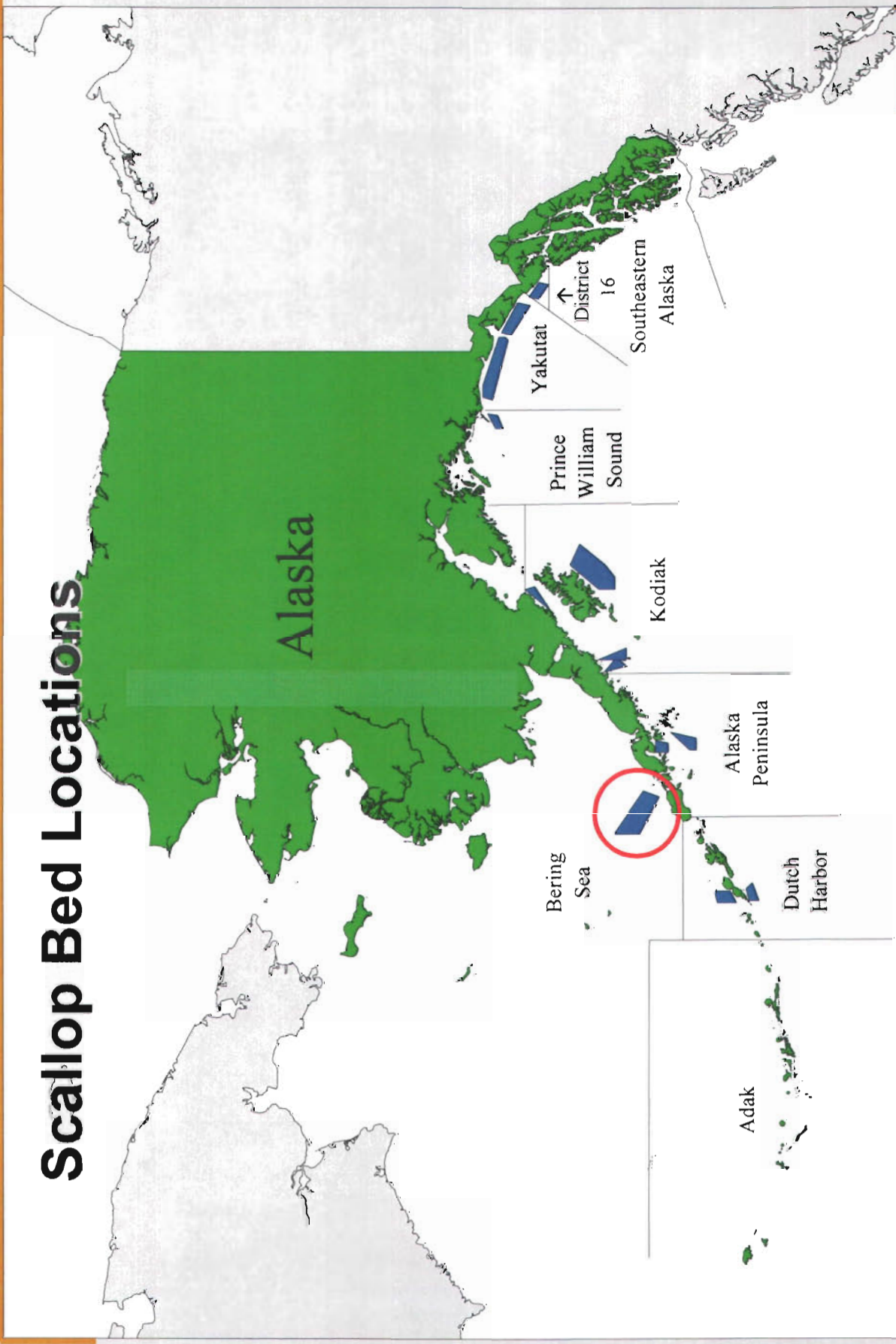
- “New Bedford” style scallop dredges
- Dredges towed 50 – 60 minutes
- Scallops sorted into baskets
- Scallops hand-shucked, washed, graded, packaged & frozen
- Some smaller vessels ice product, rather than freeze



Management Areas

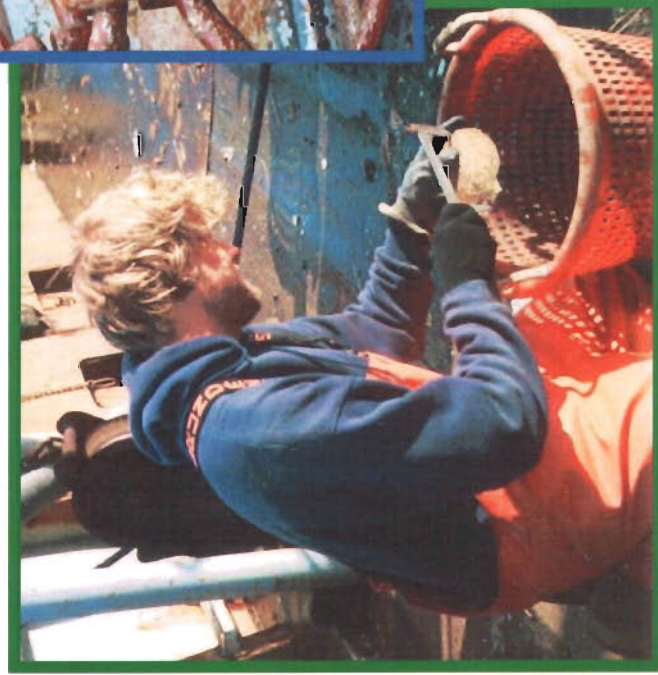


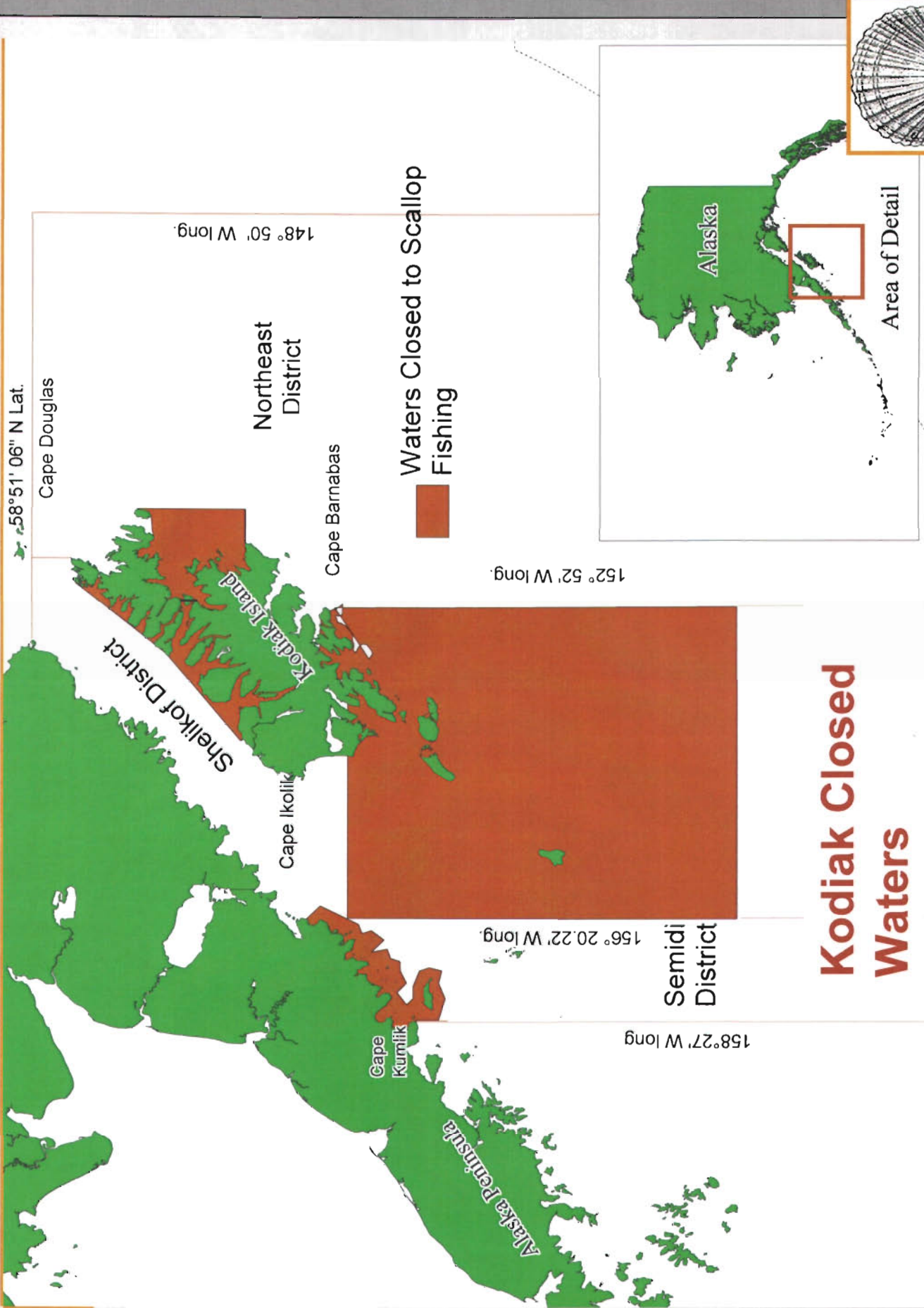
Scallop Bed Locations

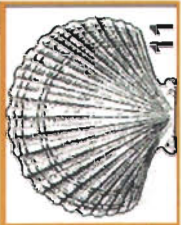


Pertinent Regulations

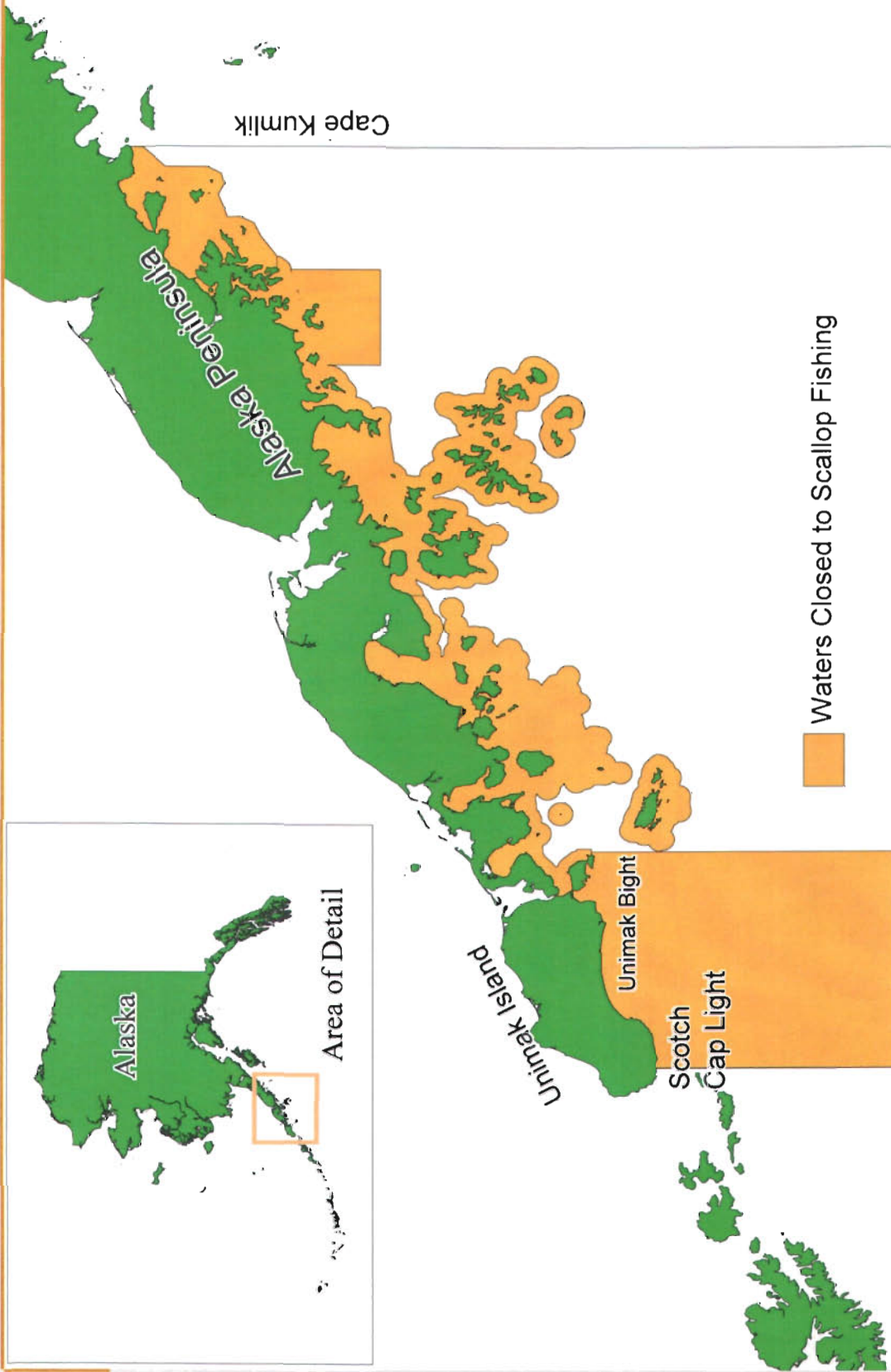
- Observer Requirement
- Dredge Size
- Season Date
- Limited Entry / LLP
- Crab Bycatch Limits
- Closed Waters







157° 27' W long



Waters Closed to Scallop Fishing

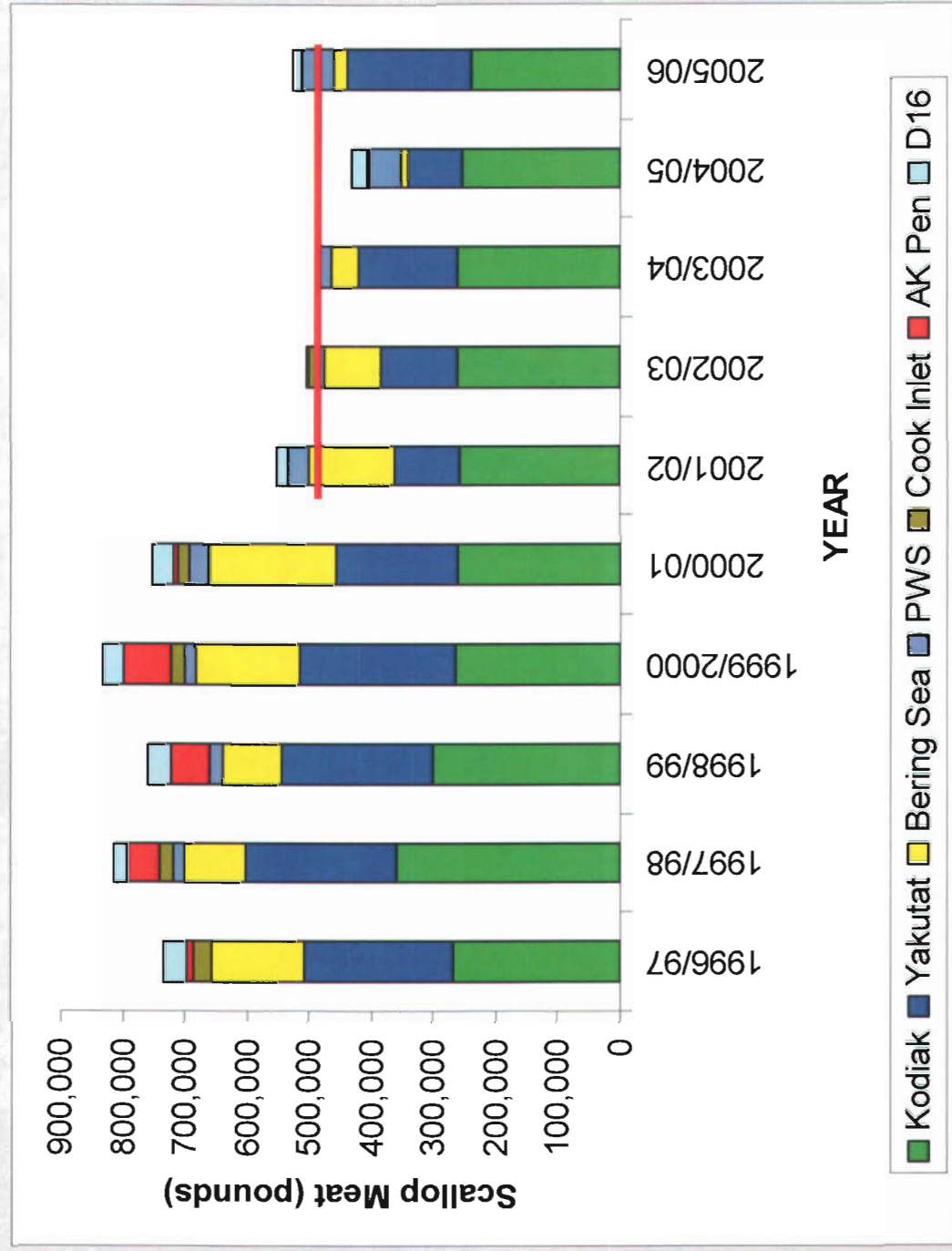
Alaska Peninsula Closed Waters



Area of Detail

164° 44' W long.

Harvest by Management Area



Effort / Program

State Limited Entry

- 9 Vessel Limited Entry (2 have been sold)
- Sunset in 2008 = open access

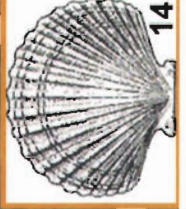
Federal License Limitation

- 9 LLP

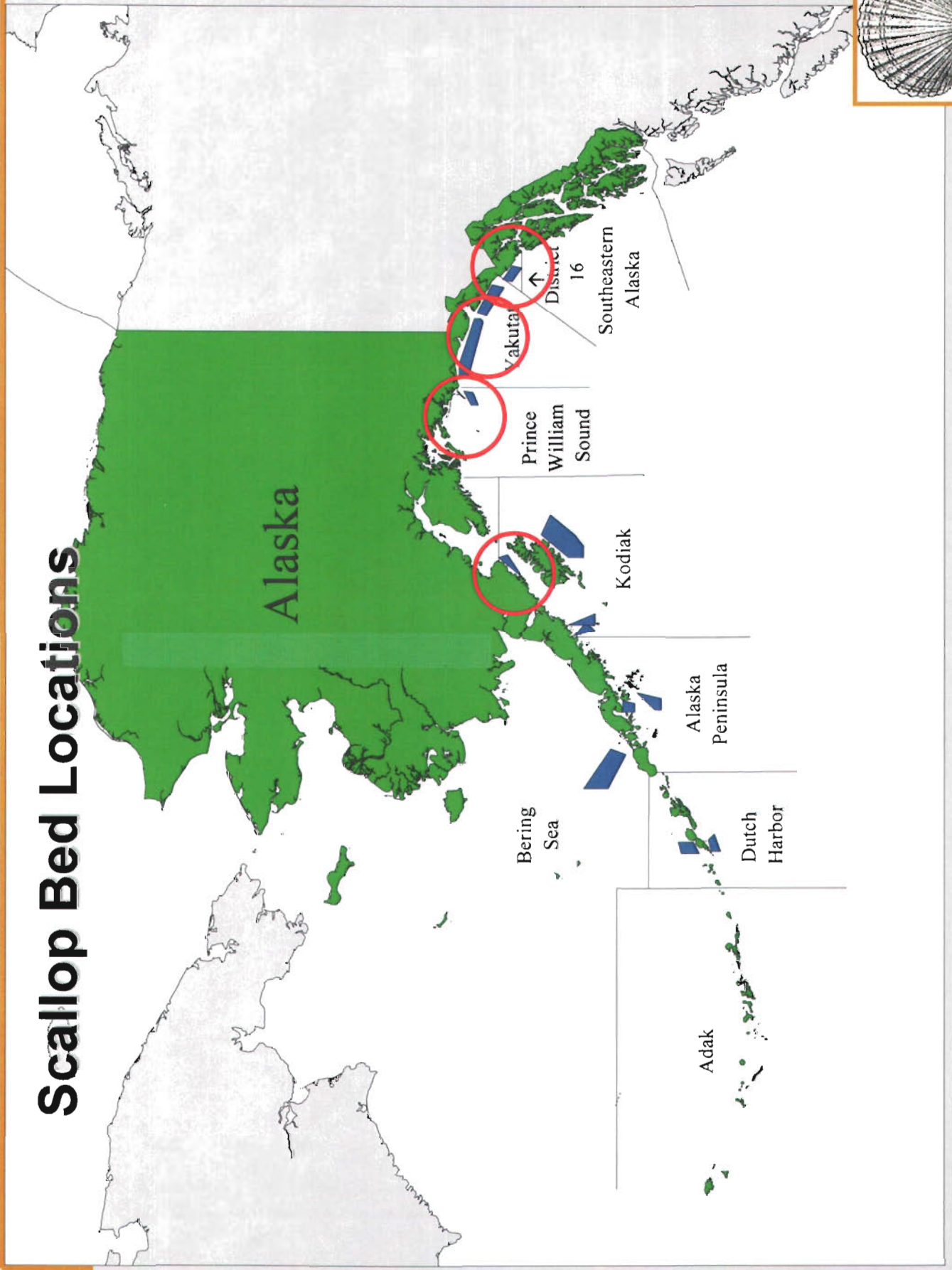


State Waters Management

- Federal and State boundary lines
- Proposed Regulations



Scallop Bed Locations



Alaska Peninsula

Cape Douglas

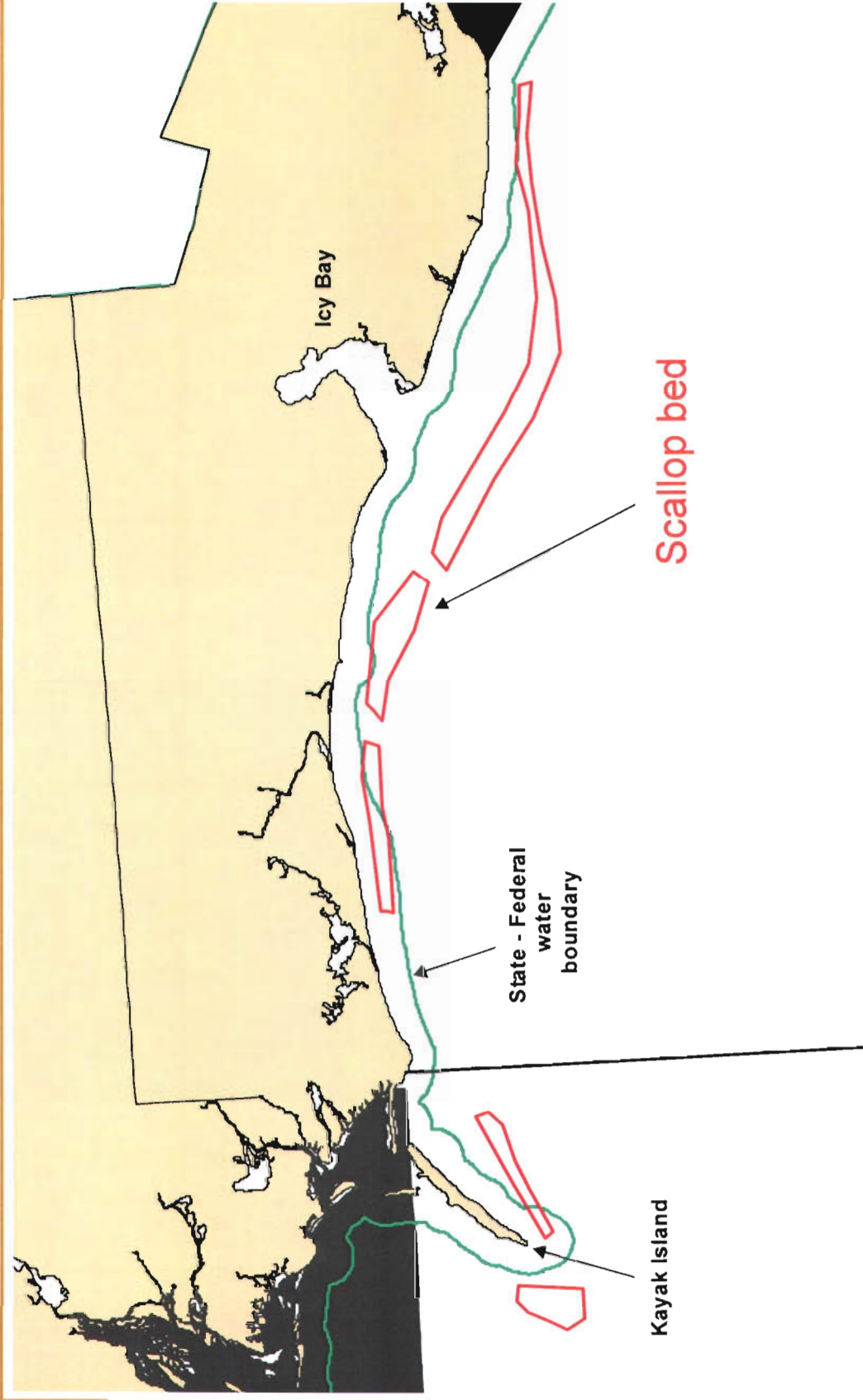
Hallo Bay

Shelikof Strait

State - Federal
water boundary

Scallop bed





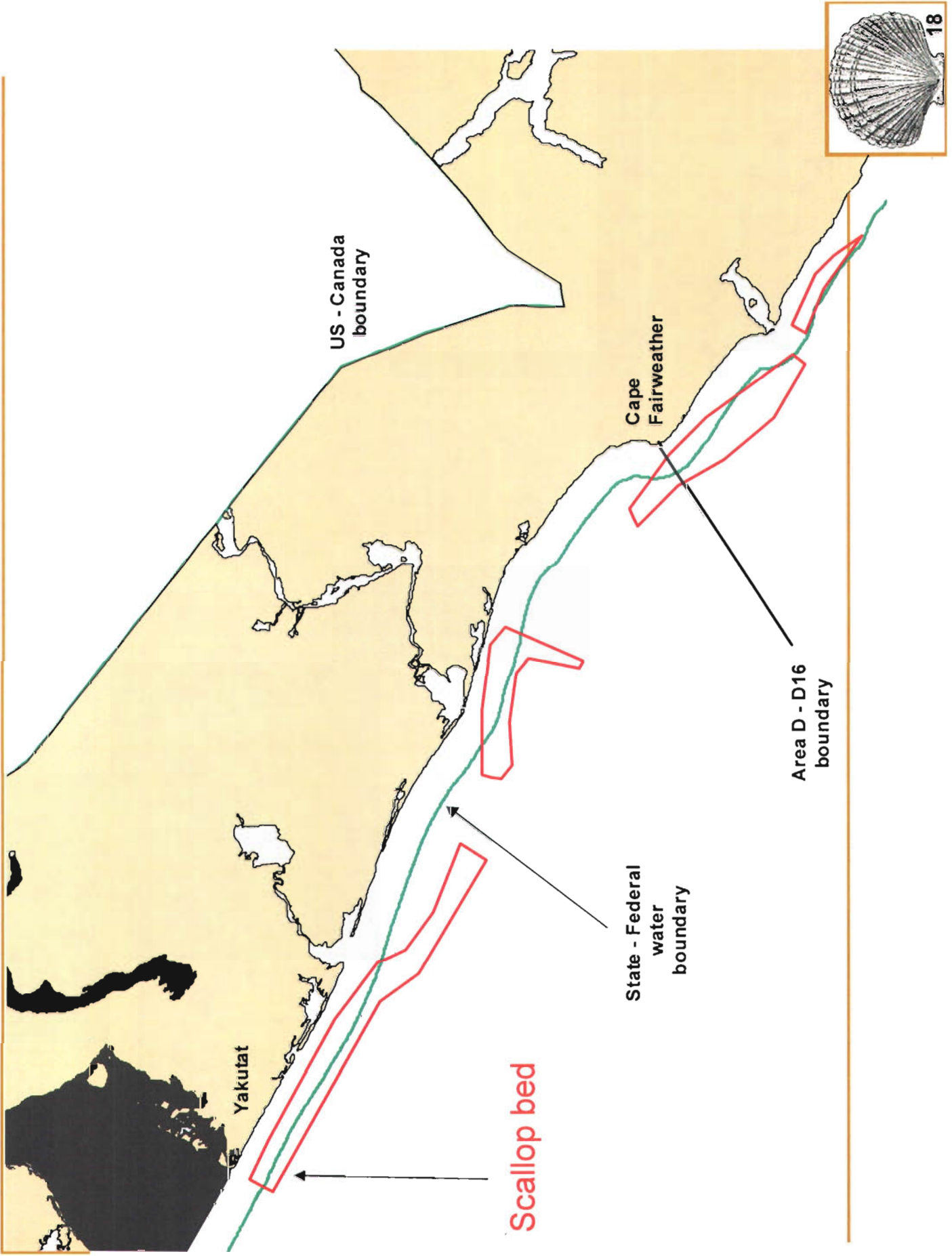
Scallop bed

State - Federal
water
boundary

Kayak Island

Central Region - Area D
Boundary





Scallop bed

US - Canada boundary

Cape Fairweather

Area D - D16 boundary

State - Federal water boundary

Yakutat

Proposed Regulations

- Preseason Registration April 1
 - Must have CFEC card at time of preseason reg.
- State waters managed separate from Federal waters
- Registration can be changed by notifying department
- Must have VMS
- Proposed regulations are in addition to existing rules (e.g., observer requirements, dredge sizes, and seasons).



Questions?

Slideshow Prepared By Patricia Conley



Overview of Revised Federal Overfishing Definitions

BSAI King and Tanner Crab Stocks



Diana L. Stram
North Pacific Fishery Management Council
Presentation to the Board of Fisheries
March 3, 2008

Previous definitions

- adopted by NPFMC in June 1998 (amd 7)
- Original intent to revise after 5 years or in the case of a change in environmental conditions
- Problems include:
 - Current definitions are fixed in FMP; inability to modify based upon improved scientific information
 - Overfishing determination considers both males and females, while fishery is male-only

New definitions

- Provide an FMP framework for definition values to facilitate use of the best available scientific information as it evolves.
- Provide a new tier system that accommodates varying levels of uncertainty of information and takes advantage of alternative biological reference points.
- Define the status determination criteria and their application to the appropriate component of the population.



Overfished

Current definition

- $MSST = \frac{1}{2} B_{MSY}$
- B_{MSY} estimated for all surveyed stocks as the average TMB over a fixed time period (1983-1997)
- **If $TMB < MSST$ = overfished**

New definition

- $MSST = \frac{1}{2} B_{MSY}$
- B_{MSY} estimated by stock assessment models MMB (frameworked to be modified with improved scientific information)
- **If $MMB < MSST$ = overfished**

Overfishing

Current definition

- Application of the MSY control rule (mortality by species) to the total mature biomass (TMB) = sustainable yield (SY)
- Mortality (M) values by species are fixed
- TMB includes males and females (fishery is male only)
- $SY = TMB * M$
- If $SY >$ retained crab catch then overfishing

New definitions:

- Overfishing levels (OFL) determined by application of the Tier system
- Total catch (directed and non-directed sources) tabulated
- If total catch $>$ OFL then overfishing



Impacts of overfished or overfishing declaration

“overfished”

- If stock status below MSST=overfished
- SOC notifies the Council of stock status and need for FMP amendment
- Council has 2 years to prepare an FMP amendment for a rebuilding plan for the stock

“overfishing”

- If catch (retrospectively) is >calculated OFL (same time period) then overfishing occurred.
- Council and NMFS advise State to reduce TAC in subsequent years to remain below OFL (catch includes all sources: crab, groundfish, scallop)
- If overfishing continues to occur, FMP amendment may be prepared for the stock

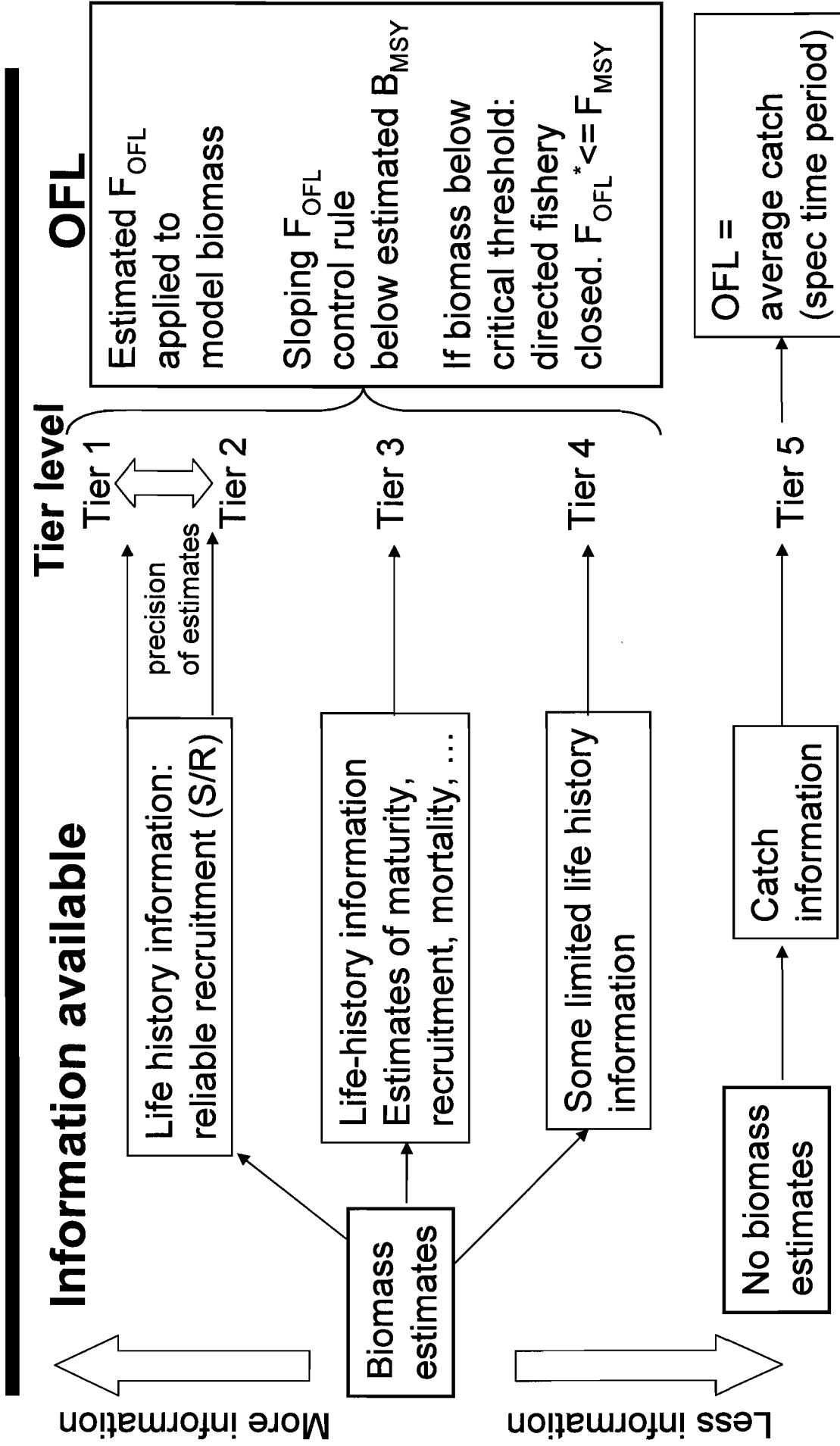


Major changes

- Frameworked definitions (tier system)
- New measurement of stock status – mature male biomass (MMB)
 - Current stock status determination in total mature biomass (TMB), includes males and females, while fishery is male only
- New review and OFL-setting process
 - Annual stock assessment and Council/NMFS review
- OFL based on total catch
- 12 stocks removed from FMP (therefore solely managed by State)



New Tier system



* Applies to all other sources of fishing mortality.

This F_{OFL} would be developed during the rebuilding plan for the stock

Impacts of applying new definitions

- For some stocks the understanding of current stock status in relation to reference (Bmsy) values changes
 - Bristol Bay red king crab
 - Pribilof Islands red king crab
 - EBS Tanner crab
- Potential harvest constraint on two stocks (Bristol Bay red king crab, EBS snow crab) estimated two ways:
 - Using 2006 harvest as example
 - Projecting 5 years in the future



Determination of overfishing

- Example from analysis using 2006 data (2006/07 crab fishery):
- Catch in millions of pounds

| Stock | Alternative 1 | | | Alternatives 2 and 3 | | |
|------------------|---------------|------------------------|---------------------|-----------------------------|------------------|--------------|
| | OFL | 2006/07 retained catch | 2006/07 Total catch | Tier and Stock status level | F _{OFL} | OFL |
| BB red king crab | 31.44 | 15.748 | 17.18 | 3b | 0.30 | 17.78 |
| EBS snow crab | 164.28 | 36.36 | 42.11 | 3b | 0.55 | 29.98 |
| EBS Tanner | 75.99 | 2.07 | 5.15 | 4b | 0.68 | 17.37 |

New OFL setting and review process

OFL assessments reviewed by Crab Plan Team and SSC in the Spring. Annual OFL is determined in the Fall.

Review by CPT (May 2008), SSC (June 2008):

- Information utilized in OFL determination
- Placement of stocks into Tiers
- Estimation of stock abundance (model methodology)

After summer survey data is available, assessment authors will update models to calculate the F_{OFL} and subsequent OFL. NMFS will provide the State with updated OFLs prior to TAC setting.

NMFS will inform the Secretary and the Council (through the Crab SAFE report) of:

- each stock's status compared to the MSST (overfished determination)
- the previous year's catch compared to the OFL (overfishing determination)



12 stocks removed from FMP

Stocks suggested for removal meet at least one of the following criteria:

1. No directed fishery
2. Harvest only occurs incidentally in targeting other crab stocks
3. Harvest only in limited, exploratory fisheries
4. Majority of catch occurs in State waters

12 stocks removed from FMP

1. Eastern Aleutian Islands Tanner crab
2. Western Aleutian Islands Tanner crab
3. EBS grooved Tanner crab
4. Eastern Aleutian Islands grooved Tanner crab
5. Western Aleutian Islands grooved Tanner crab
6. Bering Sea triangle Tanner crab
7. Eastern Aleutian Islands triangle Tanner crab
8. Saint Matthew golden king crab
9. Saint Lawrence Island blue king crab
10. Aleutian Islands scarlet king crab
11. EBS scarlet king crab
12. Dutch Harbor red king crab



Future considerations

- BOF may need to revise existing harvest strategies to provide a buffer between OFL and TAC to ensure overfishing will not occur
- Rebuilding plans need to be revised in accordance with new estimates of stock recovery and biological parameters
- Annual Catch Limits (ACL) guidance from NMFS and necessity to revise FMPs accordingly



Annual Management Report for the Commercial and Subsistence Shellfish Fisheries of the Aleutian Islands, Bering Sea and the Westward Region's Shellfish Observer Program, 2006/07

by

**Forrest R. Bowers,
Mary Schwenzfeier,
Shari Coleman,
Barbi Failor-Rounds,
Krista Milani,
Kathleen Herring,
Melissa Salmon,
and
Matthew Albert**

February 2008

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | at | @ | standard length | SL |
| kilogram | kg | compass directions: | | total length | TL |
| kilometer | km | east | E | Mathematics, statistics | |
| liter | L | north | N | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| meter | m | south | S | alternate hypothesis | H _A |
| milliliter | mL | west | W | base of natural logarithm | e |
| millimeter | mm | copyright | © | catch per unit effort | CPUE |
| | | corporate suffixes: | | coefficient of variation | CV |
| | | Company | Co. | common test statistics | (F, t, χ^2 , etc.) |
| Weights and measures (English) | | Corporation | Corp. | confidence interval | CI |
| cubic feet per second | ft ³ /s | Incorporated | Inc. | correlation coefficient (multiple) | R |
| foot | ft | Limited | Ltd. | correlation coefficient (simple) | r |
| gallon | gal | District of Columbia | D.C. | covariance | cov |
| inch | in | et alii (and others) | et al. | degree (angular) | ° |
| mile | mi | et cetera (and so forth) | etc. | degrees of freedom | df |
| nautical mile | nmi | exempli gratia (for example) | e.g. | expected value | E |
| ounce | oz | Federal Information Code | FIC | greater than | > |
| pound | lb | id est (that is) | i.e. | greater than or equal to | ≥ |
| quart | qt | latitude or longitude | lat. or long. | harvest per unit effort | HPUE |
| yard | yd | monetary symbols (U.S.) | \$, ¢ | less than | < |
| | | months (tables and figures): first three letters | Jan, ..., Dec | less than or equal to | ≤ |
| Time and temperature | | registered trademark | ® | logarithm (natural) | ln |
| day | d | trademark | ™ | logarithm (base 10) | log |
| degrees Celsius | °C | United States (adjective) | U.S. | logarithm (specify base) | log ₂ , etc. |
| degrees Fahrenheit | °F | United States of America (noun) | USA | minute (angular) | ' |
| degrees kelvin | K | U.S.C. | United States Code | not significant | NS |
| hour | h | U.S. state | use two-letter abbreviations (e.g., AK, WA) | null hypothesis | H ₀ |
| minute | min | | | percent | % |
| second | s | | | probability | P |
| | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| Physics and chemistry | | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| all atomic symbols | | | | second (angular) | " |
| alternating current | AC | | | standard deviation | SD |
| ampere | A | | | standard error | SE |
| calorie | cal | | | variance | |
| direct current | DC | | | population | Var |
| hertz | Hz | | | sample | var |
| horsepower | hp | | | | |
| hydrogen ion activity (negative log of) | pH | | | | |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

FISHERY MANAGEMENT REPORT NO. 08-02

**ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL AND
SUBSISTENCE SHELLFISH FISHERIES OF THE ALEUTIAN ISLANDS,
BERING SEA, AND THE WESTWARD REGION'S SHELLFISH
OBSERVER PROGRAM, 2006/07**

by

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TABLE OF CONTENTS

| | |
|---|----|
| TABLE OF CONTENTS | i |
| LIST OF TABLES | v |
| ABSTRACT | 1 |
| INTRODUCTION | 1 |
| ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL AND SUBSISTENCE SHELLFISH FISHERIES OF THE ALEUTIAN ISLANDS, 2006/07..... | 3 |
| ALEUTIAN ISLANDS KING CRAB MANAGEMENT AREA..... | 4 |
| Description of Area | 4 |
| Aleutian Islands Red King Crab..... | 4 |
| Historical Background..... | 4 |
| 2006/07 Commercial Fishery East of 171° W Longitude..... | 7 |
| 2006/07 Commercial Fishery 171° W Longitude to 179° W Longitude | 7 |
| 2006/07 Commercial Fishery West of 179° W Longitude (Petrel Bank)..... | 7 |
| 2006 Subsistence Fishery | 7 |
| Fishery Management and Stock Status East of 171° W Longitude | 7 |
| Fishery Management and Stock Status 171° W Longitude to 179° W Longitude..... | 8 |
| Fishery Management and Stock Status West of 179° W Longitude (Petrel Bank)..... | 8 |
| Aleutian Islands Golden King Crab..... | 9 |
| Historic Background..... | 9 |
| 2006/07 Fishery | 13 |
| Fishery Management and Stock Status..... | 14 |
| Aleutian Islands Scarlet King Crab | 15 |
| Historic Background..... | 15 |
| 2006 Fishery | 15 |
| Fishery Management and Stock Status..... | 15 |
| EASTERN ALEUTIAN TANNER CRAB DISTRICT | 16 |
| Description of District..... | 16 |
| Tanner Crab..... | 16 |
| Historic Background..... | 16 |
| 2006 Commercial Fishery | 17 |
| 2007 Commercial Fishery | 17 |
| Dockside Sampling, 2006 Commercial Fishery | 17 |
| Dockside Sampling, 2007 Commercial Fishery | 17 |
| 2006 Subsistence Fishery | 18 |
| Fishery Management and Stock Status..... | 18 |
| Grooved Tanner Crab..... | 19 |
| Historic Background..... | 19 |
| 2006 Fishery | 20 |
| Fishery Management and Stock Status..... | 20 |
| Triangle Tanner Crab | 20 |
| Historic Background..... | 20 |
| 2006 Fishery | 20 |
| Fishery Management and Stock Status..... | 21 |
| WESTERN ALEUTIAN TANNER CRAB DISTRICT | 21 |
| Description of District..... | 21 |
| Tanner Crab..... | 21 |
| Historic Background..... | 21 |
| 2006/07 Fishery..... | 21 |

TABLE OF CONTENTS (Continued)

| | Page |
|---|-----------|
| Fishery Management and Stock Status..... | 21 |
| Grooved Tanner Crab..... | 21 |
| Historic Background..... | 21 |
| 2006 Fishery..... | 22 |
| Fishery Management and Stock Status..... | 22 |
| ALEUTIAN DISTRICT DUNGENESS CRAB | 22 |
| Description of District..... | 22 |
| Historic Background..... | 22 |
| 2006/07 Fishery..... | 23 |
| Fishery Management and Stock Status..... | 23 |
| ALEUTIAN DISTRICT SHRIMP | 23 |
| Description of District..... | 23 |
| Historic Background..... | 23 |
| 2006 Fishery..... | 24 |
| Fishery Management and Stock Status..... | 24 |
| ALEUTIAN DISTRICT MISCELLANEOUS SHELLFISH SPECIES | 24 |
| Description of District..... | 24 |
| Introduction..... | 25 |
| 2006 Fisheries | 25 |
| Octopus..... | 25 |
| Red Sea Cucumber and Sea Urchin..... | 25 |
| Other Miscellaneous Shellfish Species..... | 25 |
| Fishery Management and Stock Status..... | 25 |
| REFERENCES CITED | 26 |
| ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL SHELLFISH FISHERIES OF THE BERING SEA, 2006/07 | 72 |
| KING CRAB REGISTRATION AREA T BRISTOL BAY | 73 |
| Description of Area..... | 73 |
| Historic Background..... | 73 |
| American Fisheries Act..... | 78 |
| Port Sampling..... | 78 |
| Stock Status..... | 79 |
| KING CRAB REGISTRATION AREA Q BERING SEA | 79 |
| Description of Area..... | 79 |
| Pribilof District Red and Blue King Crab | 80 |
| Historic Background..... | 80 |
| 2006/07 Season..... | 81 |
| Stock Status..... | 81 |
| Saint Mathew Island Section Blue King Crab..... | 82 |
| Historic Background..... | 82 |
| 2006/07 Season..... | 83 |
| Stock Status..... | 83 |
| Pribilof District Golden King Crab | 84 |
| Historic Background..... | 84 |
| 2006 Season..... | 85 |
| Stock Status..... | 85 |

TABLE OF CONTENTS (Continued)

| | Page |
|---|------------|
| Northern District Golden King Crab | 86 |
| Historic Background..... | 86 |
| 2006 season | 86 |
| Stock Status | 86 |
| Bering Sea Scarlet King Crab..... | 87 |
| Historic Background..... | 87 |
| 2006 Season..... | 87 |
| No vessels registered for Bering Sea scarlet king crabs in 2006. | 87 |
| Fishery Management and Stock Status..... | 87 |
| BERING SEA TANNER CRAB MANAGEMENT DISTRICT | 87 |
| Description of Area | 87 |
| Bering Sea Tanner Crab | 88 |
| Historic Background..... | 88 |
| 2006/07 Season..... | 89 |
| Stock Status | 90 |
| Bering Sea Snow Crab | 91 |
| Historic Background..... | 91 |
| Port Sampling..... | 97 |
| Stock Status | 97 |
| Bering Sea Grooved Tanner Crab | 98 |
| Historic Background..... | 98 |
| 2006 Fishery..... | 99 |
| Stock Status | 99 |
| Bering Sea Triangle Tanner Crab..... | 99 |
| Historic Background..... | 99 |
| 2006 Fishery..... | 100 |
| Stock Status | 100 |
| MISCELLANEOUS SHELLFISH SPECIES BERING SEA | 100 |
| Description of Area | 100 |
| Introduction | 100 |
| Bering Sea Hair Crabs | 101 |
| Description of Area | 101 |
| Historic Background..... | 101 |
| 2006 Season..... | 103 |
| Stock Status | 103 |
| Bering Sea Octopus | 103 |
| <i>Parlomis multispina</i> | 103 |
| Sea Cucumbers and Sea Urchins | 104 |
| Snails | 104 |
| Historic Background..... | 104 |
| 2006 Season..... | 105 |
| Stock Status | 105 |
| NORTH PENINSULA DISTRICT | 105 |
| Description of Area | 105 |
| Shrimp | 105 |
| Dungeness Crabs | 106 |
| Stock Status | 106 |
| INTRODUCTION AND BACKGROUND | 106 |

TABLE OF CONTENTS (Continued)

| | Page |
|--|------|
| REFERENCES CITED | 109 |
| ANNUAL MANAGEMENT REPORT FOR THE COMMUNITY DEVELOPMENT QUOTA AND ADAK COMMUNITY ALLOCATION CRAB FISHERIES IN THE BERING SEA AND ALEUTAIN ISLANDS, 2006/07..... | 179 |
| BERING SEA/ALEUTIAN ISLANDS COMMUNITY DEVELOPMENT QUOTA CRAB FISHERIES | 180 |
| Description of Area | 180 |
| CDQ Program Background | 180 |
| Fishery History | 181 |
| 2006/07 CDQ Fisheries | 182 |
| Bering Sea CDQ Snow Crab Fishery | 182 |
| Saint Matthew Island Section CDQ Blue King Crab Fishery..... | 183 |
| Pribilof District CDQ Red And Blue King Crab Fishery | 183 |
| Bristol Bay CDQ Red King Crab Fishery | 183 |
| Bering Sea CDQ Tanner Crab Fishery | 184 |
| Eastern Aleutian Islands CDQ Golden King Crab Fishery..... | 185 |
| Western Aleutian Islands CDQ Red King Crab Fishery | 185 |
| WESTERN ALEUTIAN ISLANDS ADAK COMMUNITY ALLOCATION | 185 |
| Description of Area | 185 |
| ACA program background | 185 |
| 2006/07 Western Aleutian Islands ACA Golden King Crab Fishery | 186 |
| ANNUAL REPORT OF THE ONBOARD OBSERVER PROGRAM FOR THE WESTWARD REGION CRAB FISHERIES, 2006/2007 | 195 |
| INTRODUCTION..... | 196 |
| HISTORY OF THE SHELLFISH ONBOARD OBSERVER PROGRAM..... | 196 |
| SHELLFISH OBSERVER PROGRAM REGULATIONS AND GUIDELINES | 198 |
| Alaska Department of Fish and Game Responsibilities | 198 |
| Independent Contracting Agent Responsibilities | 198 |
| Observer Responsibilities..... | 198 |
| Vessel Owner and Operator Responsibilities | 199 |
| SHELLFISH OBSERVER DUTIES..... | 199 |
| Crab Catcher-Processor Vessel | 199 |
| Crab Floating-Processor Vessel | 200 |
| Crab Catcher-Only Vessel..... | 200 |
| 2006/2007 OBSERVER PROGRAM ACTIVITY..... | 200 |
| Observer Program Test Fishery..... | 200 |
| OBSERVER DEPLOYMENTS BY FISHERY..... | 201 |
| 2006/07 Aleutian Islands Golden King Crab Fishery Observer Activity | 201 |
| 2006/07 Bristol Bay Red King Crab Fishery Observer Activity | 202 |
| 2006/07 Bering Sea Tanner Crab Fishery Observer Activity | 202 |
| 2006/07 Bering Sea Snow Crab Fishery Observer Activity | 204 |
| OBSERVER DATA USE AND ANALYSIS | 204 |
| REFERENCES CITED | 205 |

LIST OF TABLES

| Table | Page |
|--|------|
| 1-1. Aleutian Islands, Area O, red king crab commercial fishery data, 1960/61 - 2006/07. | 29 |
| 1-2. Aleutian Islands, Area O, red king crab fishery economic performance data, 1973/74 - 2006/07..... | 35 |
| 1-3. Eastern Aleutian Islands, west of Scotch Cap Light and east of 168° W long., subsistence king and Tanner crab harvest, 1999-2006..... | 38 |
| 1-4. Aleutian Islands golden king crab commercial fishery data, 1981/82 - 2006/07..... | 39 |
| 1-5. Aleutian Islands golden king crab fishery economic performance data, 1981/82 - 2006/07..... | 43 |
| 1-6. Eastern Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical week, 2006/07..... | 46 |
| 1-7. Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical area, 2006/07..... | 47 |
| 1-8. Western Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical week, 2006/07..... | 48 |
| 1-9. Aleutian Islands scarlet king crab fishery data, 1992-2006..... | 49 |
| 1-10. Eastern Aleutian District Tanner crab fishery data, 1973/74 - 2007..... | 50 |
| 1-11. Eastern Aleutian District Tanner crab fishery economic performance data, 1973/74 - 2007..... | 51 |
| 1-12. Eastern Aleutian District grooved Tanner crab fishery data, 1993 - 2006..... | 52 |
| 1-13. Eastern Aleutian District triangle Tanner crab fishery data, 1993 - 2006..... | 53 |
| 1-14. Western Aleutian District Tanner crab fishery data, 1973/74 - 2006/07..... | 54 |
| 1-15. Western Aleutian District commercial Tanner crab fishery economic data, 1973/74 - 2006/07..... | 55 |
| 1-16. Western Aleutian District grooved Tanner crab fishery data, 1992 - 2006..... | 56 |
| 1-17. Aleutian District Dungeness crab fishery data, 1974 - 2006/07..... | 57 |
| 1-18. Aleutian Islands District trawl shrimp fishery data, 1972 - 2006..... | 58 |
| 1-19. Aleutian Islands miscellaneous shellfish fishery data 1996 - 2006..... | 59 |
| | |
| 2-1. Bristol Bay commercial red king crab fishery harvest data, 1966-2006/07..... | 112 |
| 2-2. Bristol Bay commercial red king crab fishery economic data, 1980-2006/07..... | 114 |
| 2-3. Bristol Bay commercial red king crab fishery harvest and effort by week, 2006/07..... | 115 |
| 2-4. Bristol Bay commercial red king crab fishery catch by statistical area, 2006/07..... | 116 |
| 2-5. Bristol Bay red king crab cost-recovery harvest data, 1990-2006..... | 117 |
| 2-6. Bristol Bay red king crab cost-recovery economic performance data, 1990-2006..... | 118 |
| 2-7. Bristol Bay commercial red king crab fishery harvest composition by fishing season, 1973-2006/07..... | 119 |
| 2-8. Pribilof District commercial red and blue king crab fishery data, 1973/74-2006/07..... | 120 |
| 2-9. Guideline harvest level (GHL), economic performance and season length summary for the Pribilof District commercial red and blue king crab fishery, 1980/81-2006/07..... | 122 |
| 2-10. Saint Matthew Island Section commercial blue king crab fishery data, 1977-2006/07..... | 123 |
| 2-11. Guideline harvest level (GHL), economic performance and season length summary for the Saint Matthew Island Section commercial blue king crab fishery, 1983-2006/07..... | 124 |
| 2-12. Commercial harvest of blue king crabs by season for the Saint Matthew Island Section, 1977-2006/07.. | 125 |
| 2-13. Pribilof District golden king crab fishery harvest data, 1981/82-2006 seasons..... | 126 |
| 2-14. Pribilof District golden king crab fishery economic data, 1991-2006 seasons..... | 127 |
| 2-15. Saint Matthew Island Section commercial golden king crab fishery harvest data, 1982/83-2006 seasons.. | 128 |
| 2-16. Saint Matthew Island Section commercial golden king crab fishery economic data, 1991-2006 seasons.. | 129 |
| 2-17. King crab Registration Area Q commercial scarlet king crab fishery data, 1992-2006..... | 130 |
| 2-18. Bering Sea District commercial Tanner crab fishery harvest data, 1969-2006/07..... | 131 |
| 2-19. Bering Sea District commercial Tanner crab fishery catch by subdistrict, 1974/75-2006/07..... | 133 |
| 2-20. Bering Sea District commercial Tanner crab fishery economic data, 1979/80-2006/07..... | 137 |
| 2-21. Bering Sea District commercial Tanner crab fishery harvest by statistical area, 2006/07 season..... | 138 |
| 2-22. Bering Sea District commercial Tanner crab fishery harvest composition by fishing season, 1972- 2006/07..... | 139 |
| 2-23. Bering Sea District commercial snow crab fishery harvest data, 1978/79-2006/07..... | 140 |
| 2-24. Bering Sea District commercial snow crab fishery season dates and area closures, 1977/78-2006/07..... | 141 |
| 2-25. Bering Sea District commercial snow crab harvest by season and subdistrict, 1977/78-2005/06..... | 143 |

LIST OF TABLES (Continued)

| Table | Page |
|---|-------------|
| 2-26. Bering Sea District commercial snow crab fishery harvest composition by fishing season, 1978/79-2006/07. | 148 |
| 2-27. Bering Sea District commercial snow crab fishery economic data 1979/80-2006/07..... | 149 |
| 2-28. Bering Sea commercial snow crab fishery harvest and effort by week, 2006/07 season. | 150 |
| 2-29. Bering Sea District commercial snow crab fishery catch by statistical area, 2006/07. | 151 |
| 2-30. Bering Sea District commercial grooved Tanner crab fishery harvest data, 1992-2006..... | 152 |
| 2-31. Bering Sea District commercial triangle Tanner crab fishery harvest data, 1992-2006..... | 153 |
| 2-32. Bering Sea commercial hair crab fishery data, 1979-2006. | 154 |
| 2-33. Bering Sea commercial hair crab fishery economic performance data, 1979-2006..... | 156 |
| 2-34. Bering Sea commercial octopus incidental harvest in groundfish fisheries, 1995-2006..... | 157 |
| 2-35. Bering Sea commercial snail catch data, 1992 - 2006..... | 158 |
| 2-36. Bering Sea commercial snail fishery economic performance data, 1992-2006. | 159 |
| 2-37. North Peninsula District commercial Dungeness crab fishery data, 1992-2006. | 160 |
| 2-38. Pot Limits for Bering Sea and Aleutian Islands king and Tanner crab Fisheries, 2006/07..... | 161 |
| 2-39. Number of Bering Sea buoy tags printed and issued by fishery, 2006/07. | 162 |
| | |
| 3-1. The 2003-2006/07 Community Development Quota (CDQ) Program percent allocation by fishery to each CDQ group..... | 188 |
| 3-2. The 1998-2006/07 Community Development Quota (CDQ) Program crab fisheries statistics. | 189 |
| 3-3. The 1998-2006/07 crab Community Development Quota (CDQ) Program economic overview. | 190 |
| 3-4. The 1998-2006/07 Bering Sea Tanner crab Community Development Quota (CDQ) crab fisheries statistics. | 191 |
| 3-5. The 1998-2006/07 Bering Sea Tanner crab Community Development Quota (CDQ) crab economic overview..... | 191 |
| 3-6. The 2005/06-2006/07 Aleutian Islands golden king crab Adak Community Allocation (ACA) Program fishery statistics..... | 192 |
| | |
| 4-1. Observer coverage levels in the 2006/07 fishery seasons for the Bering Sea and Aleutian Islands rationalized, IFQ, CDQ, ACA, and permit crab fisheries. | 208 |
| 4-2. Shellfish onboard observer program test-fishery harvest statistics, 1999–2006. | 209 |
| 4-3. Economic performance of the shellfish onboard observer program test-fishery harvest, 1999–2006. | 210 |
| 4-4. Aleutian Islands golden king crab fishing effort by vessel type, 2003/04-2006/07. | 211 |
| 4-5. Aleutian Islands golden king crab observer sampling efforts for bycatch and retained catch by vessel type, 1996/97-2006/07. | 212 |
| 4-6. Bristol Bay red king crab fishing effort by vessel type, 2003 - 2006/07..... | 214 |
| 4-7. Bristol Bay red king crab observer sampling efforts for bycatch and retained catch by vessel type, 1988 –2006/07..... | 215 |
| 4-8. Comparison of the number of vessels that pre-season registered to harvest Tanner crab to the number of vessels that harvested Tanner crab, and the percentage of all vessels that harvested Tanner crab that were observed during the Bering Sea Tanner crab fishery, 2005/2006 and 2006/2007..... | 220 |
| 4-9. Bering Sea Tanner crab fishing effort by vessel type, 2006/07..... | 221 |
| 4-10. Bering Sea Tanner crab observer sampling efforts for bycatch and retained catch by vessel type, 2005/06 - 2006/07. | 222 |
| 4-11. Bering Sea snow crab fishing effort by vessel type, 2004 - 2006/07. | 223 |
| 4-12. Bering Sea snow crab observer sampling efforts for bycatch and retained catch by vessel type, 1995–2006/07. | 224 |

LIST OF FIGURES

| Figure | Page |
|---|------|
| 1-1. Aleutian Islands, Area O, red and golden king crab management area..... | 61 |
| 1-2. Adak (Area R) and Dutch Harbor (Area O) king crab Registration Areas and Districts 1981/82 – 1996/97. | 62 |
| 1-3. Aleutian Islands red king crab fishery harvest and vessel effort, 1960/61 – 2006/07..... | 63 |
| 1-4. Western Aleutian Islands golden king crab fishery harvest, fishery performance and average weight data for the 1981/82 – 2006/07 seasons, does not include Adak Community Allocation (west of 174° W long) fishery. | 64 |
| 1-5. Eastern Aleutian Islands golden king crab fishery harvest, fishery performance and average weight data for the 1981/82 – 2006/07 seasons, does not include Community Development Quota (east of 174° W long) fishery..... | 65 |
| 1-6. Eastern Aleutian Island golden king crab fishery vessel registrations and average number of pots per vessel 1981/82 - 2006/07, includes Community Development Quota (east of 174° W long) fishery..... | 66 |
| 1-7. Western Aleutian Island golden king crab fishery vessel registrations and average number of pots per vessel 1981/82 - 2006/07, includes Adak Community Allocation (west of 174° W long) fishery. | 67 |
| 1-8. Eastern and Western Aleutian Districts of Tanner crab Registration Area J..... | 68 |
| 1-9. Aleutian District for Dungeness crab management..... | 69 |
| 1-10. Aleutian District for shrimp management..... | 70 |
| 1-11. Aleutian Islands District portion of miscellaneous shellfish Registration Area J. | 71 |
| | |
| 2-1. King crab Registration Area T (Bristol Bay). | 163 |
| 2-2. Bristol Bay commercial red king crab fishery harvest and GH/L/TAC, 1966-2006/07..... | 164 |
| 2-3. Bristol Bay commercial red king crab fishery effort and exvessel value, 1980-2006/07..... | 165 |
| 2-4. King crab Registration Area Q (Bering Sea)..... | 166 |
| 2-5. Pribilof District red and blue king crab harvest and GH/L/TAC 1973-2006/07. GH/L/TAC for red and blue king crab is combined from 1995 onward..... | 167 |
| 2-6. Pribilof District commercial red and blue king crab fishery effort and exvessel value, 1980-2005/06 | 168 |
| 2-7. Saint Matthew Island Section commercial blue king crab fishery harvest and GH/L/TAC, 1977 - 2006/07. | 169 |
| 2-8. Saint Matthew Island Section commercial blue king crab fishery effort and exvessel value, 1981- 2006/07. | 170 |
| 2-9. Bering Sea District of Tanner crab Registration Area J including subdistricts and sections. | 171 |
| 2-10. Bering Sea District commercial Tanner crab harvest and GH/L/TAC, 1979-2006/07..... | 172 |
| 2-11. Bering Sea District commercial snow crab fishery harvest and GH/L/TAC, 1977-2006/07 | 173 |
| 2-12. Bering Sea portion of miscellaneous shellfish Registration Area J..... | 174 |
| 2-13. Bering Sea hair crab fishing area of miscellaneous shellfish Registration Area J. | 175 |
| 2-14. Bering Sea commercial hair crab fishery harvest and effort, 1978-2006. | 176 |
| 2-15. North Peninsula District of shrimp Registration Area J..... | 177 |
| 2-16. North Peninsula District of Dungeness crab Registration Area J..... | 178 |
| | |
| 3-1. Bering Sea Community Development Quota Program crab fisheries managed by the Westward Region. | 193 |
| 3-2. Aleutian Islands Community Development Quota Program and Adak Community Allocation crab fisheries managed by the Westward Region. | 194 |
| | |
| 4-1. Comparison of observed harvest to unobserved harvest during statistical weeks August 15, 2006 to May 15, 2007 combining harvest from both east and west of 174° W longitude in the Aleutian Islands golden king crab fishery, 2006/07..... | 227 |
| 4-2. Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks October 15, 2006 to December 6, 2006 in the Bristol Bay red king crab fishery, 2006/07..... | 228 |
| 4-3. Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks October 15 to December 16, 2006, and January 1 to March 31, 2007 in the Bering Sea Tanner crab fishery, 2006/07..... | 229 |
| 4-4. Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks November to December 31, 2006, and January 8 to May 6, 2007 in the Bering Sea snow crab fishery, 2006/07. | 230 |

ABSTRACT

The Alaska Department of Fish and Game's Westward Region (ADF&G) is tasked with management of all commercial, subsistence and personal use shellfish fisheries occurring in the Territorial Sea and Exclusive Economic Zone (EEZ) of the Aleutian Islands west of Scotch Cap Light (164° 44' W long.) and all Bering Sea waters of the Territorial Sea and EEZ north of Cape Sarichef (58° 39' N lat.). ADF&G's Arctic-Yukon-Kuskokwim Region manages king crab in the Bering Sea north of Cape Romanzof and Tanner crab in Norton Sound.

In 2006, three species of king crabs, snow crabs, Tanner crabs, Dungeness crabs, and giant Pacific octopus were taken in the Bering Sea and Aleutian Islands (BSAI) commercial and subsistence fisheries.

This report presents details on the commercial and subsistence harvest, participation and value of shellfish fisheries in the BSAI area. Historical and current fishery management practices, a summary of the most recent commercial fishery and stock status information are presented for each fishery. The 2006/07 Bering Sea king and Tanner crab community development quota (CDQ) and Individual Fishing Quota (IFQ) crab fisheries are summarized.

To enhance shellfish fishery management and collect data that would otherwise be unavailable, ADF&G has operated an observer program in the BSAI for crab since 1988. Varying levels of observer coverage are required for each crab fishery and observers are deployed on catcher vessels, catcher processors and floating processors. Observer costs are paid by either the vessel or ADF&G. Details of the crab and scallop observer program are presented as well as information on the BSAI pot limit program.

Key words: Tanner crab, *Chionoecetes bairdi*, snow crab, *C. opilio*, *C. tanneri*, Dungeness crab, *Cancer magister*, golden king crab, *Lithodes aequispinus*, red sea cucumber, *Parastichopus californicus*, red king crab *Paralithodes camtschaticus*, Pacific octopus, *Octopus dolpheni*, Community Development Quota, CDQ, crab rationalization, CR, catch per unit effort, CPUE, exclusive economic zone, EEZ, subsistence, guideline harvest level, GHL, Alaska Board of Fisheries, BOF, National Marine Fisheries Service, NMFS, Bering Sea, Aleutian Islands, North Peninsula, Area, District, deploy, observer-days, catcher-processor, C/P, catcher-vessel, C/V, floater-processor, F/P, bycatch, University of Alaska Anchorage, UAA, North Pacific Fisheries Observer Training Center, OTC, National Oceanic and Atmospheric Administration, NOAA, North Pacific Groundfish Observer Program, NPGOP, legal tallies, confidential interviews, CIF, United States Coast Guard, USCG, Commercial Fishing Vessel Safety Examination, CFVSE, Crab Observer Oversight Taskforce, COOTF.

INTRODUCTION

The ADF&G Westward Region includes all waters of the Territorial Sea and EEZ south of Cape Douglas (58° 51.1' N lat.) and west of 148° 50.25' W long. to the U.S.-Russia Maritime Boundary. ADF&G in Dutch Harbor is tasked with management of all commercial, subsistence and personal use shellfish fisheries occurring in the Territorial Sea and EEZ of the Aleutian Islands west of Scotch Cap Light (164° 44' W long.) and all Bering Sea waters of the Territorial Sea and EEZ north of Cape Sarichef (58° 39' N lat.). King crab in the Bering Sea north of Cape Romanzof and Tanner crab in Norton Sound are managed by ADF&G's Arctic-Yukon-Kuskokwim Region. The waters of the Bering Sea and Aleutian Islands (BSAI) support the largest and most valuable commercial crab fisheries in Alaska.

The BSAI area is divided into several registration areas for king crab management, whereas districts are utilized for Tanner crab, Dungeness crab and miscellaneous shellfish management. Most BSAI king and Tanner crab fisheries are managed under a federal fisheries management plan (FMP) that establishes a cooperative management structure deferring king and Tanner crab management to the state of Alaska with federal oversight. The Bering Sea hair crab fishery is managed solely under state jurisdiction, as are other crab and miscellaneous shellfish fisheries. Beginning with the 2005/06 season major BSAI crab fisheries were managed under the crab rationalization (CR) program. The CR program has resulted in consolidation of the harvesting and processing sectors and greatly lengthened fishing seasons.

Species commercially harvested during 2006/07 season in waters of the Bering Sea and Aleutian Islands (BSAI) include red king crabs *Paralithodes camtschaticus*, golden king crabs *Lithodes*

aequispinus, scarlet king crabs *Lithodes couesi*, snow crabs *Chionoecetes opilio*, Tanner crabs *C. bairdi*, grooved Tanner crabs *C. tanneri*, triangle Tanner crabs *C. angulatus*, Dungeness crabs *Cancer magister*, and giant Pacific octopus *Octopus dolfeini*. Historically, waters of the BSAI have supported commercial harvests of blue king crabs *P. platypus*, green sea urchins *Strongylocentrotus droebachiensis*, pandalid shrimp, hair crab *Erimacrus isenbeckii*, and sea snails of several species, however these fisheries are currently either closed due to low abundance or are not being commercially pursued. In addition, a fishery for weathervane scallops *Patinopecten caurinus* occurs in the BSAI, however it is summarized in a separate report.

In 2006/07, 108 catcher vessels, six catcher processors, two floating processors and 10 shorebased processors were involved in harvesting and processing non-scallop shellfish resources in the BSAI. BSAI shellfish landings totaled approximately 59.1 million pounds generating an approximate exvessel value of \$105 million.

The Bering Sea snow crab fishery was the largest shellfish fishery in Alaska with a total harvest of 36.3 million pounds, followed by the Bristol Bay red king crab fishery with a total harvest of 15.4 million pounds, the Aleutian Islands golden king crab fishery with a total harvest of 5.3 million pounds and the Bering Sea Tanner crab fishery with a harvest of 2.1 million pounds.

In addition to the fisheries previously mentioned, fisheries for golden king crabs in the Pribilof District (0.15 million pounds guideline harvest level (GHL)) and grooved Tanner crabs in the Bering Sea and Aleutian Islands were open with (0.2 million pounds GHL), however there was limited participation. Scarlet king crabs were taken incidentally in the Aleutian Islands golden king crab fishery. Fisheries for red and blue king crabs in the Pribilof District, for blue king crabs in the Saint Matthew Island Section and for red king crabs in the eastern and western Aleutian Islands were closed due to low abundance. Both the Saint Matthew Island and Pribilof blue king crabs stocks are considered overfished.

Both the Bering Sea snow and Tanner crab fisheries were open in 2006/07, however the harvest was below the long-term average for each stock and the stocks are considered overfished. The Eastern Aleutian District Tanner crab fishery was open for a small harvest in 2006.

Dungeness crab harvests in the BSAI have historically been small. Two vessels registered to fish for Dungeness crab during the 2006 season in the Aleutian Islands and North Peninsula Districts, harvests for both areas are confidential.

Relative to other portions of the Westward Region, shrimp harvests in the BSAI area have been lower and there was no shrimp harvest in the BSAI during 2006.

There was only minor participation during 2006 in most BSAI fisheries for miscellaneous shellfish species. The Bering Sea hair crab fishery was closed due to low abundance and there was no effort targeting green sea urchins or sea cucumbers. Giant Pacific octopus were harvested incidentally in BSAI groundfish fisheries.

Both state and federal management agencies and the public have come to rely on shellfish observer data to provide information on the targeted and non-targeted portions of the catch. All vessels that process crabs at sea are required to be observed and catcher vessel observer coverage is either full or partial depending on the fishery. Vessels that process at sea pay for observer coverage, while catcher vessels, depending on the fishery, either pay for coverage or the department pays for the coverage with test fish funds.

Pot limits for BSAI crab fisheries were implemented in 1992. ADF&G currently issues buoy tags to enforce the various pot limits. This report also summarizes the activities of the BSAI buoy tag program.

**ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL
AND SUBSISTENCE SHELLFISH FISHERIES OF THE
ALEUTIAN ISLANDS, 2006/07**

by
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ALEUTIAN ISLANDS KING CRAB MANAGEMENT AREA

DESCRIPTION OF AREA

The Aleutian Islands king crab Registration Area O has as its eastern boundary the longitude of Scotch Cap Light (164° 44' W long.), its northern boundary a line from Cape Sarichef (54° 36' N lat.) to 171° W long., north to 55° 30' N lat., and as its western boundary the Maritime Boundary Agreement Line as that line is described in the text of and depicted in the annex to the Maritime Boundary Agreement between the United States and the Union of Soviet Socialist Republics signed in Washington, June 1, 1990 (Figure 1-1). Area O encompasses both the waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles).

ALEUTIAN ISLANDS RED KING CRAB

Historical Background

Historically, the red king crab *Paralithodes camtschaticus* resource in the Aleutian Islands was harvested in two registration areas. The Adak Registration Area (Area R) consisted of those waters in the Aleutian Islands west of 171° W long., while the Dutch Harbor Registration Area (Area O) encompassed waters east of 171° W long., (Figure 1-2). In addition, as the fleet moved westward, a third Registration Area (Area S) was established for the waters around Amchitka Island and the Petrel Bank. Area S was created in 1967 and was merged into Area R in 1978 (ADF&G 1991). In March of 1996, the Alaska Board of Fisheries (BOF) established the Aleutian Islands king crab Registration Area (Area O) by combining the existing Dutch Harbor and Adak Registration areas. The BOF adopted this change to improve management of the increasingly important golden king crab *Lithodes aequispinus* resource in the Aleutian Islands. Combining the Adak and Dutch Harbor areas was not expected to impact management of red king crabs in the Aleutian Islands (ADF&G 1999a).

Domestic fisheries for red king crabs in both the Adak and Dutch Harbor Registration areas began in 1961, with effort and harvest rapidly increasing in both areas. The Adak Area reached a peak harvest of 21 million pounds in 1964/65, while maximum production of 33 million pounds in the Dutch Harbor Area was reached in 1966/67 (Table 1-1). The Aleutian Islands red king crab fishery had a maximum fishery value of nearly \$20 million in the 1980/81 season (Table 1-2).

In the late 1970s, GHL ranges were established using a blend of pot survey results and fisheries data. Historic fishery GHLS set in the late 1970s ranged from 8 million to 26 million pounds for Dutch Harbor and from 0.5 million to 3.0 million pounds in Adak (ADF&G 1978). GHLS were often modified inseason based on fishery performance.

Fluctuating harvest levels from one year to the next characterized the fisheries in the Dutch Harbor and Adak areas, and by the 1982/83 season the Dutch Harbor fishery had declined to a harvest of 430,000 pounds. Commercial fishing for red king crabs in the Dutch Harbor Area was closed on an annual basis after the 1982/83 season. The Adak fishery remained open through the 1995/96 season when only 39,000 pounds were harvested. After the 1995/96 season the fishery was closed for several years. Portions of the area were opened during the 1998/99, 2000/01, and 2001/02 seasons in order to assess the status of red king crab stocks (Figure 1-3). In 2002 the

Petrel Bank portion of Area O was reopened to commercial fishing with a guideline harvest level (GHL) of 500,000 pounds.

Observers have been required on all crab catcher-processor vessels since 1988 and on catcher vessels targeting red or golden king crabs in the Aleutian Islands since 1995. Observer coverage on golden king crab vessels provides red king crab incidental harvest data from that fishery, although red king crab bycatch in golden king crab gear is minimal due to the limited overlap in distribution of the two species. Observer coverage also provides data on retained and non-retained crabs as well as information related to fishing patterns.

Pot surveys in the western Aleutian Islands conducted from 1975 to 1977 provided catch per unit of effort (CPUE), fecundity, and relative abundance information of red king crabs (ADF&G 1978). Pot surveys were conducted on an annual basis in the Dutch Harbor Area until 1990 when trawl surveys were implemented to survey larger areas in a more timely fashion and to reduce gear selectivity inherent to pot fishing activities (Urban 1992).

In 1996 and 1997, a catcher-processor vessel was permitted to target red king crabs on the Petrel Bank in conjunction with their directed golden king crab fishing. The goals of this project were to enumerate, tag, and collect biological data from all red king crabs captured and to recapture tagged individuals. During this two-year period, a total of 926 crabs were tagged along the north side of Amchitka Island and along the south side of Semisopochnoi Island. Of the tagged crabs, 440 were legal males and 160 were females; 89% of legal crabs were new shell. Recovery efforts yielded 15 tagged crabs, six of which were legal males. While the tagging was too limited to provide quantitative stock assessment data, it did provide some information related to migration, molting cycle, and seasonal distribution (Byersdorfer 1998).

In order to assess the status of red king crab stocks in two areas of the Aleutian Islands without recent abundance information, a limited commercial fishery was opened on November 1, 1998 with the provision that crabs not harvested be tagged and released. In addition, vessel operators were required to document all red king crab fishing activities in a pilothouse logbook. East of 179° W long., a GHL of 5,000 pounds was established and west of 179° E long., a GHL of 10,000 pounds was set; these GHLs were set using historic catch information. Closed waters included the Petrel Bank (the area between 179° E long. and 179° W long.). The Alaska Department of Fish and Game (ADF&G) did not open the Petrel Bank area in 1998/99 since prior efforts had provided some population data from that area (Byersdorfer 1998).

Three vessels registered to harvest red king crabs in the Aleutian Islands during the 1998/99 season, but only one recorded landings. The GHL was not reached in either open area and the fishery was closed by emergency order on July 31, 1999. Observers were required on all vessels participating in the 1998/99 fishery.

In order to gain information on red king crab abundance in the Petrel Bank area, two surveys were conducted in January/February and November, 2001. Due to budget constraints, the surveys were designed so fishers could retain and sell all legal male red king crabs captured to cover survey expenses. The commissioner's permit specified stations to be fished, soak times and effort levels.

Capture of red king crabs from both 2001 surveys in the Petrel Bank area indicated healthy levels of legal males. CPUE for the combined surveys was 28. Survey CPUEs are not directly comparable to previous commercial fishery CPUEs because pot lifts in prior commercial

fisheries were not conducted in a systematic manner and may have occurred in different fishing locations (Bowers et al. 2002). Sublegal male and female CPUE for the combined surveys was two and three, respectively.

Size composition data from the 2001 surveys were comparable to the size composition of catches prior to the 1995/96 fishery closure. The size composition and shell condition data indicated that approximately 61% of the sampled legal-size crabs were post recruits. Of the crabs sampled 77% were new-shell. Similar to the surveys conducted in the mid-1990s, very few sublegal crabs were captured during the 2001 surveys.

The surveys conducted in 2001 indicated that legal male abundance increased since the fishery was closed, however, red king crab female and sublegal abundance remained low. Given the legal male abundance, a limited commercial fishery on the Petrel Bank was opened during the 2002 and 2003 seasons with a GHL of 500,000 pounds. Based on expected effort, this was considered the minimum GHL that could be managed inseason. Because of the uncertainty in the status of sublegal and female red king crabs and to provide for overall stock protection, ADF&G adopted a management strategy that would close the fishery prior to achieving the GHL if legal male CPUE drops below 10 crabs/pot. Establishing a low GHL with a moderate CPUE threshold level should help prevent the stock from declining to levels seen in the mid-90s. Trends in fishery performance were used to evaluate GHLs and having a defined threshold for closing the fishery permitted clearer understanding of the management strategy.

Thirty-three vessels participated in the 2002 Petrel Bank red king crab fishery. The fleet pulled 3,786 pots, an average of 115 pots per vessel. CPUE for the Petrel Bank was 18 legal crabs per pot lift and the fleet harvested a total of 505,642 pounds (Table 1-1). Exvessel price averaged \$6.51 per pound and the 2002 Petrel Bank fishery had a total value of over \$3.29 million (Table 1-2).

During the 2003 Petrel Bank red king crab fishery a total of 479,113 pounds were harvested by 30 vessels in 91 hours. The fleet pulled 5,774 pots and average CPUE was 10 legal crabs per pot lift (Table 1-1). Exvessel price averaged \$5.14 per pound and the 2003 Petrel Bank fishery had a total value of nearly \$2.45 million (Table 1-2).

The Petrel Bank red king crab fishery was closed in 2004 and 2005 due to low levels of sublegal crab and females seen in the 2002 and 2003 fisheries, along with the low legal male CPUE seen toward the end of the 2003 fishery.

In 2005 Crab Rationalization was implemented for the major Bering Sea and Aleutian Islands crab fisheries. Western Aleutian Islands red king crab (west of 179° W long.) is included in this program and will have both Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) fisheries when the stock is again open to commercial harvest.

In addition to commercial fisheries, long-standing subsistence and sport fisheries have targeted red king crabs in the vicinity of Unalaska Island. To gather subsistence harvest data, ADF&G requires fishers to obtain a harvest permit and log sheet. Historically, few of the permits were returned. On average, 15 permits were returned per year. The reported average annual harvest was 135 king crabs.

To address conservation concerns for the eastern Aleutian Islands red king crab stock, the State of Alaska Board of Fisheries (BOF) took action at the March 1999 meeting regarding the subsistence and sport king crab fisheries in the Aleutian Islands between 168° and 164° 44' W

long. Regulations were adopted by the BOF that closed the sport fishery and reduced the daily bag limit of subsistence king crabs from six to one per person per day. The BOF also adopted regulations requiring that subsistence king and Tanner crab *Chionoecetes bairdi* fishers operating in the Aleutian Islands between 168° and 164° 44' W long. obtain a subsistence permit before fishing.

Subsistence logsheet information has been collected by ADF&G for the past seven years. An average of 219 permits are issued each year and approximately 70 percent are returned. The returned permits accounted for an average annual harvest of 852 king crabs (Table 1-3), with harvest ranging from 0 to 150 king crabs per permit. These harvest figures are substantially less than estimates generated by a 1994 survey of 15.1% of households in Unalaska, where 6,892 king crabs were estimated to have been taken (ADF&G 1999b).

2006/07 Commercial Fishery East of 171° W Longitude

The red king crab fishery in the Aleutian Islands Registration Area O east of 171° W long. was not opened during the 2006/07 season due to low stock abundance.

2006/07 Commercial Fishery 171° W Longitude to 179° W Longitude

The red king crab fishery in the Aleutian Islands Registration Area O between 171° W long. and 179° W long. was not opened during the 2006/07 season due to low stock abundance.

2006/07 Commercial Fishery West of 179° W Longitude (Petrel Bank)

The red king crab fishery in the Aleutian Islands Registration Area O west of 179° W long. was not opened during the 2006/07 season due to low stock abundance.

2006 Subsistence Fishery

In 2006, ADF&G issued 256 subsistence permits and harvest logsheets, of which 185, or 72.3%, have been returned. The returned permits account for a harvest of 1,796 king crabs (Table 1-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 2,485 king crabs were taken with harvest ranging from 0 to 150 king crabs per permit. The majority of subsistence caught king crabs were taken in Captains Bay (88%). Ninety-nine percent of the red king crabs were taken with pot gear and 1% were taken with scuba gear. The average CPUE was <1 crab per pot.

Fishery Management and Stock Status East of 171° W Longitude

A vessel may not be registered to fish in the commercial red king crab and golden king crab fisheries concurrently east of 171° W longitude. This red king crab fishery remains open access and was not included in crab rationalization. Regulations do not allow vessels to retain IFQ and non-IFQ species concurrently.

Most shellfish research in the Aleutian Islands has been directed at crab stocks inhabiting the eastern Aleutian Islands. Recent bottom trawl surveys by ADF&G have not captured many king crabs. The eastern Aleutian Islands were surveyed by bottom trawl during the summers of 2000 and 2003-06. A single red king crab was captured during 2000, 2003, and 2005 and none were captured during the 2004 survey (Spalinger 2006 and Worton 2001). While the five captured during the 2006 survey (Spalinger 2007) are an increase over the 2000 and 2003-05 survey catches, the red king crab population in the eastern Aleutian Islands remains severely depressed.

Fishery Management and Stock Status 171° W Longitude to 179° W Longitude

A vessel may not be registered to fish in the commercial red king crab and golden king crab fisheries concurrently between 171° W long. and 179° W long. This red king crab fishery remains open access and was not included in crab rationalization. Regulations do not allow vessels to retain IFQ and non-IFQ species concurrently.

In November of 2002 ADF&G conducted a survey similar in design to the Petrel Bank surveys of 2001 in the area between 172° W long. and 179° W long. The survey area was developed in consultation with industry and focused on areas of historic red king crab abundance in the Adak, Atka, and Amlia Islands areas that have been closed to commercial red king crab fishing since the 1998/99 season and had not been previously surveyed. The survey had a total of 116 stations that were divided between state-waters (56 stations) and federal-waters (60 stations).

Ten vessels conducted 1,085 pot lifts in a total of 61 stations. Survey catches were poor and only four legal males were captured during the entire survey. Due to poor survey catches and high operation costs, many vessels were unable to fulfill their survey commitment and only 34% of the survey was completed. The portion of the survey that was completed indicates that the red king crab stocks around Adak, Atka, and Amlia Islands continue to be severely depressed (Granath 2003). Therefore, the department does not expect a commercial red king crab fishery to open in this area in the near future.

Fishery Management and Stock Status West of 179° W Longitude (Petrel Bank)

West of 179° W longitude a vessel may be registered to fish in the commercial red king crab and golden king crab fisheries concurrently; however, only single-line pots may be operated in areas open to red king crab fishing and only longline pots may be operated in areas open to golden king crab fishing. Likewise, red king crab may only be retained from single-line pots and golden king crab may only be retained from longline pots. Golden king crab fisheries in the Aleutian Islands are not restricted by pot limits. In the Petrel Bank red king crab fishery each vessel is restricted to a pot limit of 250 pots.

Shell-condition and size composition data from the 2001, 2002 and 2003 fisheries in the Petrel Bank area indicate that primarily older, post-recruit crabs supported these fisheries. Proportions of sublegal and female red king crabs did not change significantly from the 2001 surveys to the 2002 or 2003 commercial fisheries. Average weight and carapace length (CL) of legal male red king crabs increased from 2001 to 2003. Average weight and CL of legal male red king crabs increased from the surveys to 7.4 pounds and 162 mm in 2002 and up to 8.0 pounds and 168 mm in 2003. A mode of sublegal crab seen in 2003 (centered at 86 – 90 mm CL) is approximately three molts from attaining legal size.

Cumulative fishery CPUE did not drop below the benchmark of 10 during the 2003 fishery, although fish ticket data indicate that the fishery CPUE was 10 crabs per pot. Fishery CPUE climbed during the first 36 hours from 8.5 to 15.0 crabs per pot and steadily dropped for the remainder of the fishery with the exception of the morning of October 28, when most pots had soaked for an additional 12 hours. Compared to the combined survey CPUE of 28 and 2002 fishery CPUE of 18, performance during the 2003 fishery was not promising.

The harvest based approach using only legal-male CPUE as a threshold was developed to help maintain multiple size and age classes on the grounds to promote rebuilding. Using a threshold of legal male CPUE alone does not protect the stock. Because survey catch of sublegal and

female crab was low, thresholds were not developed for those stock components. After the 2001 surveys, staff expressed concern about overall stock status. While legal male catch was encouraging, the lack of sublegal and female crab was disappointing. ADF&G now has two additional years of fishery information that have failed to indicate healthy levels of those stock components. Based on fishery performance and the lack of recruitment of legal-sized crabs, it was likely that the fishery would fail to stay above the threshold criteria of 10 crabs per pot if a fishery were prosecuted in 2004. Following the 2003 fishery, ADF&G made the decision to close the Petrel Bank red king crab fishery until the next survey was conducted in the fall of 2006.

A survey was conducted on the Petrel Bank area red king crab stock in November of 2006. This information was compared to the 2001 industry survey and the 2002 and 2003 commercial fisheries to evaluate current stock status. Because of differences in fishing practices between the 2001 survey, the 2002 and 2003 commercial fisheries, and the 2006 survey, a direct CPUE comparison could not be made. However, legal male red king crab catch rate during the 2006 survey was lower than during the 2001 survey and recent commercial fisheries. The 2006 survey CPUE of legal males was 1.2 crabs per pot from 170 stations fished (Gish 2007). Red king crabs captured during the survey were predominately larger, mature-sized male crabs, and the size distribution of surveyed crabs provides no expectation for significant recruitment of legal males in the immediate future. Although males that were estimated to be new recruits to legal size accounted for 36% of the 2006 survey catch of legal crabs, recruitment occurring since the 2001 survey has been insufficient to rebuild legal male abundance to levels of the early 2000s. Spatial distribution of legal males during the 2006 survey decreased from the 2001 survey distribution and was limited to the northwestern portion of the Petrel Bank. Distribution of red king crabs was also restricted relative to harvest location during the last two commercial fisheries. Given the limited distribution and low relative abundance of legal male red king crab on Petrel Bank and the lack of projected recruitment to the legal size class in the near future, a harvestable surplus of red king crab is not currently available.

The implementation of Crab Rationalization designated a portion of the western Aleutian Islands (west of 179° W long.) red king crab fishery as an IFQ fishery. Individual fishing quota shares will allow harvesters to prosecute this fishery at any time during the biological season opening. Prior to rationalization, the overall pot limit in the Western Aleutian Islands red king crab fishery was 1,250 pots to be divided evenly among participants. Currently, regulations stipulate a pot limit of 250 pots per vessel. Observer coverage requirements remain at 100% of fishing activity.

ALEUTIAN ISLANDS GOLDEN KING CRAB

Historic Background

The golden king crab fishery in the Aleutian Islands has never failed to open due to low stock abundance, making it unique among Westward Region king crab fisheries. Golden king crabs inhabit depths greater than where other commercially exploited king crabs are typically found (Blau et al. 1996). The depths and steep bottom topography of the inter-island passes inhabited by golden king crabs necessitate the use of longline rather than single-pot gear. No other major king crab fisheries in Alaska exist where longline pot gear is the only legal gear type.

Historically, golden king crabs were taken as incidental harvest during red king crab fisheries in the Adak (Area R) and Dutch Harbor (Area O) Registration areas. One landing of golden king crabs was reported from the Adak Area during the 1975/76 season, but directed fishing for

golden king crabs did not occur in either management area until the 1981/82 season (ADF&G 1984). From the 1981/82 season until the 1996/97 season, the golden king crab resource in the Aleutian Islands was harvested in separate directed fisheries occurring in the Adak and Dutch Harbor Registration areas.

During the 1981/82 season, 14 vessels landed 1.2 million pounds of golden king crabs in 76 deliveries from the Adak Area (Table 1-4). By the following season, harvest had reached 8.0 million pounds with 99 vessels participating in the fishery. Between 1981 and 1995, an average of 49 vessels participated in the Adak golden king crab fishery, harvesting an average of 6.9 million pounds annually. Peak harvest in the Adak Area fishery occurred during the 1986/87 season when 12.9 million pounds of golden king crabs were harvested for an exvessel value of \$37.6 million (Table 1-5). No stock assessment of the golden king crab population was performed in the Adak Area, and initially the fishery was managed based on size, sex, and season restrictions. Catches were monitored inseason (ADF&G 1999a) and after the initial fishery, harvest levels were set based on harvest expectations generated from catch in prior seasons (ADF&G 1983a). The majority of golden king crabs harvested in the Adak Area were taken in the North Amlia and Petrel Bank Districts (Figure 1-2); however, significant harvest also occurred in the remainder of the Western Aleutian District.

From the 1981/82 season to the 1995/96 season, the average weight of golden king crabs harvested in the Adak Area fishery declined from 5.5 to 4.2 pounds and CPUE declined from 10 to five legal crabs per pot lift (Figure 1-4). In July 1985, the BOF adopted a regulation reducing the minimum legal size for golden king crabs from 6.5 to 6.0 inches in carapace width (CW). Decreasing the legal size for golden king crabs in this area resulted in an expected decrease in average weight of legal crabs harvested after 1985/86 and increased catch during the 1985/86 and 1986/87 seasons. This regulation change did not, however, reverse the trend of slowly declining catch rates in the area west of 171° W long.

Initial catches of golden king crabs in the Dutch Harbor Area were similar to those observed in the Adak Area fishery (ADF&G 1984). Harvest was incidental to the red king crab fishery and effort in the fishery only increased as red king crab stocks decreased in abundance. Six vessels harvested approximately 116,000 pounds of golden king crabs during the 1981/82 Dutch Harbor red king crab season (Table 1-4). The following season, 49 vessels participated in the directed golden king crab fishery, harvesting 1.2 million pounds. Between 1981 and 1995, an average of 18 vessels harvested approximately 1.5 million pounds of golden king crabs annually (Figure 1-5). Peak golden king crab harvest in the Dutch Harbor Area occurred during the 1995/96 season when 2.0 million pounds were harvested for an exvessel value of \$5.2 million (Table 1-5). The Dutch Harbor Area harvest was primarily from the Islands of Four Mountains and Yunaska Island area (Figure 1-1).

In general, the average weight of golden king crabs harvested in the Dutch Harbor Area declined during the period from 1981 to 1995, ranging from a high of 7.6 pounds during the 1983/84 season to 4.1 pounds during the 1992/93 season (Figure 1-5). In 1984, the BOF adopted an ADF&G staff proposal to lower the legal size for golden king crabs in the Dutch Harbor Area from 6.5 inches to 6.0 inches CW, which would have affected average weight, and to establish the area as a permit fishery. CPUE has slowly declined throughout the history of this fishery, reaching a peak of 14 legal crabs per pot during the 1984/85 season and declining to 6 crabs during the 1994/95 season. The golden king crab stock in the Dutch Harbor Area was not

surveyed for abundance prior to 1991 and the fishery was managed based on a historical average catch of 1.5 million pounds annually (ADF&G 1999a).

At its March 1996 meeting, the BOF chose to restructure management of king crabs in the Aleutian Islands. Formerly, the Aleutian Islands king crab populations had been managed using the Adak and Dutch Harbor Registration Areas that were established for red king crab fisheries. However, during the 1970s and 1980s, red king crab fisheries declined in the Aleutian Islands while the golden king crab fishery gained increasing importance. Consequently, the BOF felt that king crab management areas in the Aleutian Islands should be re-designated to more accurately reflect current golden king crab stock distribution and patterns in fishing effort. The BOF, therefore, elected to replace the Adak and Dutch Harbor areas with the newly created Aleutian Islands Registration Area O and directed ADF&G to manage the golden king crab in the areas east and west of 174° W long. as two distinct stocks. It also stipulated that a conservative management plan be initiated and that all vessels registered for the fishery continue to carry an onboard observer for all of their fishing activities.

In 1996, when the initial golden king crab fishery in the new king crab Registration Area O occurred, GHLS were established at 3.2 million pounds for the area east of 174° W long., and 2.7 million pounds for the area west of 174° W long. Compared to the combined Adak and Dutch Harbor Area fisheries from prior years, there was reduced effort and harvest during the 1996/97 fishery. Eighteen vessels harvested 5.9 million pounds, down from 28 vessels taking 6.9 million pounds in 1995/96. This reduction in effort was likely due to the departure of vessels for the 1996 Bristol Bay red king crab season, which re-opened to commercial fishing for the first time since 1993. The eastern portion of Area O closed by emergency order on December 25, with a harvest of 3.3 million pounds, while the western portion was open for the entire registration year with a harvest of 2.6 million pounds.

During the 1996/97 fishery, the CPUE east of 174° W long. was six legal crabs per pot and the average weight was 4.5 pounds per crab. Most fishing effort was concentrated in the area around Yunaska Island and the Islands of Four Mountains with some effort in the Seguam and Amukta Pass areas (Figure 1-1). In the portion of Area O west of 174° W long., fishery performance was six legal crabs per pot pull with an average weight of 4.2 pounds per crab (Table 1-4). Most harvest occurred between Amchitka Pass and Buldir Island. The 1996/97 golden king crab fishery in the Aleutian Islands had an estimated exvessel value of \$12.5 million (Table 1-5).

Since the 1996/97 season, effort and harvest in the Aleutian Islands east of 174° W long. have remained relatively stable. During the 1997/98 season, 15 vessels harvested 3.5 million pounds in an 84-day season. CPUE averaged seven legal crabs per pot lift and harvested crabs averaged 4.5 pounds each. The fishery west of 174° W long. has experienced greater variability in catch and effort. During the 1997/98 season, eight vessels participated in the fishery and harvested 2.4 million pounds. The GHLS west of 174° W long. was not reached and the fishery was not closed. The fleet averaged seven legal crabs per pot lift with landed crabs averaging 4.3 pounds each. The 1997/98 Aleutian Islands golden king crab fishery had an exvessel value of \$12.5 million.

Prior to the 1998/99 season, the Aleutian Islands golden king crab GHLS east of 174° W long. was reduced from 3.2 million pounds to 3.0 million pounds. Fishery performance trends and data from tag recoveries indicated that the 200,000 pound GHLS reduction for the area east of 174° W long. was necessary in order to comply with the overfishing definition specified in the Fishery

Management Plan (FMP) for the king and Tanner crab fisheries of the Bering Sea and Aleutian Islands (NPFMC 1998).

The 1998/99 fishery east of 174° W long. was similar to the prior two fisheries. Fourteen vessels registered and harvested 3.2 million pounds in a 68-day season. The catch rate was nine legal crabs per pot lift with landed crabs averaging 4.4 pounds each. West of 174° W long., effort declined significantly from the prior two seasons. A fleet of three vessels harvested 1.7 million pounds, or 63% of the GHL. The fleet averaged 12 legal crabs per pot lift with landed crabs averaging 4.1 pounds each. The 1998/99 fishery had an exvessel value of \$9.3 million, the lowest in 14 years.

In July 1999, the BOF adopted a regulation to move the Registration Area O golden king crab fishery from September 1 to August 15 in order to accommodate fishers that participate in both the golden king and Bristol Bay red king crab (BBRKC) fisheries. The BBRKC fishery opening date had been moved from November 1 to October 15, which reduced the amount of fishing time available to the golden king crab fleet prior to the Bristol Bay opening. The change in opening date for Area O was designed to provide adequate fishing time for the golden king crab fleet to harvest the GHL east of 174° W long., prior to the opening of the BBRKC fishery.

In 2000/01, the fishery east of 174° W long. continued the stable trend seen in the previous four years. Fifteen vessels registered and harvested 3.1 million pounds. The CPUE was 10 legal crabs per pot, with a 4.5-pound average weight per crab. West of 174° W long., a fleet of 12 vessels harvested 2.9 million pounds. The CPUE was seven legal crabs per pot, while the average weight per crab was 4.1 pounds. With an exvessel value of just under \$19.5 million, the 2000/01 season was the most valuable golden king crab fishery in six years (Table 1-5).

These stable trends continued through the 2003/04 fishery. In the area east of 174° W long., since the 2001/02 season, 18 to 19 vessels participated and harvested an average of 2.99 million pounds per year. The CPUE and average weight have remained relatively stable with an average of 11 to 12 crab per pot lift and legal males averaging 4.4 to 4.6 pounds. In the area west of 174° W long., six to nine vessels harvested an average of 2.69 million pounds per year (Table 1-4). Legal males averaged 4.0 pounds and in 2001/02 and 2002/03 CPUE has averaged seven crabs per pot lift. Catch rates rose during the 2003/04 fishery when average CPUE increased to 10 legal crabs per pot lift.

The number of vessels fishing and the average number of pots per vessel in the eastern portion of the Aleutian Islands golden king crab fishery remained fairly constant from the 1994/95 season to the 2004/05 season (Figure 1-6). In the western portion of the Aleutian Islands golden king crab fishery, there has been a decrease in the number of vessels registered per season with a dramatic increase in the number of pots registered per vessel (Figure 1-7). With the adoption of longline gear in 1986, vessels became more specialized in fishing for golden king crabs and were able to more efficiently operate gear. In recent years, with shorter Bristol Bay red king and Bering Sea snow crab *Chionoecetes opilio* fisheries, longline vessels that also fish in the Bering Sea have increased their effort in the Aleutian Islands. While the total number of vessels registered has remained relatively low since the early 1990s, the amount of time relative to other crab fisheries that these vessels spend fishing in the Aleutian Islands has increased, resulting in shorter golden king crab fisheries. The expansion of processing facilities in Adak has also contributed to the shorter seasons, especially in the western Aleutians. Vessels could deliver closer to the fishing grounds, saving approximately a week in transit time for each delivery. The

implementation of Crab Rationalization in 2005 decreased participation further with the consolidation of quota onto fewer vessels. Under rationalization the season is open from August 15 to May 15 of the following year.

2006/07 Fishery

The 2006/07 Aleutian Islands golden king crab fishery opened by regulation at 12:00 NOON August 15 with a TAC of 5.7 million pounds (5.13 million pounds IFQ, 0.57 million pounds CDQ); 3.0 million pounds of which was apportioned to the area east of 174° W long. and further subdivided between the IFQ (2.7 million pounds) and CDQ (300,000 pounds) fisheries, and 2.7 million pounds apportioned to the area west of 174° W long. further subdivided into the IFQ (2.43 million pounds) and Adak Community Allocation (ACA) fishery (270,000 pounds). This was the second season under rationalization regulations, including the CDQ fishery for golden king crab, and the ACA fishery. Seven vessels participated in the IFQ fishery and landed 4.69 million pounds. The fleet averaged 23 legal crabs per pot lift, the same as the prior season, and landed crabs averaged 4.5 pounds each which is slightly higher than the 2005/06 season (Table 1-4).

East of 174° W long.

With the implementation of crab rationalization, the golden king crab fleet has been reduced to less than half of the pre-rationalization fleet size. A total of six vessels participated in the Aleutian Islands golden king crab commercial fishery east of 174° W long. The fleet registered 8,150 pots, or 1,358 pots per vessel, only 92% of the overall pots registered during the 2005/06 fishery and on average 7% more pots registered per vessel as compared to the 2005/06 fishery. Weekly harvest peaked mid-September (Table 1-6). Most fishing effort was concentrated around Yunaska Island, Islands of Four Mountains, and in Seguam and Amukta Passes. Catch rates tended to be highest in Amukta and Seguam Passes, with the most productive grounds yielding up to 36 legal crabs per pot lift, compared to 29 crabs per pot lift in this area the previous season (Table 1-7). The average catch rate for the entire eastern portion was 24 crabs per pot lift, down slightly from 25 crabs per pot lift the previous season. The average weight of legal crabs was 4.6 pounds, the same as the 2005/06 season, with the largest crabs encountered around Seguam Island (Table 1-7).

The IFQ fleet harvested 2.69 million pounds of golden king crabs during the season. Four shore-based processors in Dutch Harbor, one shore-based processor in Akutan, and one catcher-processor processed golden king crabs from the eastern Aleutian Islands. Exvessel price paid for live, whole crabs averaged \$1.77 per pound, leading to a fishery value of \$4.71 million, a decrease of \$1.77 million from the 2005/06 fishery (Table 1-5).

West of 174° W long.

A total of three vessels participated in the IFQ fishery west of 174° W long. The fleet registered 6,000 pots, an average of 2,000 pots per vessel, 25% more pots overall than were registered in the 2005/06 season, and 25% more pots per vessel than the 2005/06 season (Table 1-4). Weekly harvest peaked in early November (Table 1-8). Fishing effort was concentrated around the Delarof Islands, Amchitka Pass and the Petrel Bank. Weekly catch rates ranged from ten to 54 crabs per pot lift and averaged 20, down from 21 crabs per pot lift the previous season. The average weight of legal crab was 4.3 pounds, an increase from the 2005/06 season average weight of 4.2 pounds.

The fleet harvested 2.00 million pounds of golden king crab. Golden king crabs were purchased and processed by one catcher-processor, one floating processor and by three shore-based processors, one in Adak and two in Dutch Harbor. Exvessel price averaged \$1.33 per pound for live, whole crabs, yielding a total fishery value of \$2.64 million, well below the previous 5-years' average fishery value of \$8.03 million (Table 1-5).

Fishery Management and Stock Status

Crab Rationalization introduced regulatory changes in the Aleutian Islands golden king crab fishery. The historic GHL has been changed to a Total Allowable Catch (TAC). Qualified participants are issued IFQ shares which they may harvest at any time while the season is open. Harvesters may now use gear cooperatively, transporting and fishing another vessel's gear if registered to do so. Additionally, observer coverage requirements have been decreased. Prior to rationalization, vessels harvesting golden king crab in the Aleutian Islands were required to carry an observer during 100% of their fishing activities. Current regulations stipulate that onboard observers are required during the harvest of 50% of the total golden king crab weight harvested by each catcher vessel and 100% of the fishing activity of each catcher-processor during each of the three trimesters as outlined in 5 AAC 39.645 (d)(4)(A).

The department surveyed a small portion of the golden king crab habitat in the Aleutian Islands during the summer of 1997 (Blau et al. 1998). Prior to that, the department performed the only survey of this area in 1991 (Blau and Pengilly 1994). Only a small portion of the area in which golden king crabs are commercially important is currently surveyed. Mark-recapture data from the 1997 survey suggested that the commercial fishery was annually removing a minimum of 20% of the legal male crabs present in the area surveyed. The FMP for king and Tanner crabs in the Bering Sea and Aleutian Islands specifies that the golden king crab stock in the Aleutian Islands is considered overfished when fishing mortality (F) exceeds 0.2 (NPFMC 1998). A fishing rate of $F=0.2$ corresponds to an annual mature male removal rate of approximately 18%. During the 1997/98 season, the GHL of 3.2 million pounds in the area east of 174° W long. was exceeded by approximately 300,000 pounds. Therefore, to maintain a long-term average harvest at 3.2 million pounds, the 1998/99 GHL in this area was reduced to 3.0 million pounds (D. Pengilly, ADF&G, Kodiak, personal communication).

The stations surveyed in 1997 were surveyed again in 2000, 2003 and 2006. Tag recovery rates changed only slightly even though approximately one-third fewer legal-sized male crabs were tagged in 2000 than in 1997. Harvest rates as indicated by tag returns in the 2000/01 season were similar to those in 1997/98. Shell-condition composition data indicated the stock was healthy, while size composition of the retained catch has changed very little (Watson and Gish 2002). Results from the 2003 survey indicate that overall approximately 22% fewer crab were tagged compared to the 2000 survey although numbers of tagged legal males were similar (Watson 2005). Approximately 14% fewer crabs were tagged during the 2006 survey than the 2003 survey, although numbers of tagged legal males increased. Results from the 2006 survey and tag recovery data are available in Fishery Management Report No. 07-07 (Watson 2007).

In order to operate their gear more efficiently, fishers tend to utilize the shallowest waters in which crabs may be found in abundance. Distribution of legal males extends to depths greater than those fished, so the entire depth range distribution of legal males is not exploited. Additionally, the area surveyed receives more fishing pressure than many other areas in the entire Aleutian Islands, so golden king crabs in less heavily fished locales may have a lower

harvest rate. Even though the harvest rates are at or near the allowable maximum in some areas, the Aleutian Islands golden king crab population is believed to be healthy.

Recent fishery data also indicates that the stock is healthy. The average size of crabs harvested has remained nearly constant for the last six seasons. Average weight has been between 4.2 and 4.6 pounds per crab for the last ten years. CPUE has also been stable and has been above the 10-year average during the last five seasons. All this information suggests that the 3.0 million-pound harvest level has provided a stable fishery and protects against overfishing as defined in the FMP. Currently, the department intends to survey the area around Amukta and Yunaska Islands every three years, with the next survey scheduled for the summer of 2009.

In the Aleutian Islands west of 174° W long., no surveys are conducted. The 2.7 million-pound harvest level has been in effect since the 1996/97 season and was determined on the basis of the preceding 5-year average harvest in the waters west of 174° W long. Fishery and observer data do not demonstrate a compelling reason to change the harvest level from 2.7 million pounds as fishery statistics have not markedly changed since the harvest level was developed in 1996/97.

ALEUTIAN ISLANDS SCARLET KING CRAB

Historic Background

Scarlet king crabs *Lithodes couesi* are currently harvested under authority of a permit issued by the commissioner of ADF&G and authorized in 5 AAC 34.082. PERMITS FOR *LITHODES COUESI* KING CRAB. These permits are usually issued in conjunction with an Aleutian Islands golden king crab registration. Scarlet king crabs are typically found in waters deeper than 200 fathoms and have been taken as incidental harvest in the golden king crab and deepwater Tanner crab fisheries in the Aleutian Islands. Limited directed fishing has occurred; however, exploratory fishing does not indicate that a large biomass is present. Since 1992, annual harvest of scarlet king crabs in the Aleutian Islands has ranged from less than 5,000 pounds to a peak of nearly 63,000 pounds in 1995, when eight vessels made 25 landings. Exvessel value was at a maximum in 1995 when the fishery was worth approximately \$186,500 (Table 1-9). Since 1996, effort and harvest in this fishery have been minimal and catch information has been confidential in all years except 1997 when 6,720 pounds were harvested. When the BOF combined the Adak and Dutch Harbor king crab Registration Areas to create Area O, management of scarlet king crabs was not impacted (ADF&G 1999a).

2006 Fishery

No vessels registered to incidentally harvest scarlet king crab during either the 2006 grooved Tanner *Chionoecetes tanneri* or golden king crab fisheries.

Fishery Management and Stock Status

No surveys are conducted, nor are any estimates of population abundance made for scarlet king crabs in the Aleutian Islands; consequently, stock status and distribution are not well known. Scarlet king crab males larger than or equal to five and one-half inches in CW may be taken as incidental harvest under the conditions of a commissioner's permit. No directed fishing for scarlet king crabs is anticipated. Observer coverage on each vessel registered for the king crab fisheries of the Aleutian Islands has provided biological information that will be used by the department to develop future management measures for scarlet king crab. The implementation

of Crab Rationalization did not impart any changes to the management of the Aleutian Islands scarlet king crab fishery.

EASTERN ALEUTIAN TANNER CRAB DISTRICT

DESCRIPTION OF DISTRICT

The Eastern Aleutian Tanner crab District (EAD) encompasses all waters of Registration Area J between the longitude of Scotch Cap Light at 164° 44' W long., west to 172° W long., and south of the latitude of Cape Sarichef at 54°36' N lat. (Figure 1-8). Area J encompasses both waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles).

TANNER CRAB

Historic Background

The EAD has not supported harvests of Tanner crabs as large as those recorded in other districts of Area J. Tanner crabs are found only in a few major bays and inlets of the eastern Aleutians and the directed fishery was relatively small in volume and geographically limited until the late 1970s. The fishery began in Akutan and Unalaska bays and subsequently expanded to include all areas of known Tanner crab distribution in the EAD. Harvest of Tanner crabs over the last 26 years has typically remained under one million pounds per year. Only in the three consecutive seasons from 1976/77 to 1978/79 did the harvest exceed one million pounds, reaching a peak of 2.5 million pounds in the 1977/78 season (Table 1-10). Vessel participation was low in 1973/74, with only six vessels registered and reached a high of 31 vessels in 1982 when the fishery was in decline. Vessel participation declined in 1991 to five vessels and consequently the harvest reached a low of 50,038 pounds. The EAD Tanner crab fishery reached a maximum exvessel value of approximately \$950,000 in 1977/78 (Table 1-11). Commercial fishing for Tanner crabs was not permitted in the EAD between 1994 and 2003 due to low stock abundance. The 2004 fishery opened in two areas, Makushin/Skan Bay (GHL of 87,891 pounds) and Unalaska Bay (GHL of 47,219 pounds), but harvest information is confidential because less than three processors purchased the crab. Unalaska Bay opened in 2005 with a GHL of 35,304 pounds of Tanner crab. Twenty-five vessels participated with 79 landings, harvesting 96.4% of the quota (Table 1-10).

Subsistence harvest limit reductions applied to the Eastern Aleutian Islands red king crab fishery in 1999 were not applied to Tanner crabs. However, the permit and reporting requirements for subsistence harvest were reinstated. Between 1988 and 1994, an average of 15 subsistence permits per year were returned and accounted for approximately 121 Tanner crabs annually. A survey of 15.1% of Unalaska households in 1994 generated an estimated total subsistence Tanner crab harvest of 10,957 crabs (ADF&G 1999b). ADF&G staff issued 179 subsistence permits in 1999, of which 80 were returned. Returned permits accounted for a Tanner crab harvest of 1,432 crabs and the estimated total harvest was 3,204 crabs (Table 1-3).

During the past seven years, ADF&G in Dutch Harbor has issued an average of 219 subsistence permits and harvest logsheets. On average, 70 percent or 153 are returned. The returned permits account for an average annual harvest of 2,838 Tanner crabs and annual harvest ranged from 0 to 914 crabs per permit. Estimates generated from the subsistence harvest logsheets indicate that an

average of 4,080 Tanner crabs are harvested annually, although in recent years the harvest has been much higher (Table 1-3).

2006 Commercial Fishery

The Tanner crab fishery in the EAD opened at NOON, January 15, 2006. Only the Makushin/Skan Bay portion of the EAD was estimated to have a harvestable surplus allowing for commercial fishing with a GHF of 87,241 pounds. Preseason registrations were received from 15 vessels and based on this level of effort and the fishery limit of 300 pots, pot limits were set at 20 pots per vessel. Ten vessels participated in the fishery and used 198 pots.

Makushin/Skan Bay

Harvest information from the 2006 Tanner fishery in Makushin/Skan Bay portion of the EAD is confidential as less than three processors participated.

2007 Commercial Fishery

The Tanner crab fishery in the EAD opened at NOON, January 15, 2007. The Akutan Bay and Unalaska Bay portions of the EAD were estimated to have harvestable surplus allowing for commercial fishing with a GHF of 49,000 pounds in Unalaska Bay and 35,000 pounds in Akutan Bay. Preseason registrations were received from 22 vessels and based on this level of effort and the fishery limit of 300 pots, pot limits were set at 13 pots per vessel. Thirteen vessels participated in the fishery and used 167 pots.

Akutan Bay

Harvest information from the 2007 Tanner fishery in the Akutan Bay portion of the EAD is confidential as less than three processors participated.

Unalaska Bay

Harvest information from the 2007 Tanner fishery in the Unalaska Bay portion of the EAD is confidential as less than three processors participated.

Dockside Sampling, 2006 Commercial Fishery

Tanner crabs were sampled by an observer aboard a floating processor and dockside sampling staff at a Dutch Harbor processor during the course of the 2006 EAD Tanner crab fishery. Confidential interviews were conducted with vessel captains to acquire detailed information regarding areas fished, effort and fishery performance. Biological data collected consisted of average weights, carapace width (CW) and shell-condition.

Ten vessels made a total of 32 landings, of which 29 (91%) deliveries were contacted by an observer and/or dockside sampling staff for confidential interviews and biological data during offloads. The average weight for Tanner crabs harvested in the EAD fishery was 2.35 pounds during the 2006 fishery. From the biological data collected, 82% of the crabs measured were new shell and 18% were old shell. Average CW was 149 mm.

Dockside Sampling, 2007 Commercial Fishery

Tanner crabs were sampled by dockside sampling staff at a Dutch Harbor processor during the course of the 2007 EAD Tanner crab fishery. Confidential interviews were conducted with vessel captains to acquire detailed information regarding areas fished, effort and fishery performance. Biological data collected consisted of average weights, CW and shell-condition.

Thirteen vessels made a total of 48 landings, of which all deliveries were contacted by dockside sampling staff for confidential interviews and biological data during offloads. Average weight for Tanner crabs harvested in the EAD fishery was 2.19 pounds from the Akutan Bay portion of the 2007 fishery, and 2.49 pounds from the Unalaska Bay portion of the 2007 fishery. From the biological data collected, 31% of the crabs measured were new shell and 69% were old or very old shell. Average CW was 152 mm.

2006 Subsistence Fishery

In 2006, ADF&G issued 256 subsistence permits and harvest logsheets, of which 185, or 72.3%, have been returned. The returned permits accounted for a harvest of 1,439 Tanner crabs (Table 1-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,991 Tanner crabs were taken with pot and scuba gear with harvest ranging from 0 to 420 Tanner crabs per permit. The majority of Tanner crabs were taken in Captains Bay (65%), with peak harvest in June although catch continued throughout the year.

Fishery Management and Stock Status

In 2002 the BOF adopted new management measures for the Eastern Aleutian Tanner crab District including pot limits, daily fishing periods and reporting requirements. A total of 300 pots are allowed in the fishery with no more than 50 pots per vessel. Pots may be operated to take Tanner crab only from 8:00 AM until 5:59 PM with a soak time of 14 hours from 6:00 PM until 7:59 AM. Fishers must report daily the number of pot lifts, number of crab retained and any other information considered necessary for the management and conservation of the fishery. In the EAD, the waters of Unalaska Bay enclosed by a line from Cape Cheerful (54° N lat., 166° 40.33' W long.) to Priest Rock (54° N lat., 166° 22.50' W long.) are closed to harvest of Tanner crab by vessels over 58 feet in overall length. In 2005 the BOF expanded vessel length restrictions in the EAD Tanner crab fishery restricting the harvest of Tanner crab in the Eastern Aleutian District to vessels under 58 feet overall length when the GHL for Tanner crabs in the EAD is 1,000,000 pounds or less. Although crab rationalization was implemented in 2005 by the BOF for several Bering Sea and Aleutian Islands crab fisheries, the EAD Tanner crab fishery remains open access.

Prior to 1990, sporadic pot surveys were utilized to generate a Tanner crab abundance index in the eastern Aleutian Islands (Urban 1992). The pot surveys were not utilized to generate a GHL; instead they were used to monitor trends in abundance and recruitment. Pot surveys and fishery data were used to establish harvest levels of zero to 250,000 pounds (ADF&G 1983b). Since 1990, trawl surveys have been used to estimate abundance and are used in conjunction with fishery data for management purposes.

Trawl surveys in 1990 and 1991 indicated that a surplus of 100,000 pounds of Tanner crab were available for harvest. Commercial fisheries that opened in 1991 and 1992 based on those surveys resulted in legal male harvests of 50,038 and 98,703 pounds respectively (Table 1-10). A 1994 trawl survey of the same location revealed an 87% decrease in abundance of Tanner crabs since 1991. Results of the 1994 survey prompted the department to issue an emergency order closing the 1995 season (ADF&G 1999b). A trawl survey conducted by the department in 1995 indicated that the abundance of Tanner crabs had increased slightly over the 1994 level, but was still well below levels observed on the 1990 and 1991 surveys. The 1995 survey found an increase in juvenile male and immature female crabs. However, the abundance of legal male crabs was still very low (Urban 1996); thus, the fishery closure was extended.

A trawl survey conducted in 1999 indicated that the biomass of Tanner crabs in the eastern Aleutian Islands had increased. Abundance increases were recorded for all size classes, with females and large males showing the greatest change. Female abundance more than doubled from the 1995 survey estimate to 2.2 million crabs, and male crab abundance increased nearly four-fold to just over 4.0 million crabs of which approximately 0.4 million were legal size. The majority of the recruitment was observed in Akutan, Unalaska, and Makushin bays (Worton 2000).

Because encouraging recruitment was noted during the 1999 trawl survey, the department surveyed the eastern Aleutian Islands again in 2000. Much of the recruitment observed in Akutan Bay in 1999 was not encountered in 2000; thus the Tanner crab abundance estimate declined (Worton 2001).

A commissioner's-permit survey using pot gear, similar in design to the pot surveys for red king crab in the western Aleutians, was conducted in the EAD during January/February of 2003. The survey focused on areas of historic Tanner crab abundance in Unalaska Bay, Beaver Inlet and Akutan Bay. The pot survey included areas that are inaccessible to the trawl survey. Results from the 2003 pot survey show an increase in the abundance of Tanner crabs in Unalaska Bay and Akutan Bay when compared to historic catch at the same survey locations (Bon 2005).

The 2003 trawl survey estimated total abundance at 6.4 million crabs, the third largest abundance estimate since 1990. Population estimates for legal males, post-recruit males, and adult females were the highest on record (Spalinger 2004). A portion of the area was again surveyed by trawl gear in 2004. Total estimated abundance for the area surveyed was 5.2 million crabs (Spalinger 2005). In 2005 the portion of the EAD surveyed indicated an estimated abundance of 5.4 million crabs (Spalinger 2006). Total estimated abundance from the 2006 survey was 5.6 million Tanner crabs for the EAD (Spalinger 2007).

GROOVED TANNER CRAB

Historic Background

Similar to other deep-water crab fisheries in the Aleutian Islands, the first harvest of grooved Tanner crabs in the EAD occurred in the early 1980s as incidental harvest in the Dutch Harbor golden king crab fishery. Directed fishing for this species did not begin until 1993, when one vessel participated in a fishery that lasted from July until December. The grooved Tanner crab fishery in the EAD typically occurred between March and December. Peak harvest in the EAD occurred in 1995 when eight vessels landed approximately 879,000 pounds (Table 1-12).

Limited data has been collected regarding the abundance, distribution, and stock status of deep-water crab species in the Bering Sea and Aleutian Islands. During the 1993 season, the Department utilized data collected by onboard observers to restrict harvest to males of five inches or greater CW. In 1994, pursuant to permit provisions described in 5 AAC 35.511. PERMITS FOR TANNER AND ANGULATUS TANNER CRAB IN REGISTRATION AREA J, the Department required that vessels registered for this fishery carry an observer for all of their fishing activities. Data collected by observers has documented incidental harvest as well as fishing practices and has aided the department in developing further management measures.

In 1997, ADF&G established GHs for grooved Tanner crabs in the Eastern Aleutian, Bering Sea, and Alaska Peninsula districts where most historical harvests had occurred. Harvest levels in this fishery were derived using catch information from previous seasons and data collected by

onboard observers. A GHL of 200,000 pounds was established for each of the aforementioned areas, while smaller harvest levels of 100,000 pounds were established for the Kodiak and Western Aleutian districts to allow for exploratory fishing. In addition, the department required that all pots be equipped with at least two escape rings of 4.5 inches minimum diameter (ADF&G 1999a).

2006 Fishery

No vessels registered to harvest grooved Tanner crabs in the EAD during 2006.

Fishery Management and Stock Status

The grooved Tanner crab population in the EAD is not surveyed; consequently, no estimates of population abundance are available for this stock. Fishery data from the mid 1990s is the primary source of information regarding abundance and stock status. Catch per unit of effort declined from 15 legal crabs per pot lift in 1993 to two in 1996 and catches decreased from over 850,000 pounds in 1995 to under 105,000 pounds in 1996. In addition, fishing effort was concentrated in three statistical areas immediately to the south of Unalaska Island. This information indicates that at least in the area historically fished, the population was heavily exploited.

Given poor fishery performance and declining harvests of the mid 1990s, ADF&G re-evaluated deepwater Tanner crab harvest levels in 2000. A GHL range of 50,000 to 200,000 pounds was established for the EAD. The GHL was set as a range to provide greater flexibility for inseason management and to better inform the public of the department's management goals for the fishery. The fishery will be managed so that the upper end of the GHL range is reached only when catch rates similar to, or greater than those documented prior to the harvest declines of the mid 1990s are observed. In addition to new GHL requirements, the department specified that four 4.5-inch escape rings be placed on the lower third of each pot and required that pots be fished over multiple depth strata. Observers required on all vessels registered for the fishery will collect biological and fishery data.

TRIANGLE TANNER CRAB

Historic Background

In the Eastern Aleutian District triangle Tanner crabs *Chionoecetes angulatus* are harvested under a permit authorized in 5 AAC 35.511. PERMITS FOR TANNERI AND ANGULATUS TANNER CRAB IN REGISTRATION AREA J. Triangle Tanner crabs were incidentally harvested in the eastern Aleutian grooved Tanner crab fishery, where the species has occurred in small numbers. Prior to 1995 and the beginning of the directed fishery, no harvest of triangle Tanner crabs was reported on fish tickets; however, shellfish observers stationed on board vessels participating in the grooved Tanner crab fishery observed small numbers of triangle crabs harvested in 1994 (ADF&G 1999a). Two vessels targeted triangle Tanner crabs in the EAD during the 1995 and 1996 seasons, thus harvest information from those fisheries is confidential (Table 1-13). From 1997 to 2000, and 2002 to 2005, no vessels registered to harvest triangle Tanner crabs in the EAD. One vessel registered to participate in 2001, thus harvest information is confidential.

2006 Fishery

No vessels registered to harvest triangle Tanner crabs in the EAD during 2006.

Fishery Management and Stock Status

Surveys of population abundance are not conducted for triangle Tanner crabs; thus the status of this stock is unknown. Because of the paucity of population level data for this species and the history of the fishery, additional fishing for triangle Tanner crabs in the Eastern Aleutian District will be limited to incidental harvest during the grooved Tanner crab fishery. Vessels registered to fish for grooved Tanner crabs will be permitted to harvest triangle Tanner crabs at up to 50% of the weight of the target species. This harvest level is consistent with the historic development of the fishery and allows retention of a deepwater species that is believed to have a high mortality rate when taken incidentally in pot gear.

WESTERN ALEUTIAN TANNER CRAB DISTRICT

DESCRIPTION OF DISTRICT

The Western Aleutian District of Registration Area J includes all waters west of 172° W long., east of the United States-Russia Maritime Boundary Line of 1991, and south of 54° 36' N lat. (Figure 1-8). Area J encompasses both waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles).

TANNER CRAB

Historic Background

Harvest of Tanner crabs from the Western Aleutian District has, in general, been incidental to the directed red king crab fishery in that area. Commercial harvest has ranged from a high of over 800,000 pounds during the 1981/82 season to less than 8,000 pounds in 1991/92 (Table 1-14). No commercial harvest of Tanner crabs has occurred in the Western Aleutian District since 1995/96. The Western Aleutian District Tanner crab fishery reached a maximum value of just over \$1 million in the 1981/82 season (Table 1-15). Tanner crab abundance in the Western Aleutian District is probably limited by available habitat. Most of the historical harvest occurred within a few bays in the vicinity of Adak and Atka islands.

2006/07 Fishery

The Western Aleutian District Tanner crab fishery may be opened by emergency order on November 1, however, the fishery was not opened during the 2006/07 season. The fishery was not opened because there is no management plan in place, nor has sufficient population data been collected to develop a GHL.

Fishery Management and Stock Status

No stock assessment surveys are conducted for Tanner crabs in the Western Aleutian District; thus no population estimates are available. Stock status is currently unknown. Historic fisheries were managed using GHLs set from commercial catch data (ADF&G 1985).

GROOVED TANNER CRAB

Historic Background

In the Western Aleutian District, harvest of grooved Tanner crab first occurred in conjunction with the developing golden king crab fishery in the Adak king crab management area during the late 1970s. Effort in this fishery has been minimal with two or fewer vessels participating during

most years. Only in 1995 did significant fishing effort occur, when six vessels harvested approximately 146,000 pounds of grooved Tanner crabs (Table 1-16).

To prevent overharvest of this population where little abundance information is available, ADF&G restricted harvest to males of five inches or greater CW in 1993. In addition, beginning in 1994, and according to provisions provided in 5 AAC 35.511 PERMITS FOR TANNER AND ANGULATUS TANNER CRAB IN AREA J, all vessels registered for the fishery were required to carry an onboard observer for all of their fishing activities. Using information collected by onboard observers and historic catch information, the department established GHLS for grooved Tanner crabs in the Western Aleutian District in 1997. The GHLS was set at 100,000 pounds; this level was believed to be adequate to allow for exploratory fishing and incidental harvest (ADF&G 1999a). Since 1997, the department has reevaluated harvest levels for deepwater Tanner crabs. Because commercial fishing for grooved Tanner crabs in the Western Aleutian District has only occurred during four seasons and no survey data is available, confidence was not as high in the GHLS for this district as in other districts where grooved Tanner crab harvest has occurred. In order to prevent over-harvest of this stock, no GHLS was set in 2000 when new deepwater Tanner crab GHLS were announced and the fishery will remain closed until further notice.

In addition to harvests of Tanner crabs and grooved Tanner crabs, fishers have anecdotally reported incidental triangle Tanner crab catch in the grooved Tanner crab and golden king crab fisheries in the Western Aleutian District. There have not been any landings of triangle Tanner crab from this area and there is currently no fishery.

2006 Fishery

The Western Aleutian District was not open to commercial fishing for grooved Tanner crabs in 2006.

Fishery Management and Stock Status

No stock assessment surveys have been conducted for grooved Tanner crabs in the Western Aleutian District; therefore, no estimates of population abundance are available. Fishery data from the mid 1990s indicates that the western Aleutian Islands may not support grooved Tanner crab populations as large as the eastern Aleutian Islands and the Bering Sea. Commercial fishery data from the mid 1990s indicates that neither catch nor CPUE were large when compared to those observed in other districts.

ALEUTIAN DISTRICT DUNGENESS CRAB

DESCRIPTION OF DISTRICT

The Aleutian District for Dungeness crab *Cancer magister* management includes all waters of Registration Area J west of the longitude of Scotch Cap Light (164° 44' W long.), south of the latitude of Cape Sarichef (54° 36' N lat.), and east of the United States-Russia Maritime Boundary Line of 1991 (Figure 1-9). Area J encompasses both waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles).

HISTORIC BACKGROUND

Islands in the Aleutian Chain are separated by deep passes with swift currents and are closely bordered on the north by the Aleutian Basin and to the south by the Aleutian Trench. Dungeness

crabs inhabit bays, estuaries, and other shallow water habitats, areas that are sparse and widely dispersed in the Aleutian Islands. Therefore, populations of Dungeness crabs are small and fishing effort has been low within the district.

The Aleutian District Dungeness crab fishery has occurred primarily as a small-vessel, summer fishery in the vicinity of Unalaska Island. Some larger-vessel effort has occurred in other locales within the district, but fishing in these areas has been sporadic throughout the history of the fishery. Interest and activity in this fishery has been erratic from year to year, with the first reliable reports of harvest made in 1970. Since 1974, harvests have ranged from 0 pounds, to a peak of over 91,000 pounds in 1984/85 (Table 1-17). Four vessels operated that year, with over 80% of their catch coming from Unalaska and Makushin bays. In addition to commercial harvest, Dungeness crabs have also been taken in subsistence and sport fisheries occurring in the vicinity of Unalaska Island. Subsistence harvest reports returned to ADF&G between 1988 and 1994 indicate that Dungeness harvests were larger than those documented for both red king *P. camtschaticus* and Tanner crabs *C. bairdi* crabs. On average, 15 harvest reports were returned per year and Dungeness harvest averaged 686 crabs per year with a range of 5 to 1,906 crabs per year (ADF&G 1999b). No estimate of current Dungeness harvest by sport or subsistence users is available, but it is believed to be small.

2006/07 FISHERY

One vessel registered to harvest Dungeness crabs during the 2006/07 season, therefore all harvest information is confidential.

FISHERY MANAGEMENT AND STOCK STATUS

The Aleutian Islands Dungeness crab fishery is managed using size, sex, and season restrictions. Only male Dungeness crabs six and one-half inches (165 mm) or greater in carapace width may be retained in the Aleutian District from 12:00 NOON May 1 to 12:00 NOON January 1. No stock assessment work has been performed and limited biological and fishery data have been collected through dockside sampling. The status of this species in the Aleutian Islands is unknown, but the resource is believed to be limited due to the lack of suitable habitat.

ALEUTIAN DISTRICT SHRIMP

DESCRIPTION OF DISTRICT

The Aleutian District of Registration Area J, as described for shrimp, includes all Bering Sea and Pacific Ocean waters west of the longitude of Cape Sarichef at 164° 55' W long. and east of the United States-Russia Maritime Boundary Line of 1991 (Figure 1-10). Area J encompasses both waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles). The Aleutian District includes four sections: Unalaska Bay, Makushin Bay, Usof Bay, and Beaver Inlet.

HISTORIC BACKGROUND

Commercial fishing for shrimp in the Aleutian District began in the 1960s with Russian and Japanese participation. Most harvests occurred northwest of the Pribilof Islands, with some harvests as large as 30,000 metric tons per year (NMFS 1999). In 1972 a domestic trawl fishery began targeting northern pink shrimp *Pandalus borealis* in the vicinity of Unalaska Island. Catch and effort increased and harvest peaked in 1977/78 at 6.8 million pounds (Table 1-18). Sharp

declines in catches after 1978 led to a reduction in season length. Between 1983 and 1991 no fishing occurred; however, in 1992 four catcher-processors targeted shrimp northwest of the Pribilof Islands. Low concentrations of shrimp were located and all four vessels departed the fishery after making a total of six landings for 72,133 pounds. Since 1992, interest in fishing for shrimp in the Aleutian District has remained at a very low level. Several vessels registered to fish, but made no landings until 1999. In 1999, the first commercial harvest of shrimp in the Aleutian District occurred since 1992. Only two vessels registered for the fishery; therefore, catch information is confidential. Initial catches were composed primarily of northern pink shrimp. As the fishery progressed, sidestriped shrimp *Pandalopsis dispar* became the dominant species in the catch. The fishery was closed on July 9, 1999, because ADF&G did not possess adequate information regarding the abundance and distribution of these species and it was not possible to prosecute the trawl fishery in accordance with 5 AAC 39.210. MANAGEMENT PLAN FOR HIGH IMPACT EMERGING FISHERIES.

2006 FISHERY

No vessels registered to participate in the 2006 trawl fishery. There is no closed season for shrimp fishing with pots in the Aleutian Islands.

FISHERY MANAGEMENT AND STOCK STATUS

ADF&G has obtained limited population information for the shrimp stocks of the Aleutian Islands. The last extensive commercial activity occurred in the 1970s and trawl surveys conducted by ADF&G and NMFS do not target shrimp. Consequently, ADF&G does not possess information to develop a management plan or conduct a commercial trawl fishery. Fishers have expressed interest in collaborating with ADF&G on a stock assessment survey, but funding constraints have limited such endeavors. In 2000, NMFS performed a pilot deep-sea trawl survey of the continental slope. Sidestriped shrimp was the most abundant shrimp species, found primarily on the continental slope of the Bering Sea east of Zhemchug Canyon at an average depth of 214 fathoms. NMFS conducted an eastern Bering Sea continental slope survey again in 2002. Sidestriped and northern pink shrimp were the most abundant species encountered although extensive data was not collected (Hoff and Britt 2003). Shrimp are also encountered during the NMFS summer Bering Sea trawl survey. The most abundant species caught on the survey are northern pink shrimp which are found along the outer shelf between the 100 and 200 meter depth contours and humpy shrimp *P. goniurus*, which are usually found in water shallower than 100 meters.

ALEUTIAN DISTRICT MISCELLANEOUS SHELLFISH SPECIES

DESCRIPTION OF DISTRICT

The Aleutian Islands portion of miscellaneous shellfish Registration Area J, includes all waters south of the latitude of Cape Sarichef (54° 36' N lat.), west of the longitude of Scotch Cap Light (164° 44' W long.), and east of the United States-Russia Maritime Boundary Line of 1991 (Figure 1-11). Area J encompasses both waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles). Area J is not divided into districts for commercial miscellaneous shellfish fisheries.

INTRODUCTION

Shellfish species included in this section are those which have been harvested in relatively small amounts compared to the commercial king and Tanner crab fisheries which occur in the Aleutian Islands. Miscellaneous shellfish species include hair crabs *Erimacrus isenbeckii*, sea urchins *Strongylocentrotus spp*, red sea cucumbers *Parastichopus californicus*, snails, *Paralomis multispina* (cherry) crab, and octopi. Prior to 1999, it was ADF&G's policy to register vessels for exploratory fishing in these new and emerging fisheries under authority of a commissioner's permit described in 5 AAC 38.062. PERMITS FOR OCTOPI, SQUID, HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, AND OTHER MARINE INVERTEBRATES. Typically, permit conditions were general and not fully developed on an individual species basis. Fisheries for these species were conducted without prior knowledge of stock abundance or distribution and no harvest limits were established.

2006 FISHERIES

Octopus

In 2006, directed fishing for octopi was permitted in the Aleutian Islands under the authority of a commissioner's permit. Two vessels registered for the fishery using pot gear, however, neither vessel made a landing.

Incidental harvest may also be retained on a commercial fisheries entry commission (CFEC) card at up to 20% of the weight of the target species. In 2006, 33 vessels made 113 landings of octopi totaling 182,353 pounds from the Aleutian Islands (Table 1-19). At-sea discards totaled 44,336 pounds. The majority of retained octopi were sold to processors (55%), while the rest was either retained for personal use including bait (20%), discarded (24%) or sold for use as fishmeal (<1%). Octopus landings were made by vessels targeting Pacific cod or other groundfish species using pot gear (99.9%), longline gear (<0.1%), and trawl gear (<0.1%).

Red Sea Cucumber and Sea Urchin

In September, ADF&G issued a news release announcing the GHL for red sea cucumbers and sea urchins in the Westward Region. The 2006 season opened under a commissioner's permit with a GHL of 5,000 pounds each of eviscerated product for sea cucumbers and whole animal weight for sea urchins in the Aleutian Islands. The small GHLs were established to permit conservative commercial exploration of areas that lacked historic harvest data and to allow ADF&G to collect critical information for future management purposes. However, no vessels or divers registered or fished for either of these fisheries in the Aleutian Islands in 2006.

Other Miscellaneous Shellfish Species

No vessels were registered for any other miscellaneous shellfish species in the Aleutian Islands in 2006.

FISHERY MANAGEMENT AND STOCK STATUS

No surveys of abundance for octopi have been performed in the Aleutian Islands; thus, no population data is available. ADF&G has not developed a management plan for this species. In addition to incidental harvest which is limited to 20% of the weight of the target species, directed fishing may also occur under the authority of a commissioner's permit. A fishing logbook is required for the directed fishery and only pots or dive gear may be used. Starting in 2005, vessels

may not be concurrently registered to fish more than one species in a directed fishery using pot gear. Stock assessment work has not been performed for other miscellaneous shellfish species in the Aleutian Islands and until such work has been performed and a BOF approved management plan has been adopted, only limited fisheries for these species will be allowed.

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Table 1-1.-Aleutian Islands, Area O, red king crab commercial fishery data, 1960/61 - 2006/07.

| Season | Locale | Number of | | | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Average | | | Deadloss ^c |
|---------|----------------|----------------------|------------|----------|--------------------|-------------------|------------------------|---------------------|------------------|---------------------|-----------------------|
| | | Vessels ^a | Landings | Landings | | | | Weight ^c | CPU ^e | Length ^e | |
| 1960/61 | East of 172° W | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | West of 172° W | 4 | 41 | NA | NA | 2,074,000 | NA | NA | NA | NA | NA |
| | TOTAL | | | | | | | | | | |
| 1961/62 | East of 172° W | 4 | 69 | NA | NA | 533,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 8 | 218 | NA | NA | 6,114,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 287 | | | 6,647,000 | | | | | |
| 1962/63 | East of 172° W | 6 | 102 | NA | NA | 1,536,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 9 | 248 | NA | NA | 8,006,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 350 | | | 9,542,000 | | | | | |
| 1963/64 | East of 172° W | 4 | 242 | NA | NA | 3,893,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 11 | 527 | NA | NA | 17,904,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 769 | | | 21,797,000 | | | | | |
| 1964/65 | East of 172° W | 12 | 336 | NA | NA | 13,761,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 18 | 442 | NA | NA | 21,193,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 778 | | | 34,954,000 | | | | | |
| 1965/66 | East of 172° W | 21 | 555 | NA | NA | 19,196,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 10 | 431 | NA | NA | 12,915,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 986 | | | 32,111,000 | | | | | |
| 1966/67 | East of 172° W | 27 | 893 | NA | NA | 32,852,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 10 | 90 | NA | NA | 5,883,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 983 | | | 38,735,000 | | | | | |

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Table 1-1.-Page 2 of 6.

| Season | Locale | Number of | | | | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Average | | |
|---------|----------------|----------------------|--------------|---------------------|-------------------|--------------------|-------------|------------------------|---------------------|-----------------------|----|
| | | Vessels ^a | Landings | Weight ^c | CPUE ^d | | | | Length ^e | Deadloss ^e | |
| 1967/68 | East of 172° W | 34 | 747 | NA | NA | 22,709,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 22 | 505 | NA | NA | 14,131,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 1,252 | | | 36,840,000 | | | | | |
| 1968/69 | East of 172° W | NA | NA | NA | NA | 11,300,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 30 | NA | NA | NA | 16,100,000 | NA | NA | NA | NA | NA |
| | TOTAL | | | | | 27,400,000 | | | | | |
| 1969/70 | East of 172° W | 41 | 375 | NA | 72,683 | 8,950,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 33 | 435 | NA | 115,929 | 18,016,000 | 6.5 | NA | NA | NA | NA |
| | TOTAL | | 810 | | 188,612 | 26,966,000 | | | | | |
| 1970/71 | East of 172° W | 32 | 268 | NA | 56,198 | 9,652,000 | NA | NA | NA | NA | NA |
| | West of 172° W | 35 | 378 | NA | 124,235 | 16,057,000 | NA | NA | NA | NA | NA |
| | TOTAL | | 646 | | 180,433 | 25,709,000 | | | | | |
| 1971/72 | East of 172° W | 32 | 210 | 1,447,692 | 31,531 | 9,391,615 | 7 | 46 | NA | NA | NA |
| | West of 172° W | 40 | 166 | NA | 46,011 | 15,475,940 | NA | NA | NA | NA | NA |
| | TOTAL | | 376 | | 77,542 | 24,867,555 | | | | | |
| 1972/73 | East of 172° W | 51 | 291 | 1,500,904 | 34,037 | 10,450,380 | 7 | 44 | | | |
| | West of 172° W | 43 | 313 | 3,461,025 | 81,133 | 18,724,140 | 5.4 | 43 | NA | NA | NA |
| | TOTAL | | 604 | 4,961,929 | 115,170 | 29,174,520 | 5.9 | 43 | | | |
| 1973/74 | East of 172° W | 56 | 290 | 1,780,673 | 41,840 | 12,722,660 | 7.1 | 43 | NA | NA | NA |
| | West of 172° W | 41 | 239 | 1,844,974 | 70,059 | 9,741,464 | 5.3 | 26 | 148.6 | | |
| | TOTAL | | 529 | 3,625,647 | 111,899 | 22,464,124 | 6.2 | 32 | | | |

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Table 1-1.-Page 3 of 6.

| Season | Locale | Number of | | | | Pots Lifted | Harvest ^{b,c} | Average | | | Deadloss ^e |
|--------------|----------------|---------------------------|------------------|--------------------|-------------------|------------------------|------------------------|---------------------|-------------------|---------------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | Landings | | | Weight ^c | CPUE ^d | Length ^e | |
| 1974/75 | East of 172° W | 87 | 372 | 1,812,647 | 71,821 | 13,991,190 | 7.7 | 25 | NA | | |
| | West of 172° W | 36 | 97 | 532,298 | 32,620 | 2,774,963 | 5.2 | 16 | 148.6 | | |
| | TOTAL | | 469 | 2,344,945 | 104,441 | 16,766,153 | 7.1 | 22 | | | |
| 1975/76 | East of 172° W | 79 | 369 | 2,147,350 | 86,874 | 15,906,660 | 7.4 | 25 | | | |
| | West of 172° W | 20 | 25 | 79,977 | 8,331 | 411,583 | 5.2 | 10 | 147.2 | | |
| | TOTAL | | 394 | 2,227,327 | 95,205 | 16,318,243 | 7.3 | 23 | | | |
| 1976/77 | East of 172° W | 72 | 226 | 1,273,298 | 65,796 | 9,367,965 ^f | 7.4 | 19 | | | |
| | East of 172° W | 38 | 61 | 86,619 | 17,298 | 830,458 ^g | 9.6 | 5 | NA | | |
| | West of 172° W | F I S H E R Y C L O S E D | | | | | | | | | |
| TOTAL | | 287 | 1,359,917 | 83,094 | 10,198,423 | 7.5 | 16 | | | | |
| 1977/78 | East of 172° W | 33 | 227 | 539,656 | 46,617 | 3,658,860 ^f | 6.8 | 12 | | | |
| | East of 172° W | 6 | 7 | 3,096 | 812 | 25,557 ^h | 8.3 | 4 | NA | | |
| | West of 172° W | 12 | 18 | 160,343 | 7,269 | 905,527 | 5.7 | 22 | 152.2 | | |
| TOTAL | | 252 | 703,095 | 54,698 | 4,589,944 | 6.5 | 13 | | | | |
| 1978/79 | East of 172° W | 60 | 300 | 1,233,758 | 51,783 | 6,824,793 | 5.5 | 24 | NA | | |
| | West of 172° W | 13 | 27 | 149,491 | 13,948 | 807,195 | 5.4 | 11 | NA | | 1,170 |
| | TOTAL | | 327 | 1,383,249 | 65,731 | 7,631,988 | 5.5 | 21 | | | |
| 1979/80 | East of 172° W | 104 | 542 | 2,551,116 | 120,554 | 15,010,840 | 5.9 | 21 | NA | | |
| | West of 172° W | 18 | 23 | 82,250 | 9,757 | 467,229 | 5.7 | 8 | 152 | | 24,850 |
| | TOTAL | | 565 | 2,633,366 | 130,311 | 15,478,069 | 5.9 | 20 | | | |

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Table 1-1.-Page 4 of 6.

| Season | Locale | Number of | | | | Pots Lifted | Harvest ^{b,c} | Average | | |
|---------|----------------|----------------------|--------------|--------------------|---------------------|-------------------------|------------------------|-------------------|---------------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | Weight ^c | | | CPUE ^d | Length ^e | Deadloss ^e |
| 1980/81 | East of 172° W | 114 | 830 | 2,772,287 | 231,607 | 17,660,620 ^f | 6.4 | 12 | NA | NA |
| | East of 172° W | 54 | 120 | 182,349 | 30,000 | 1,392,923 ^h | 7.6 | 6 | | |
| | West of 172° W | 17 | 52 | 254,390 | 20,914 | 1,419,513 | 5.6 | 12 | 149 | 54,360 |
| | TOTAL | | 1,002 | 3,209,026 | 282,521 | 20,473,056 | 6.4 | 11 | | |
| 1981/82 | East of 172° W | 92 | 683 | 741,966 | 220,087 | 5,155,345 | 6.9 | 3 | NA | NA |
| | West of 172° W | 46 | 106 | 291,311 | 40,697 | 1,648,926 | 5.7 | 7 | 148.3 | 8,759 |
| | TOTAL | | 789 | 1,033,277 | 260,784 | 6,804,271 | 6.6 | 4 | | |
| 1982/83 | East of 172° W | 81 | 278 | 64,380 | 72,924 | 431,179 | 6.7 | 1 | | |
| | West of 172° W | 72 | 191 | 284,787 | 66,893 | 1,701,818 | 6.0 | 4 | 150.8 | 7,855 |
| | TOTAL | | 469 | 349,167 | 139,817 | 2,132,997 | 6.1 | 3 | | |
| 1983/84 | East of 172° W | FISHERY CLOSED | | | | | | | | |
| | West of 172° W | 106 | 248 | 298,958 | 60,840 | 1,981,579 | 6.6 | 5 | 157.3 | 3,833 |
| 1984/85 | East of 171° W | FISHERY CLOSED | | | | | | | | |
| | West of 171° W | 64 | 106 | 196,276 | 48,642 | 1,296,385 | 6.6 | 4 | 155.1 | 0 |
| 1985/86 | East of 171° W | FISHERY CLOSED | | | | | | | | |
| | West of 171° W | 35 | 82 | 156,097 | 29,095 | 868,828 | 5.6 | 5 | 152.2 | 0 |
| 1986/87 | East of 171° W | FISHERY CLOSED | | | | | | | | |
| | West of 171° W | 33 | 69 | 126,204 | 29,189 | 712,543 | 5.7 | 4 | NA | 800 |
| 1987/88 | East of 171° W | FISHERY CLOSED | | | | | | | | |
| | West of 171° W | 71 | 103 | 211,692 | 43,433 | 1,213,892 | 5.7 | 5 | 148.5 | 6,900 |

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Table 1-1.--Page 5 of 6.

| Season | Locale | Number of | | | | Pots Lifted | Harvest ^{b,c} | Average | | | | |
|---------|----------------|----------------------|----------|--------------------|---------------------|-------------|------------------------|-------------------|---------------------|-----------------------|--|--|
| | | Vessels ^a | Landings | Crabs ^b | Weight ^c | | | CPUE ^d | Length ^e | Deadloss ^c | | |
| 1988/89 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 73 | 156 | 266,053 | 64,334 | 1,567,314 | 5.9 | 4 | 153.1 | 557 | | |
| 1989/90 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 56 | 123 | 193,177 | 54,213 | 1,105,971 | 5.7 | 4 | 151.5 | 759 | | |
| 1990/91 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 7 | 34 | 146,903 | 10,674 | 828,105 | 5.6 | 14 | 148.1 | 0 | | |
| 1991/92 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 10 | 35 | 165,356 | 16,636 | 951,278 | 5.8 | 10 | 149.8 | 0 | | |
| 1992/93 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 12 | 30 | 218,049 | 16,129 | 1,286,424 | 6.0 | 14 | 151.5 | 5,000 | | |
| 1993/94 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 12 | 21 | 119,330 | 13,575 | 698,077 | 5.9 | 9 | 154.6 | 7,402 | | |
| 1994/95 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 20 | 31 | 30,337 | 18,146 | 196,967 | 6.5 | 2 | 157.5 | 1,430 | | |
| 1995/96 | East of 171° W | FISHERY CLOSED | | | | | | | | | | |
| | West of 171° W | 4 | 12 | 6,880 | 1,986 | 38,941 | 5.7 | 3 | 153.6 | 235 | | |
| 1996/97 | | FISHERY CLOSED | | | | | | | | | | |
| 1997/98 | | FISHERY CLOSED | | | | | | | | | | |

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Table 1-1.-Page 6 of 6.

| Season | Locale | Number of | | | | Harvest ^{b,c} | Average | | | |
|----------------------|--------------------------|----------------------|----------|--------------------|-------------|------------------------|---------------------|-------------------|---------------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | Pots Lifted | | Weight ^c | CPUE ^d | Length ^e | Deadloss ^c |
| 1998/99 | West of 174° W | 3 | 6 | 749 | 102 | 5,900 | 7.9 | 7 | NA | 0 |
| 1999/2000 | | FISHERY CLOSED | | | | | | | | |
| 2000/01 ⁱ | Petrel Bank ^j | 1 | 3 | 11,299 | 496 | 76,562 | 6.8 | 23 | 161.0 | 0 |
| 2001/02 ^k | Petrel Bank ^j | 4 | 5 | 22,080 | 564 | 153,961 | 7.0 | 39 | 159.5 | 82 |
| 2002/03 | Petrel Bank ^j | 33 | 35 | 68,300 | 3,786 | 505,642 | 7.4 | 18 | 162.4 | 1,311 |
| 2003/04 | Petrel Bank ^j | 30 | 31 | 59,828 | 5,774 | 479,113 | 8.0 | 10 | 167.9 | 2,617 |
| 2004/05 | | FISHERY CLOSED | | | | | | | | |
| 2005/06 | | FISHERY CLOSED | | | | | | | | |
| 2006/07 | | FISHERY CLOSED | | | | | | | | |

^a Many vessels fished both east and west of 171° W long, thus total number of vessels reflects registrations for entire Aleutian Islands.

^b Deadloss included.

^c In pounds.

^d Number of legal crabs per pot lift.

^e Carapace length in millimeters.

^f Split season based on 6.5 inch minimum legal size.

^g Split season based on 8 inch minimum legal size.

^h Split season based on 7.5 inch minimum legal size.

ⁱ January/February 2001 Petrel Bank survey (fish ticket harvest code 15).

^j Those waters of king crab Registration Area O between 179° E long., 179° W long., and north of 51° 45' N lat.

^k November 2001 Petrel Bank survey (fish ticket harvest code 15).

NA = Not available.

Table 1-2.—Aleutian Islands, Area O, red king crab fishery economic performance data, 1973/74 - 2006/07.

| Year | Locale | GHL ^a | Value | | Season Length | |
|---------|-----------------------------------|--------------------------|------------------------|--------------|---------------|---------------|
| | | | Ex-vessel ^b | Total | Days | Dates |
| 1973/74 | East of 172° W long. | 10.0 ^c | \$0.65 | \$8,269,729 | 24 | 11/01 - 11/24 |
| | West of 172° W long. | 20.0 ^c | NA | NA | NA | 11/01 - 12/06 |
| 1974/75 | East of 172° W long. | 11.5 ^c | \$0.37 | \$5,176,740 | 75 | 11/01 - 01/14 |
| | West of 172° W long. | 20.0 ^c | \$0.35 | \$971,237 | NA | 11/01 - 02/26 |
| 1975/76 | East of 172° W long. | 14.5 ^c | \$0.42 | \$6,680,797 | 71 | 11/01 - 01/10 |
| | West of 172° W long. | 15.0 ^c | \$0.38 | \$156,402 | NA | 01/10 - 12/18 |
| 1976/77 | East of 172° W long. ^d | 14.5 ^c | \$0.64 | \$5,995,497 | 37 | 11/01 - 12/07 |
| | East of 172° W long. ^e | | \$0.79 | \$656,061 | 31 | 12/13 - 01/13 |
| | West of 172° W long. | | FISHERY CLOSED | | | |
| 1977/78 | East of 172° W long. ^d | 8.0 - 14.5 ^c | \$0.99 | \$3,622,271 | 84 | 09/15 - 12/08 |
| | East of 172° W long. ^f | | \$1.35 | \$34,502 | 28 | 12/08 - 01/05 |
| | West of 172° W long. | | 0.25 - 2.5 | \$1.36 | \$1,231,517 | NA |
| 1978/79 | East of 172° W long. | 5.0 - 13.0 ^c | \$1.35 | \$9,213,471 | 71 | 09/10 - 11/20 |
| | West of 172° W long. | 0.5 - 3.0 | \$1.23 | \$992,850 | NA | NA |
| 1979/80 | East of 172° W long. | 17.0 - 25.0 ^c | \$0.90 | \$13,509,756 | 122 | 09/10 - 01/10 |
| | West of 172° W long. | 0.5 - 3.0 | \$0.68 | \$317,716 | NA | NA |
| 1980/81 | East of 172° W long. ^d | 7.0 - 17.0 ^c | \$1.02 | \$18,013,832 | 73 | 11/01 - 01/12 |
| | East of 172° W long. ^f | | \$1.03 | \$1,434,711 | 31 | 01/15 - 02/15 |
| | West of 172° W long. | | 0.5 - 3.0 | \$0.92 | \$1,305,952 | 72 |
| 1981/82 | East of 172° W long. | 7.0 - 17.0 ^c | \$2.30 | \$11,617,293 | 107 | 11/01 - 02/15 |
| | West of 172° W long. | 0.5 - 3.0 | \$2.01 | \$3,314,341 | 107 | 11/01 - 02/15 |
| 1982/83 | East of 172° W long. | 2.0 - 3.0 ^g | \$3.43 | \$1,478,944 | 66 | 11/01 - 01/15 |
| | West of 172° W long. | 0.5 - 3.0 | \$3.44 | \$5,854,254 | 76 | 11/01 - 01/15 |
| 1983/84 | East of 172° W long. | 0.5 - 3.0 | FISHERY CLOSED | | 340 | 11/10 - 12/16 |
| | West of 172° W long. | | \$3.53 | \$6,796,816 | | |

-continued-

Table 1-2.—Page 2 of 3.

| Year | Locale | GHL ^a | Value | | Season Length | |
|---------|--|------------------|------------------------|--------------------------------------|---------------|---------------|
| | | | Ex-vessel ^b | Total | Days | Dates |
| 1984/85 | East of 171° W long. West of 171° W long. | 1.5 - 3.0 | | FISHERY CLOSED \$2.10 \$2,872,111 | 97 | 11/10 - 02/15 |
| 1985/86 | East of 171° W long. West of 171° W long. | 0.5 - 2.0 | | FISHERY CLOSED \$2.15 \$1,948,530 | 107 | 11/01 - 02/15 |
| 1986/87 | East of 171° W long. West of 171° W long. | 0.5 - 1.5 | | FISHERY CLOSED \$3.87 \$2,756,380 | 107 | 11/01 - 02/15 |
| 1987/88 | East of 171° W long. West of 171° W long. | 0.5 - 1.5 | | FISHERY CLOSED \$4.00 \$4,855,732 | 107 | 11/01 - 02/15 |
| 1988/89 | East of 171° W long. West of 171° W long. | 1.0 | | FISHERY CLOSED \$5.00 \$7,836,570 | 34 | 11/01 - 12/04 |
| 1989/90 | East of 171° W long. West of 171° W long. | 1.7 | | FISHERY CLOSED \$4.20 \$4,697,977 | 107 | 11/01 - 02/15 |
| 1990/91 | East of 171° W long. West of 171° W long. | NA | | FISHERY CLOSED \$4.00 \$3,312,420 | 107 | 11/01 - 02/15 |
| 1991/92 | East of 171° W long. West of 171° W long. | NA | | FISHERY CLOSED \$3.00 \$2,853,834 | 107 | 11/01 - 02/15 |
| 1992/93 | East of 171° W long. West of 171° W long. | NA | | FISHERY CLOSED \$5.05 \$6,496,441 | 76 | 11/01 - 01/15 |
| 1993/94 | East of 171° W long. West of 171° W long. | NA | | FISHERY CLOSED \$3.87 \$2,701,558 | 107 | 11/01 - 02/15 |
| 1994/95 | East of 171° W long. West of 171° W long. | 1.0 - 1.5 | | FISHERY CLOSED \$5.50 \$1,083,319 | 27 | 11/01 - 11/28 |
| 1995/96 | East of 171° W long. West of 171° W long. | 1.0 - 1.5 | | FISHERY CLOSED \$2.81 \$109,424 | 107 | 11/01 - 02/15 |
| 1996/97 | | | | FISHERY CLOSED | | |
| 1997/98 | | | | FISHERY CLOSED | | |

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Table 1-2.—Page 3 of 3.

| Year | Locale | GHL ^a | Value | | Season Length | |
|-----------|--------------------------|------------------|------------------------|-------------|---------------|---------------|
| | | | Ex-vessel ^b | Total | Days | Dates |
| 1998/99 | West of 174° W long. | 0.015 | CONFIDENTIAL | | | |
| 1999/2000 | | | FISHERY CLOSED | | | |
| 2000/01 | | | FISHERY CLOSED | | | |
| 2001/02 | | | FISHERY CLOSED | | | |
| 2002/03 | Petrel Bank ^h | 0.5 | \$6.51 | \$3,291,729 | 2 | 10/25 - 10/27 |
| 2003/04 | Petrel Bank ^h | 0.5 | \$5.14 | \$2,449,189 | 4 | 10/25 - 10/29 |
| 2004/05 | | | FISHERY CLOSED | | | |
| 2005/06 | | | FISHERY CLOSED | | | |
| 2006/07 | | | FISHERY CLOSED | | | |

^a Guideline harvest level (GHL), millions of pounds.

^b Average price per pound. No economic data available prior to 1973.

^c GHL includes all king crab species. Golden king crab primarily harvested incidental to red king crab.

^d Split season based on 6.5 inch minimum legal size.

^e Split season based on 8.0 inch minimum legal size.

^f Split season based on 7.5 inch minimum legal size.

^g The harvest strategy was to take 40% of the estimated population of legal size male king crab. No survey was conducted in Area O in 1982, and a pre-season harvest estimate of 2 - 3 millions pounds was based on the 1981 survey and fishery.

^h Those waters of king crab Registration Area O between 179° E long., 179° W long., and north of 51° 45' N lat.

NA = Not available.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-3.-Eastern Aleutian Islands, west of Scotch Cap Light and east of 168° W long., subsistence king and Tanner crab harvest, 1999-2006.

| Year | Number of Permits | | Percentage Returned | Harvest ^a | | | |
|----------------------------|-------------------|------------|---------------------|----------------------|----------------------|---------------------|-----------------------|
| | Issued | Returned | | King crab reported | Tanner crab reported | King crab estimated | Tanner crab estimated |
| 1999 | 179 | 80 | 44.7 | 787 | 1,761 | 1,432 | 3,204 |
| 2000 | 193 | 137 | 71.0 | 523 | 737 | 916 | 1,290 |
| 2001 | 200 | 153 | 76.5 | 1,149 | 1,502 | 1,703 | 2,226 |
| 2002 | 231 | 179 | 77.5 | 1,080 | 1,394 | 2,451 | 3,163 |
| 2003 | 229 | 160 | 69.9 | 387 | 554 | 4,600 | 6,584 |
| 2004 | 225 | 144 | 64.0 | 225 | 352 | 4,714 | 7,366 |
| 2005 | 241 | 182 | 75.5 | 866 | 1,147 | 5,447 | 7,213 |
| 2006 | 256 | 185 | 72.3 | 1,796 | 2,485 | 1,439 | 1,991 |
| 1999 - 2006 Average | 219 | 153 | 69.6 | 852 | 1,224 | 2,838 | 4,080 |

^a Harvest estimate, in numbers of crab, from Unalaska Island (no reported harvest from any other portion of permit area).

Table 1-4.-Aleutian Islands golden king crab commercial fishery data, 1981/82 - 2006/07.

| Season | Locale | Number of | | | Number of Pots | | | Average | | | Deadloss ^c |
|---------|-----------------|----------------------|--------------|--------------------|----------------|----------------|---------------------|-------------------|---------------------|----------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | Registered | Lifted | Weight ^c | CPUE ^d | Length ^c | | |
| 1981/82 | East of 172° W. | 6 | 16 | 22,666 | 0 | 2,906 | 5.1 | 8 | 158 | 8,752 | |
| | West of 172° W. | 14 | 76 | 217,700 | 2,647 | 24,627 | 5.5 | 9 | 160 | 22,064 | |
| | TOTAL | | 92 | 240,458 | 2,647 | 27,533 | 5.4 | 9 | | 30,816 | |
| 1982/83 | East of 172° W. | 49 | 136 | 227,471 | NA | 29,369 | 5.2 | 8 | 158 | 47,479 | |
| | West of 172° W. | 99 | 501 | 1,509,001 | 13,111 | 150,103 | 5.3 | 10 | 158 | 220,743 | |
| | TOTAL | | 637 | 1,737,109 | 13,111 | 179,472 | 5.3 | 10 | | 268,222 | |
| 1983/84 | East of 172° W. | 47 | 132 | 238,353 | 4,514 | 29,595 | 7.6 | 8 | NA | 45,268 | |
| | West of 172° W. | 157 | 1,002 | 1,534,909 | 17,406 | 226,798 | 5.3 | 7 | NA | 171,021 | |
| | TOTAL | | 1,134 | 1,773,262 | 21,920 | 256,393 | 5.6 | 7 | | 216,289 | |
| 1984/85 | East of 171° W. | 13 | 67 | 327,440 | 1,394 | 24,044 | 4.6 | 14 | 161 | 70,362 | |
| | West of 171° W. | 38 | 85 | 643,597 | 5,270 | 64,777 | 4.9 | 10 | 157 | 125,073 | |
| | TOTAL | | 152 | 971,274 | 6,664 | 88,821 | 4.8 | 11 | | 195,435 | |
| 1985/86 | East of 171° W. | 13 | 59 | 364,097 | 1,479 | 25,223 | 4.8 | 14 | 156 | 25,223 | |
| | West of 171° W. | 53 | 386 | 2,452,216 | 7,057 | 205,279 | 4.5 | 12 | 151 | 197,753 | |
| | TOTAL | | 445 | 2,816,313 | 8,536 | 230,502 | 4.5 | 12 | | 222,976 | |
| 1986/87 | East of 171° W. | 17 | 71 | 400,389 | 1,575 | 37,585 | 4.7 | 11 | NA | 9,510 | |
| | West of 171° W. | 62 | 528 | 2,940,238 | 12,958 | 395,435 | 4.4 | 7 | 150 | 276,741 | |
| | TOTAL | | 599 | 3,340,627 | 14,533 | 433,020 | 4.4 | 8 | | 286,251 | |
| 1987/88 | East of 171° W. | 23 | 77 | 301,227 | 3,591 | 42,867 | 4.6 | 7 | 150 | 25,060 | |
| | West of 171° W. | 57 | 380 | 1,873,349 | 10,687 | 263,863 | 4.2 | 7 | 147 | 167,110 | |
| | TOTAL | | 457 | 2,174,576 | 14,278 | 306,730 | 4.3 | 7 | | 192,170 | |

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Table 1-4.-Page 2 of 4.

| Season | Locale | Number of | | | Number of Pots | | Average | | Deadloss ^e | |
|---------|-----------------|----------------------|------------------|--------------------|----------------|----------------|---------------------|-------------------|-----------------------|---------------------|
| | | Vessels ^a | Landings | Crabs ^b | Registered | Lifted | Weight ^c | CPUE ^d | | Length ^f |
| 1988/89 | East of 171° W. | 21 | 57 | 323,783 | 4,215 | 41,371 | 4.8 | 8 | 154 | 23,960 |
| | West of 171° W. | 74 | 455 | 2,164,650 | 23,627 | 280,556 | 4.2 | 8 | 149 | 125,500 |
| | TOTAL | 512 | 2,488,433 | 10,627,042 | 27,842 | 321,927 | 4.3 | 8 | | 149,460 |
| 1989/90 | East of 171° W. | 13 | 70 | 424,067 | 5,635 | 43,346 | 4.4 | 10 | 151 | 17,421 |
| | West of 171° W. | 65 | 505 | 2,478,846 | 14,724 | 314,457 | 4.1 | 8 | 149 | 99,866 |
| | TOTAL | 575 | 2,902,913 | 12,022,052 | 20,359 | 357,803 | 4.1 | 8 | | 117,287 |
| 1990/91 | East of 171° W. | 16 | 67 | 391,135 | 5,225 | 53,592 | 4.3 | 7 | 148 | 42,800 |
| | West of 171° W. | 13 | 167 | 1,312,116 | 7,380 | 160,960 | 4.0 | 8 | 145 | 176,583 |
| | TOTAL | 24 | 234 | 1,703,251 | 12,605 | 214,552 | 4.1 | 8 | | 219,383 |
| 1991/92 | East of 171° W. | 11 | 53 | 346,176 | 3,760 | 42,600 | 4.3 | 8 | 148 | 45,100 |
| | West of 171° W. | 16 | 206 | 1,494,595 | 7,635 | 191,626 | 4.1 | 8 | 145 | 96,848 |
| | TOTAL | 20 | 259 | 1,840,771 | 11,395 | 234,226 | 4.2 | 8 | | 141,948 |
| 1992/93 | East of 171° W. | 10 | 46 | 337,559 | 4,222 | 38,348 | 4.2 | 9 | 148 | 37,200 |
| | West of 171° W. | 18 | 128 | 1,190,769 | 8,236 | 164,873 | 4.1 | 7 | 147 | 104,215 |
| | TOTAL | 22 | 174 | 1,528,328 | 12,458 | 203,221 | 4.1 | 8 | | 141,415 |
| 1993/94 | East of 171° W. | 4 | 14 | 217,788 | 2,334 | 22,490 | 4.2 | 10 | 149 | 7,324 |
| | West of 171° W. | 21 | 148 | 1,179,742 | 11,970 | 212,164 | 3.9 | 6 | 148 | 165,358 |
| | TOTAL | 21 | 162 | 1,397,530 | 14,304 | 234,654 | 4.0 | 6 | | 172,682 |
| 1994/95 | East of 171° W. | 14 | 45 | 384,353 | 7,378 | 67,537 | 4.6 | 6 | 148 | 29,908 |
| | West of 171° W. | 34 | 247 | 1,539,866 | 15,604 | 319,006 | 4.1 | 5 | 150 | 242,065 |
| | TOTAL | 35 | 292 | 1,924,219 | 22,982 | 386,543 | 4.2 | 5 | | 271,973 |

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Table 1-4.-Page 3 of 4.

| Season | Locale | Number of | | | Number of Pots | | | Average | | | Deadloss ^c |
|---------|-----------------|----------------------|------------|--------------------|----------------|----------------|---------------------|------------------|---------------------|----------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | Registered | Lifted | Weight ^c | CPU ^e | Length ^c | | |
| 1995/96 | East of 171° W. | 17 | 42 | 431,867 | 10,325 | 65,030 | 4.6 | 7 | 150 | 67,027 | |
| | West of 171° W. | 25 | 141 | 1,150,466 | 14,213 | 227,991 | 4.3 | 5 | 147 | 248,108 | |
| | TOTAL | 28 | 183 | 1,582,333 | 24,538 | 293,021 | 4.4 | 5 | | 315,135 | |
| 1996/97 | East of 174° W. | 14 | 71 | 731,909 | 9,040 | 113,460 | 4.5 | 6 | | 185,203 | |
| | West of 174° W. | 13 | 99 | 602,968 | 8,805 | 99,267 | 4.2 | 6 | | 75,506 | |
| | TOTAL | 18 | 170 | 1,334,877 | 17,845 | 212,727 | 4.4 | 6 | 147 | 260,709 | |
| 1997/98 | East of 174° W. | 15 | 74 | 780,610 | 9,720 | 106,403 | 4.5 | 7 | 147 | 131,481 | |
| | West of 174° W. | 9 | 160 | 569,550 | 5,240 | 86,811 | 4.3 | 6 | 148 | 79,564 | |
| | TOTAL | 15 | 234 | 1,350,160 | 14,960 | 193,214 | 4.4 | 7 | 147 | 211,045 | |
| 1998/99 | East of 174° W. | 14 | 55 | 740,011 | 8,295 | 83,378 | 4.4 | 9 | 148 | 82,113 | |
| | West of 174° W. | 3 | 44 | 409,531 | 1,930 | 35,920 | 4.1 | 11 | 146 | 21,218 | |
| | TOTAL | 16 | 99 | 1,149,542 | 10,225 | 119,298 | 4.3 | 10 | 147 | 103,331 | |
| 1999/00 | East of 174° W. | 15 | 60 | 709,332 | 9,514 | 79,129 | 4.3 | 9 | 147 | 67,574 | |
| | West of 174° W. | 17 | 113 | 676,558 | 10,564 | 107,040 | 4.1 | 6 | 147 | 104,675 | |
| | TOTAL | 17 | 173 | 1,385,890 | 20,078 | 186,169 | 4.2 | 7 | 147 | 172,249 | |
| 2000/01 | East of 174° W. | 15 | 50 | 704,702 | 10,598 | 71,551 | 4.4 | 10 | 147 | 55,999 | |
| | West of 174° W. | 12 | 100 | 705,613 | 8,910 | 101,239 | 4.1 | 7 | 145 | 53,158 | |
| | TOTAL | 17 | 150 | 1,410,315 | 19,508 | 172,790 | 4.3 | 8 | 146 | 109,157 | |
| 2001/02 | East of 174° W. | 19 | 45 | 730,030 | 12,927 | 62,639 | 4.4 | 12 | 147 | 50,030 | |
| | West of 174° W. | 9 | 90 | 686,738 | 8,491 | 105,512 | 4.0 | 7 | 145 | 43,519 | |
| | TOTAL | 21 | 135 | 1,416,768 | 21,418 | 168,151 | 4.2 | 8 | 146 | 93,549 | |

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Table 1-4.-Page 4 of 4.

| Season | Locale | Number of | | | Harvest ^{b,c} | Number of Pots | | Average | | | |
|----------------------|-----------------|----------------------|------------|--------------------|------------------------|----------------|----------------|---------------------|-------------------|---------------------|-----------------------|
| | | Vessels ^a | Landings | Crabs ^b | | Registered | Lifted | Weight ^c | CPUE ^d | Length ^e | Deadloss ^c |
| 2002/03 | East of 174° W. | 19 | 43 | 643,886 | 2,821,851 | 11,834 | 52,042 | 4.4 | 12 | 148 | 55,425 |
| | West of 174° W. | 6 | 73 | 664,823 | 2,640,604 | 6,225 | 78,979 | 4.0 | 8 | 146 | 32,101 |
| | TOTAL | 22 | 116 | 1,308,709 | 5,462,455 | 18,059 | 131,021 | 4.2 | 10 | 147 | 87,526 |
| 2003/04 | East of 174° W. | 18 | 37 | 643,074 | 2,977,055 | 12,518 | 58,883 | 4.6 | 11 | 149 | 76,006 |
| | West of 174° W. | 6 | 60 | 676,633 | 2,688,773 | 7,140 | 66,236 | 4.0 | 10 | 146 | 49,321 |
| | TOTAL | 21 | 97 | 1,319,707 | 5,665,828 | 19,658 | 125,119 | 4.3 | 11 | 147 | 125,327 |
| 2004/05 | East of 174° W. | 19 | 32 | 637,536 | 2,886,817 | 13,165 | 34,848 | 4.5 | 18 | 148 | 43,576 |
| | West of 174° W. | 6 | 51 | 685,465 | 2,688,234 | 7,240 | 56,846 | 3.9 | 12 | 146 | 43,560 |
| | TOTAL | 22 | 83 | 1,323,001 | 5,575,051 | 20,405 | 91,694 | 4.2 | 14 | 147 | 87,136 |
| 2005/06 ^f | East of 174° W. | 7 | 33 | 560,906 | 2,567,781 | 8,833 | 21,898 | 4.6 | 25 | 151 | 23,791 |
| | West of 174° W. | 3 | 43 | 571,014 | 2,384,567 | 4,800 | 27,503 | 4.2 | 21 | 148 | 26,500 |
| | TOTAL | 8 | 72 | 1,131,920 | 4,952,348 | 13,633 | 49,401 | 4.4 | 23 | 149 | 50,291 |
| 2006/07 ^f | East of 174° W. | 6 | 32 | 585,676 | 2,692,010 | 8,150 | 23,839 | 4.6 | 24 | 152 | 31,311 |
| | West of 174° W. | 3 | 32 | 462,529 | 2,002,190 | 6,000 | 22,694 | 4.3 | 20 | 150 | 19,768 |
| | TOTAL | 7 | 64 | 1,048,205 | 4,694,200 | 14,150 | 46,533 | 4.5 | 23 | 150 | 51,079 |

^a Many vessels fished both east and west of 174° W long., thus total number of vessels reflects registrations for entire Aleutian Islands.

^b Deadloss included.

^c In pounds.

^d Number of legal crabs per pot lift.

^e Carapace length in millimeters, from observer database.

^f Individual Fishing Quota (IFQ) does not include: East of 174° W long. Community Development Quota (CDQ) or West of 174° W long. Adak Community Allocation (ACA) fisheries.

Table 1-5.—Aleutian Islands golden king crab fishery economic performance data, 1981/82 - 2006/07.

| Year | Locale | GHL ^a | Value | | Season Length | |
|---------|-----------------|-------------------------|------------------------|--------------------|---------------|-------------|
| | | | Ex-vessel ^b | Total ^c | Days | Dates |
| 1981/82 | East of 172° W. | 7.0 - 17.0 ^d | \$2.05 | \$0.22 | 75 | 11/01-01/15 |
| | West of 172° W. | NA | \$2.06 | \$2.41 | 227 | 11/01-06/15 |
| | Total | - | \$2.06 | \$2.63 | | |
| 1982/83 | East of 172° W. | NA | \$3.00 | \$3.41 | 105 | 11/01-02/15 |
| | West of 172° W. | NA | \$3.01 | \$23.43 | 166 | 11/01-04/15 |
| | Total | | \$3.01 | \$26.85 | | |
| 1983/84 | East of 172° W. | NA | \$3.05 | \$5.38 | 105 | 11/01-02/15 |
| | West of 172° W. | | \$2.92 | \$23.23 | 157 | 11/10-04/15 |
| | Total | | \$2.94 | \$28.62 | | |
| 1984/85 | East of 171° W. | NA | \$1.35 | \$1.96 | 229 | 07/01-02/15 |
| | West of 171° W. | | \$2.00 | \$6.11 | 240 | 11/10-07/08 |
| | Total | | \$1.79 | \$8.07 | | |
| 1985/86 | East of 171° W. | NA | \$2.00 | \$3.86 | 121 | 07/01-10/31 |
| | West of 171° W. | | \$2.50 | \$27.80 | 288 | 11/01-08/15 |
| | Total | | \$2.43 | \$31.66 | | |
| 1986/87 | East of 171° W. | NA | \$2.85 | \$5.30 | 182 | 07/01-12/31 |
| | West of 171° W. | | \$3.00 | \$37.56 | 288 | 11/01-08/15 |
| | Total | | \$2.98 | \$42.86 | | |
| 1987/88 | East of 171° W. | NA | \$2.85 | \$3.87 | 62 | 07/01-09/02 |
| | West of 171° W. | | \$3.00 | \$23.51 | 289 | 11/01-08/15 |
| | Total | | \$2.98 | \$27.38 | | |
| 1988/89 | East of 171° W. | NA | \$3.00 | \$4.57 | 93 | 09/01-12/04 |
| | West of 171° W. | | \$3.20 | \$28.66 | 288 | 11/01-08/15 |
| | Total | | \$3.17 | \$33.23 | | |
| 1989/90 | East of 171° W. | NA | \$3.50 | \$6.42 | 104 | 09/01-02/15 |
| | West of 171° W. | | \$3.00 | \$30.18 | 288 | 11/01-08/15 |
| | Total | | \$3.08 | \$36.61 | | |
| 1990/91 | East of 171° W. | NA | \$3.00 | \$5.03 | 68 | 09/01-11/09 |
| | West of 171° W. | | \$3.00 | \$15.22 | 288 | 11/01-08/15 |
| | Total | | \$3.00 | \$20.25 | | |
| 1991/92 | East of 171° W. | NA | \$2.00 | \$2.81 | 74 | 09/01-11/15 |
| | West of 171° W. | | \$2.50 | \$15.39 | 289 | 11/01-08/15 |
| | Total | | \$2.41 | \$18.20 | | |
| 1992/93 | East of 171° W. | NA | \$2.50 | \$3.30 | 76 | 09/01-11/17 |
| | West of 171° W. | | \$2.05 | \$9.86 | 288 | 11/01-08/15 |
| | Total | | \$2.15 | \$13.16 | | |
| 1993/94 | East of 171° W. | NA | \$2.15 | \$1.95 | 212 | 09/01-03/1 |
| | West of 171° W. | | \$2.50 | \$11.18 | 288 | 11/01-08/15 |
| | Total | | \$2.44 | \$13.13 | | |

-continued-

Table 1-5.--Page 2 of 3.

| Year | GHL ^a | Value | | Season Length | | |
|----------------------|------------------|------------------------|--------------------|----------------|-------|-------------|
| | | Ex-vessel ^b | Total ^c | Days | Dates | |
| 1994/95 | East of 171° W. | NA | \$4.00 | \$6.88 | 57 | 09/01-10/28 |
| | West of 171° W. | | \$3.33 | \$20.43 | 288 | 11/01-08/15 |
| | Total | | \$3.48 | \$27.31 | | |
| 1995/96 | East of 171° W. | 1.5 | \$2.60 | \$5.15 | 38 | 09/01-10/09 |
| | West of 171° W. | 5.0 - 6.0 | \$2.10 | \$9.57 | 289 | 11/01-08/15 |
| | Total | - | \$2.25 | \$14.72 | | |
| 1996/97 | East of 174° W. | 3.2 | \$2.23 | \$6.93 | 115 | 09/01-12/25 |
| | West of 174° W. | 2.7 | \$2.23 | \$5.60 | 365 | 09/01-08/31 |
| | Total | 5.9 | \$2.23 | \$12.53 | | |
| 1997/98 | East of 174° W. | 3.2 | \$2.25 | \$7.58 | 84 | 09/01-11/24 |
| | West of 174° W. | 2.7 | \$2.10 | \$4.96 | 365 | 09/01-08/31 |
| | Total | 5.9 | \$2.19 | \$12.54 | | |
| 1998/99 | East of 174° W. | 3.0 | \$1.87 | \$5.92 | 68 | 09/01-11/07 |
| | West of 174° W. | 2.7 | \$2.04 | \$3.41 | 365 | 09/01-08/31 |
| | Total | 5.7 | \$1.92 | \$9.33 | | |
| 1999/00 | East of 174° W. | 3.0 | \$3.26 | \$9.78 | 55 | 09/01-10/25 |
| | West of 174° W. | 2.7 | \$3.09 | \$8.23 | 348 | 09/01-8/14 |
| | Total | 5.7 | \$3.15 | \$18.01 | | |
| 2000/01 | East of 174° W. | 3.0 | \$3.50 | \$10.77 | 40 | 08/15-09/24 |
| | West of 174° W. | 2.7 | \$3.09 | \$8.75 | 286 | 08/15-05/28 |
| | Total | 5.7 | \$3.33 | \$19.52 | | |
| 2001/02 | East of 174° W. | 3.0 | \$3.30 | \$10.26 | 26 | 08/15-09/10 |
| | West of 174° W. | 2.7 | \$2.93 | \$7.87 | 227 | 08/15-03/30 |
| | Total | 5.7 | \$3.16 | \$18.13 | | |
| 2002/03 | East of 174° W. | 3.0 | \$3.30 | \$9.13 | 23 | 08/15-09/07 |
| | West of 174° W. | 2.7 | \$3.50 | \$9.13 | 205 | 08/15-03/08 |
| | Total | 5.7 | \$3.38 | \$18.26 | | |
| 2003/04 | East of 174° W. | 3.0 | \$3.46 | \$10.05 | 24 | 08/15-09/08 |
| | West of 174° W. | 2.7 | \$3.83 | \$10.11 | 175 | 08/15-02/06 |
| | Total | 5.7 | \$3.61 | \$20.16 | | |
| 2004/05 | East of 174° W. | 3.0 | \$3.18 | \$9.05 | 14 | 8/15-8/29 |
| | West of 174° W. | 2.7 | \$3.09 | \$8.16 | 141 | 8/15-1/03 |
| | Total | 5.7 | \$3.14 | \$17.23 | | |
| 2005/06 ^e | East of 174° W. | 2.7 | \$2.53 | \$6.50 | 273 | 8/15-5/15 |
| | West of 174° W. | 2.43 | \$2.05 | \$4.89 | 273 | 8/15-5/15 |
| | Total | 5.13 | \$2.32 | \$11.39 | | |

- continued -

Table 1-5.—Page 3 of 3.

| Year | GHL ^a | Value | | Season Length | | |
|----------------------|------------------|------------------------|--------------------|---------------|-------|-----------|
| | | Ex-vessel ^b | Total ^c | Days | Dates | |
| 2006/07 ^e | East of 174° W. | 2.7 | \$1.77 | \$4.71 | 273 | 8/15-5/15 |
| | West of 174° W. | 2.43 | \$1.33 | \$2.64 | 273 | 8/15-5/15 |
| | Total | 5.13 | \$1.58 | \$7.35 | | |

^a Guideline harvest level, millions of pounds. Prior to 1996/97, management was based on size, sex, and season.

^b Average price per pound.

^c Millions of dollars.

^d GHL includes all king crab species.

^e Individual fishing quota (IFQ), does not include CDQ or ACA fisheries.

Table 1-6.—Eastern Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical week, 2006/07.

| Week Ending | Statistical Week ^a | Number of | | | Harvest ^{b,c} | Average | | Deadloss ^c |
|--------------|-------------------------------|-----------|-------------------|---------------|------------------------|---------------------|-------------------|-----------------------|
| | | Landings | Crab ^b | Pots lifted | | Weight ^c | CPUE ^d | |
| 19-Aug | 33 | 3 | 78,192 | 3,486 | 368,421 | 4.7 | 22.43 | 3,052 |
| 26-Aug | 34 | | | | CONFIDENTIAL | | | |
| 2-Sep | 35 | | | | CONFIDENTIAL | | | |
| 9-Sep | 36 | | | | CONFIDENTIAL | | | |
| 16-Sep | 37 | 4 | 89,054 | 3,323 | 410,688 | 4.6 | 26.8 | 2,723 |
| 23-Sep | 38 | | | | CONFIDENTIAL | | | |
| 30-Sep | 39 | | | | CONFIDENTIAL | | | |
| 7-Oct | 40 | | | | CONFIDENTIAL | | | |
| 14-Oct | 41 | | | | CONFIDENTIAL | | | |
| 21-Oct | 42 | | | | NO LANDINGS | | | |
| 28-Oct | 43 | | | | CONFIDENTIAL | | | |
| 4-Nov | 44 | | | | CONFIDENTIAL | | | |
| 11-Nov | 45 | | | | CONFIDENTIAL | | | |
| 18-Nov | 46 | | | | NO LANDINGS | | | |
| 25-Nov | 47 | | | | NO LANDINGS | | | |
| 2-Dec | 48 | | | | CONFIDENTIAL | | | |
| 9-Dec | 49 | | | | CONFIDENTIAL | | | |
| 16-Dec | 50 | | | | NO LANDINGS | | | |
| 23-Dec | 51 | | | | NO LANDINGS | | | |
| 30-Dec | 52 | | | | NO LANDINGS | | | |
| 6-Jan | 1 | | | | NO LANDINGS | | | |
| 13-Jan | 2 | | | | CONFIDENTIAL | | | |
| 20-Jan | 3 | | | | NO LANDINGS | | | |
| 27-Jan | 4 | | | | NO LANDINGS | | | |
| 3-Feb | 5 | | | | NO LANDINGS | | | |
| 10-Feb | 6 | | | | NO LANDINGS | | | |
| 17-Feb | 7 | | | | NO LANDINGS | | | |
| 24-Feb | 8 | | | | NO LANDINGS | | | |
| 3-Mar | 9 | | | | NO LANDINGS | | | |
| 10-Mar | 10 | | | | NO LANDINGS | | | |
| 17-Mar | 11 | | | | NO LANDINGS | | | |
| 24-Mar | 12 | | | | NO LANDINGS | | | |
| 31-Mar | 13 | | | | NO LANDINGS | | | |
| Total | | 32 | 585,676 | 23,839 | 2,692,010 | 4.6 | 24 | 31,311 |

^a Landings in a statistical week are based on the date fishing began, not the date landed.

^b Deadloss included.

^c In pounds.

^d Number of legal crabs per pot lift.

Table 1-7.—Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical area, 2006/07.

| Locate | Statistical Area | Number of | | | Average | | Deadloss ^b |
|--------------------|------------------|-----------|-------------------|---------------|------------------------|---------------------------------------|-----------------------|
| | | Landings | Crab ^a | Pots lifted | Harvest ^{a,b} | Weight ^b CPUE ^c | |
| | 705200 | 7 | 53,738 | 2713 | 248,920 | 4.6 | 2,982 |
| | 705232 | 25 | 142,120 | 6,581 | 658,359 | 4.6 | 6,556 |
| | 715202 | 26 | 114,264 | 4,320 | 524,637 | 4.6 | 5,997 |
| | 715231 | 5 | 29,323 | 970 | 133,826 | 4.6 | 1,503 |
| | 725201 | 24 | 80,605 | 2,990 | 368,633 | 4.6 | 4,848 |
| | 725203 | 18 | 14,620 | 406 | 67,196 | 4.6 | 626 |
| Other ^d | | | 613,535 | 28,553 | 2,692,630 | 4.4 | 28,567 |
| Total | | 64 | 1,048,205 | 46,533 | 4,694,201 | 4.5 | 51,079 |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

^d Combination of 83 statistical areas in which landings were made by fewer than three vessels.

Table 1-8.—Western Aleutian Islands golden king crab Individual Fishing Quota (IFQ) catch by statistical week, 2006/07.

| Week Ending | Statistical Week ^a | Number of | | | Harvest ^{b,c} | Average | | Deadloss ^c |
|--------------|-------------------------------|-----------|-------------------|---------------|------------------------|---------------------|-------------------|-----------------------|
| | | Landings | Crab ^b | Pots lifted | | Weight ^c | CPUE ^d | |
| 19-Aug | 33 | | | | CONFIDENTIAL | | | |
| 26-Aug | 34 | | | | CONFIDENTIAL | | | |
| 2-Sep | 35 | | | | NO LANDINGS | | | |
| 9-Sep | 36 | | | | NO LANDINGS | | | |
| 16-Sep | 37 | | | | CONFIDENTIAL | | | |
| 23-Sep | 38 | | | | CONFIDENTIAL | | | |
| 30-Sep | 39 | | | | NO LANDINGS | | | |
| 7-Oct | 40 | | | | CONFIDENTIAL | | | |
| 14-Oct | 41 | | | | NO LANDINGS | | | |
| 21-Oct | 42 | | | | NO LANDINGS | | | |
| 28-Oct | 43 | | | | CONFIDENTIAL | | | |
| 4-Nov | 44 | | | | CONFIDENTIAL | | | |
| 11-Nov | 45 | | | | CONFIDENTIAL | | | |
| 18-Nov | 46 | | | | CONFIDENTIAL | | | |
| 25-Nov | 47 | | | | CONFIDENTIAL | | | |
| 2-Dec | 48 | | | | NO LANDINGS | | | |
| 9-Dec | 49 | | | | CONFIDENTIAL | | | |
| 16-Dec | 50 | | | | CONFIDENTIAL | | | |
| 23-Dec | 51 | | | | CONFIDENTIAL | | | |
| 30-Dec | 52 | | | | CONFIDENTIAL | | | |
| 6-Jan | 1 | | | | CONFIDENTIAL | | | |
| 13-Jan | 2 | | | | NO LANDINGS | | | |
| 20-Jan | 3 | | | | CONFIDENTIAL | | | |
| 27-Jan | 4 | | | | CONFIDENTIAL | | | |
| 3-Feb | 5 | | | | CONFIDENTIAL | | | |
| 10-Feb | 6 | | | | CONFIDENTIAL | | | |
| 17-Feb | 7 | | | | CONFIDENTIAL | | | |
| 24-Feb | 8 | | | | NO LANDINGS | | | |
| 3-Mar | 9 | | | | CONFIDENTIAL | | | |
| 10-Mar | 10 | | | | CONFIDENTIAL | | | |
| 17-Mar | 11 | | | | CONFIDENTIAL | | | |
| 24-Mar | 12 | | | | CONFIDENTIAL | | | |
| 31-Mar | 13 | | | | CONFIDENTIAL | | | |
| 7-Apr | 14 | | | | CONFIDENTIAL | | | |
| 14-Apr | 15 | | | | NO LANDINGS | | | |
| 21-Apr | 16 | | | | NO LANDINGS | | | |
| 28-Apr | 17 | | | | CONFIDENTIAL | | | |
| Total | | 32 | 462,529 | 22,694 | 2,002,190 | 4.3 | 20 | 19,768 |

^a Landings in a statistical week are based on the date fishing began, not the date landed.

^b Deadloss included.

^c In pounds.

^d Number of legal crabs per pot lift.

Table 1-9.—Aleutian Islands scarlet king crab fishery data, 1992-2006.

| Year | Area | Number of | | | Pots lifted | Harvest ^{a,b} | Average | | Value | | Deadloss ^b |
|------|------------------|-----------|----------|--------------------|-------------|------------------------|---------------------|-------------------|------------------------|--------------------|-----------------------|
| | | Vessels | Landings | Crabs ^a | | | Weight ^b | CPUE ^c | Ex-vessel ^d | Total ^e | |
| 1992 | Dutch Harbor | 0 | | | | NO LANDINGS | | | | | |
| | Adak | 1 | | | | CONFIDENTIAL | | | | | |
| 1993 | Dutch Harbor | 0 | | | | NO LANDINGS | | | | | |
| | Adak | 0 | | | | NO LANDINGS | | | | | |
| 1994 | Dutch Harbor | 1 | | | | CONFIDENTIAL | | | | | |
| | Adak | 5 | 9 | 6,613 | 7,370 | 21,269 | 3.2 | 1 | \$1.24 | \$26.4 | 10,829 |
| | Total | 6 | | | | CONFIDENTIAL | | | | | |
| 1995 | Dutch Harbor | 3 | 7 | 6,270 | 5,706 | 13,871 | 2.2 | 1 | \$3.01 | \$41.8 | 1,755 |
| | Adak | 6 | 18 | 19,544 | 15,046 | 49,126 | 2.5 | 1 | \$2.95 | \$144.9 | 2,066 |
| | Total | 8 | 25 | 25,814 | 20,752 | 62,997 | 2.4 | 1 | \$2.96 | \$186.5 | 3,821 |
| 1996 | Dutch Harbor | 3 | 10 | 9,967 | 8,071 | 20,538 | 2.1 | 1 | \$1.78 | \$37.1 | 3,911 |
| | Adak | 4 | 13 | 10,199 | 18,547 | 24,161 | 2.4 | <1 | \$1.80 | \$43.5 | 1,861 |
| | Total | 7 | 23 | 20,166 | 26,618 | 44,699 | 2.2 | <1 | \$1.79 | \$80.6 | 5,772 |
| 1997 | Aleutian Islands | 3 | 12 | 2,698 | 21,217 | 6,720 | 2.5 | <1 | \$1.40 | \$9.4 | 408 |
| 1998 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 1999 | Aleutian Islands | 1 | | | | CONFIDENTIAL | | | | | |
| 2000 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 2001 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 2002 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 2003 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 2004 | Aleutian Islands | 2 | | | | CONFIDENTIAL | | | | | |
| 2005 | Aleutian Islands | 0 | | | | NO LANDINGS | | | | | |
| 2006 | Aleutian Islands | 0 | | | | NO LANDINGS | | | | | |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

^d Average price per pound.

^e Thousands of dollars.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-10.—Eastern Aleutian District Tanner crab fishery data, 1973/74 - 2007.

| Season | Locale | Number of | | | | GHLL | Harvest ^{a,b} | Average | | Deadloss ^b |
|-------------------|---------------|-----------|-----------|-----------|-------------|----------------|------------------------|---------------------|-------------------|-----------------------|
| | | Vessels | Landings | Crabs | Pots lifted | | | Weight ^b | CPUE ^c | |
| 1973/74 | | 6 | 14 | 210,539 | NA | NA | 498,836 | 2.4 | 60 | 0 |
| 1974/75 | | | | | | CONFIDENTIAL | | | | |
| 1975/76 | | 8 | 13 | 219,166 | 4,646 | NA | 534,295 | 2.4 | 47 | 0 |
| 1976/77 | | 12 | 35 | 544,755 | 9,640 | NA | 1,239,569 | 2.3 | 57 | 0 |
| 1977/78 | | 15 | 198 | 1,104,631 | 29,855 | NA | 2,494,631 | 2.3 | 37 | 0 |
| 1978/79 | | 20 | 174 | 542,081 | 18,618 | NA | 1,280,115 | 2.4 | 29 | 0 |
| 1979/80 | | 18 | 107 | 352,819 | 18,040 | NA | 886,487 | 2.5 | 20 | NA |
| 1981 | | 29 | 119 | 264,238 | 21,771 | NA | 654,514 | 2.5 | 12 | NA |
| 1982 | | 31 | 138 | 332,260 | 30,109 | NA | 739,694 | 2.2 | 11 | NA |
| 1983 | | 23 | 107 | 250,774 | 22,168 | NA | 547,830 | 2.2 | 11 | NA |
| 1984 | | 16 | 91 | 104,761 | 11,069 | NA | 239,585 | 2.3 | 9 | NA |
| 1985 | | 7 | 56 | 78,930 | 6,295 | NA | 181,407 | 2.3 | 13 | 60 |
| 1986 | | 8 | 37 | 73,187 | 10,244 | NA | 167,339 | 2.3 | 7 | 400 |
| 1987 | | 8 | 65 | 72,098 | 5,915 | NA | 162,097 | 2.2 | 12 | 115 |
| 1988 | | 20 | 130 | 129,478 | 11,011 | NA | 309,918 | 2.4 | 12 | 2,000 |
| 1989 | | 12 | 108 | 144,593 | 14,615 | NA | 326,196 | 2.3 | 10 | 2,300 |
| 1990 | | 10 | 75 | 68,859 | 6,858 | NA | 155,648 | 2.3 | 10 | 0 |
| 1991 | | 5 | 27 | 21,511 | 1,849 | NA | 50,038 | 2.3 | 12 | 0 |
| 1992 | | 4 | 29 | 42,096 | 2,963 | NA | 98,703 | 2.3 | 14 | 0 |
| 1993 | | 7 | 34 | 51,441 | 3,530 | NA | 118,609 | 2.3 | 15 | 0 |
| 1994 | | 8 | 119 | 71,760 | 6,303 | NA | 166,080 | 2.3 | 11 | 40 |
| 1995-2002 | | | | | | FISHERY CLOSED | | | | |
| 2003 ^d | | 3 | 10 | 6,695 | 191 | | 15,138 | 2.3 | 35 | 9 |
| 2004 | Unalaska Bay | 10 | 36 | * | * | 47,219 | * | 2.3 | * | * |
| | Makushim/Skan | 9 | 14 | * | * | 87,891 | * | 2.3 | * | * |
| | Total | 14 | 50 | * | * | 135,110 | * | 2.3 | * | * |
| 2005 | Unalaska Bay | 25 | 79 | 14,249 | 696 | 35,304 | 34,022 | 2.4 | 20 | 0 |
| 2006 | Makushim/Skan | 10 | 32 | * | * | 87,241 | * | 2.4 | * | * |
| 2007 | Akutun Bay | 3 | 7 | * | * | 35,000 | * | 2.2 | * | * |
| | Unalaska Bay | 12 | 41 | * | * | 49,000 | * | 2.5 | * | * |
| | Total | 13 | 48 | * | * | 84,000 | * | 2.4 | * | * |

^a Deadloss included beginning 1980.

^b In pounds.

^c Number of legal crabs per pot lift.

^d January/February survey (fish ticket harvest code 15).

NA = Not Available.

*Confidential = Less than three vessels or processors participated in fishery.

Table 1-11.—Eastern Aleutian District Tanner crab fishery economic performance data, 1973/74 - 2007.

| Season | Date | | Value | |
|-----------|----------------|--------|------------------------|--------------------|
| | Opened | Closed | Ex-vessel ^a | Total ^b |
| 1973/74 | 1-Oct | 31-Jul | NA | |
| 1974/75 | 18-Jan | 15-Oct | NA | |
| 1975/76 | 20-Jan | 15-Oct | \$0.20 | \$0.11 |
| 1976/77 | 7-Nov | 15-Jun | \$0.30 | \$0.38 |
| 1977/78 | 1-Nov | 15-Jun | \$0.38 | \$0.95 |
| 1978/79 | 1-Nov | 15-Jun | \$0.52 | \$0.67 |
| 1979/80 | 1-Nov | 15-Jun | \$0.52 | \$0.46 |
| 1981 | 15-Jan | 15-Jun | \$0.58 | \$0.38 |
| 1982 | 15-Feb | 15-Jun | \$1.25 | \$0.92 |
| 1983 | 15-Feb | 15-Jun | \$1.20 | \$0.66 |
| 1984 | 15-Feb | 15-Jun | \$0.98 | \$0.23 |
| 1985 | 15-Jan | 15-Jun | \$0.96 | \$0.17 |
| 1986 | 15-Jan | 15-Jun | \$1.66 | \$0.28 |
| 1987 | 15-Jan | 15-Jun | \$2.03 | \$0.33 |
| 1988 | 15-Jan | 10-Apr | \$2.18 | \$0.67 |
| 1989 | 15-Jan | 7-May | \$2.72 | \$0.88 |
| 1990 | 15-Jan | 9-Apr | \$1.97 | \$0.31 |
| 1991 | 15-Jan | 31-Mar | \$1.25 | \$0.06 |
| 1992 | 15-Jan | 31-Mar | \$2.07 | \$0.20 |
| 1993 | 15-Jan | 31-Mar | \$1.70 | \$0.20 |
| 1994 | 15-Jan | 31-Mar | \$2.11 | \$0.35 |
| 1995-2003 | FISHERY CLOSED | | | |
| 2004 | 15-Jan | 3-Feb | * | * |
| 2005 | 15-Jan | 18-Jan | \$2.58 | \$0.09 |
| 2006 | 15-Jan | 21-Jan | * | * |
| 2007 | 15-Jan | 31-Mar | * | * |

^a Average price per pound.

^b Millions of dollars.

NA = Not Available.

*Confidential = Less than three vessels or processors participated in fishery.

Table 1-12.—Eastern Aleutian District grooved Tanner crab fishery data, 1993 - 2006.

| Year | Number of | | | Harvest ^{a,b} | Average | | Value | | Deadloss ^b | |
|-------------|-----------|----------|--------------------|------------------------|-------------|---------------------|-------------------|------------------------|-----------------------|--------------------|
| | Vessels | Landings | Crabs ^a | | Pots lifted | Weight ^b | CPUE ^c | Ex-vessel ^d | | Total ^e |
| 1993 | 1 | | | CONFIDENTIAL | | | | | | |
| 1994 | 4 | 28 | 429,777 | 37,246 | 754,983 | 1.8 | 11 | \$1.72 | \$1.3 | 19,151 |
| 1995 | 8 | 55 | 511,125 | 77,443 | 879,386 | 1.7 | 6 | \$1.57 | \$1.4 | 30,348 |
| 1996 | 3 | 25 | 54,903 | 21,994 | 104,680 | 1.9 | 2 | \$0.99 | \$0.1 | 7,496 |
| 1997-2000 | | | | NO LANDINGS | | | | | | |
| 2001 | 1 | | | CONFIDENTIAL | | | | | | |
| 2002 - 2006 | | | | NO LANDINGS | | | | | | |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

^d Average price per pound.

^e Millions of dollars.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-13.—Eastern Aleutian District triangle Tanner crab fishery data, 1993 - 2006.

| Year | Number of | | | Harvest | Average | | Value | |
|-------------|-----------|----------|-------|--------------|-------------|--------|-------|-----------|
| | Vessels | Landings | Crabs | | Pots lifted | Weight | CPUE | Ex-vessel |
| 1993 | 0 | | | NO LANDINGS | | | | |
| 1994 | 0 | | | NO LANDINGS | | | | |
| 1995 | 2 | | | CONFIDENTIAL | | | | |
| 1996 | 2 | | | CONFIDENTIAL | | | | |
| 1997 - 2000 | 0 | | | NO LANDINGS | | | | |
| 2001 | 1 | | | CONFIDENTIAL | | | | |
| 2002 - 2006 | 0 | | | NO LANDINGS | | | | |

Confidential = Less than three vessels or processors participated in fishery.

Table 1-14.—Western Aleutian District Tanner crab fishery data, 1973/74 - 2006/07.

| Year | Number of | | | Pots lifted | Harvest ^{a,b} | Average | | |
|-------------------|-----------|----------|--------------------|----------------|------------------------|---------------------|-------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | | | Weight ^b | CPUE ^c | Deadloss ^b |
| 1973/74 | 7 | 12 | 31,079 | 2,390 | 71,887 | 2.3 | 13 | NA |
| 1974/75 | | | | CONFIDENTIAL | | | | |
| 1975/76 | | | | CONFIDENTIAL | | | | |
| 1976/77 | | | | NO LANDINGS | | | | |
| 1977/78 | 6 | 7 | 103,190 | 2,700 | 237,512 | 2.3 | 38 | NA |
| 1978/79 | 6 | 9 | 84,129 | 4,730 | 197,244 | 2.3 | 18 | 0 |
| 1979/80 | 10 | 12 | 147,843 | 5,952 | 337,297 | 2.3 | 25 | NA |
| 1980/81 | 9 | 23 | 95,102 | 7,327 | 220,716 | 2.3 | 13 | 0 |
| 1981/82 | 17 | 43 | 364,164 | 21,910 | 838,697 | 2.3 | 17 | 6,470 |
| 1982/83 | 61 | 125 | 225,491 | 40,450 | 488,399 | 2.2 | 6 | 7,662 |
| 1983/84 | 31 | 86 | 171,576 | 20,739 | 384,146 | 2.2 | 8 | 200 |
| 1984/85 | 31 | 41 | 75,009 | 13,416 | 163,460 | 2.2 | 6 | 1,000 |
| 1985/86 | 15 | 30 | 98,089 | 7,999 | 206,814 | 2.1 | 12 | 0 |
| 1986/87 | 8 | 24 | 19,874 | 10,878 | 42,761 | 2.1 | 2 | 200 |
| 1987/88 | 15 | 37 | 63,545 | 7,453 | 141,390 | 2.2 | 9 | 200 |
| 1988/89 | 36 | 77 | 69,280 | 18,906 | 148,997 | 2.1 | 4 | 233 |
| 1989/90 | 12 | 30 | 22,937 | 6,204 | 48,746 | 2.1 | 4 | 3,810 |
| 1990/91 | 5 | 21 | 6,901 | 1,309 | 14,779 | 2.1 | 5 | 125 |
| 1991/92 | 8 | 8 | 3,483 | 986 | 7,825 | 2.2 | 4 | NA |
| 1992/93 | 2 | | | CONFIDENTIAL | | | | |
| 1993/94 | | | | NO LANDINGS | | | | |
| 1994/95 | | | | NO LANDINGS | | | | |
| 1995/96 | 1 | | | CONFIDENTIAL | | | | |
| 1996/97 - 2006/07 | | | | FISHERY CLOSED | | | | |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

NA = Not available.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-15.—Western Aleutian District commercial Tanner crab fishery economic data, 1973/74 - 2006/07.

| Year | Value | |
|-------------------|------------------------|-------------|
| | Ex-vessel ^a | Total |
| 1973/74 | NOT AVAILABLE | |
| 1974/75 | CONFIDENTIAL | |
| 1975/76 | CONFIDENTIAL | |
| 1976/77 | NO LANDINGS | |
| 1977/78 | \$0.38 | \$90,255 |
| 1978/79 | \$0.53 | \$104,539 |
| 1979/80 | \$0.52 | \$175,394 |
| 1980/81 | \$0.54 | \$119,187 |
| 1981/82 | \$1.30 | \$1,081,895 |
| 1982/83 | \$1.27 | \$610,536 |
| 1983/84 | \$0.95 | \$364,749 |
| 1984/85 | \$1.30 | \$211,198 |
| 1985/86 | \$1.40 | \$289,540 |
| 1986/87 | \$1.50 | \$63,842 |
| 1987/88 | \$2.10 | \$296,499 |
| 1988/89 | \$1.00 | \$148,764 |
| 1989/90 | \$1.00 | \$44,936 |
| 1990/91 | \$1.25 | \$18,318 |
| 1991/92 | \$1.00 | \$7,825 |
| 1992/93 | CONFIDENTIAL | |
| 1993/94 | NO LANDINGS | |
| 1994/95 | NO LANDINGS | |
| 1995/96 | CONFIDENTIAL | |
| 1996/97 - 2006/07 | FISHERY CLOSED | |

^a Average price per pound.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-16.—Western Aleutian District grooved Tanner crab fishery data, 1992 - 2006.

| Year | Number of | | Harvest ^{a,b} | Average | | Value | | Deadloss ^b |
|-----------|-----------|-------------|------------------------|---------------------|-------------------|------------------------|--------------------|-----------------------|
| | Vessels | Pots lifted | | Weight ^b | CPUE ^c | Ex-vessel ^d | Total ^e | |
| 1992 | 1 | | | CONFIDENTIAL | | | | |
| 1993 | 0 | | | NO LANDINGS | | | | |
| 1994 | 2 | | | CONFIDENTIAL | | | | |
| 1995 | 6 | 17,749 | 145,795 | 1.9 | 4 | \$2.45 | \$0.36 | 17,190 |
| 1996 | 1 | | | CONFIDENTIAL | | | | |
| 1997-2006 | | | | NO LANDINGS | | | | |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

^d Average price per pound.

^e Millions of dollars.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-17.-Aleutian District Dungeness crab fishery data, 1974 - 2006/07.

| Year | Season Dates | Number of | | | | Pots Lifted | Harvest ^{a,b} | Weight ^b | Average | |
|-----------------|--------------|-----------|----------|--------------------|------------------|-------------|------------------------|---------------------|-------------------|-------------|
| | | Vessels | Landings | Crabs ^a | CPU ^c | | | | CPUE ^c | Price/pound |
| 1974 | 01/01-12/31 | 3 | 13 | 24,459 | 3,399 | 60,517 | 2.4 | 8 | NA | |
| 1975 | 01/01-12/31 | | | | CONFIDENTIAL | | | | | |
| 1976/77 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 1977/78 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 1978/79 | 05/01-01/01 | | | | CONFIDENTIAL | | | | | |
| 1979/80 | 05/01-01/01 | | | | CONFIDENTIAL | | | | | |
| 1980/81 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 1981/82 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 1982/83 | 05/01-01/01 | | | | CONFIDENTIAL | | | | | |
| 1983/84 | 05/01-01/01 | | | | CONFIDENTIAL | | | | | |
| 1984/85 | 05/01-01/01 | 4 | 50 | 40,128 | 13,555 | 91,739 | 2.3 | 3 | \$1.35 | |
| 1985/86 | 05/01-01/01 | 4 | 19 | 8,590 | 1,706 | 17,830 | 2.1 | 5 | NA | |
| 1986/87 | 05/01-01/01 | 2 | | | CONFIDENTIAL | | | | | |
| 1987/88 | 05/01-01/01 | 5 | 43 | 13,247 | 2,987 | 26,627 | 2.0 | 4 | \$0.95 | |
| 1988/89 | 05/01-01/01 | 6 | 45 | 10,814 | 2,581 | 22,634 | 2.1 | 4 | \$0.90 | |
| 1989/90 | 05/01-01/01 | 4 | 31 | 5,165 | 2,078 | 11,124 | 2.1 | 2 | \$0.90 | |
| 1990/91 | 05/01-01/01 | 3 | 11 | 8,379 | 1,345 | 17,365 | 2.1 | 6 | \$0.90 | |
| 1991/92 | 05/01-01/01 | 4 | 14 | 3,654 | 732 | 7,412 | 2.0 | 5 | \$1.25 | |
| 1992/93 | 05/01-01/01 | 4 | 13 | 2,854 | 555 | 5,649 | 2.0 | 5 | \$0.83 | |
| 1993/4 | 05/01-01/01 | 5 | 12 | 3,448 | 797 | 7,531 | 2.2 | 4 | \$0.78 | |
| 1994/95-2000/01 | 05/01-01/01 | 0 | | | | NO LANDINGS | | | | |
| 2001/02 | 05/01-01/01 | 1 | | | CONFIDENTIAL | | | | | |
| 2002/03 | 05/01-01/01 | 1 | | | CONFIDENTIAL | | | | | |
| 2003/04 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 2004/05 | 05/01-01/01 | 0 | | | NO LANDINGS | | | | | |
| 2005/06 | 05/01-01/01 | 1 | | | CONFIDENTIAL | | | | | |
| 2006/07 | 05/01-01/01 | 1 | | | NO LANDINGS | | | | | |

^a Deadloss included.

^b In pounds.

^c Number of legal crabs per pot lift.

NA = Not available.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-18.—Aleutian Islands District trawl shrimp fishery data, 1972 - 2006.

| Year | Season Dates | Number of | | | Tows | Harvest ^a | Value | | Total ^c |
|-----------|--------------|-----------|----------|-------|--------------|----------------------|------------------------|--------|--------------------|
| | | Vessels | Landings | | | | Ex-vessel ^b | | |
| 1972 | 1/1 - 12/1 | | | | CONFIDENTIAL | | | NA | NA |
| 1973 | 1/1 - 12/1 | | | | CONFIDENTIAL | | | NA | NA |
| 1974 | 1/1 - 12/1 | 7 | 88 | 721 | 5,749,407 | | | NA | NA |
| 1975 | 1/1 - 12/1 | 4 | 14 | 54 | 467,196 | | | NA | NA |
| 1976 | 1/1 - 12/1 | 8 | 66 | 689 | 3,670,609 | | | \$0.07 | \$0.26 |
| 1977/78 | 2/1 - 3/1 | 7 | 93 | 1,372 | 6,800,393 | | | \$0.12 | \$0.82 |
| 1978/79 | 4/1 - 3/1 | 7 | 74 | 1,007 | 4,946,350 | | | \$0.15 | \$0.74 |
| 1979/80 | 4/1 - 2/1 | 7 | 68 | 799 | 3,292,049 | | | \$0.20 | \$0.66 |
| 1980 | 3/1 - 12/1 | 4 | 60 | 711 | 2,454,829 | | | \$0.23 | \$0.56 |
| 1981 | 3/1 - 12/2 | 6 | 45 | 551 | 2,185,326 | | | \$0.22 | \$0.48 |
| 1982 | 5/1 - 6/1 | | | | CONFIDENTIAL | | | | |
| 1983-1991 | | 0 | | | NO LANDINGS | | | | |
| 1992 | 1/1 - 12/1 | 4 | 6 | 94 | 72,133 | | | NA | NA |
| 1993-1998 | | 0 | | | NO LANDINGS | | | | |
| 1999 | 1/1 - 7/9 | 2 | | | CONFIDENTIAL | | | | |
| 2000-2006 | | | | | NO LANDINGS | | | | |

^a In pounds.

^b Average price per pound.

^c Millions of dollars.

NA = Not available.

Confidential = Less than three vessels or processors participated in fishery.

Table 1-19.—Aleutian Islands miscellaneous shellfish fishery data 1996 - 2006.

| Year | Fishery | Number of | | Harvest ^a |
|------|-----------------------------|--------------|-----------------|----------------------|
| | | Vessels | Landings | |
| 1996 | Octopus | 35 | 119 | 62,214 3,701 |
| | Sea Urchins | 6 | 15 ^b | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |
| 1997 | Octopus ^c | 38 | 107 | 73,472 |
| | Sea Urchins | NO LANDINGS | | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |
| 1998 | Octopus | CONFIDENTIAL | | 29,360 |
| | Octopus ^c | 24 | 75 | |
| | Sea Urchins | NO LANDINGS | | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |
| 1999 | Octopus ^c | 34 | 95 | 115,322 |
| | Sea Urchins | NO LANDINGS | | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |
| 2000 | Octopus ^c | 31 | 91 | 21,265 |
| | Sea Urchins | NO LANDINGS | | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |
| 2001 | Octopus ^c | 25 | 51 | 13,097 |
| | Sea Urchins | NO LANDINGS | | |
| | Sea Cucumbers | NO LANDINGS | | |
| | Hair Crab | NO LANDINGS | | |
| | Snails | NO LANDINGS | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | |

-continued-

Table 1-19.—Page 2 of 2.

| Year | Fishery | Number of | | Harvest ^a | | |
|-----------------------------|------------------------------------|------------------------------------|------------|----------------------|-----|---------|
| | | Vessels | Landings | | | |
| 2002 | Octopus ^c | 56 | 186 | 96,585 | | |
| | Sea Urchins | NO LANDINGS | | | | |
| | Sea Cucumbers | NO LANDINGS | | | | |
| | Hair Crab | NO LANDINGS | | | | |
| | Snails | NO LANDINGS | | | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | | | |
| 2003 | Octopus ^c | 70 | 313 | 242,946 | | |
| | Sea Urchins | NO LANDINGS | | | | |
| | Sea Cucumbers | NO LANDINGS | | | | |
| | Hair Crab | NO LANDINGS | | | | |
| | Snails | NO LANDINGS | | | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | | | |
| 2004 | Octopus ^c | 72 | 401 | 720,997 | | |
| | Octopus, state-waters ^d | 14 | 31 | | | |
| | Total | 86 | 432 | Confidential | | |
| | Sea Urchins | NO LANDINGS | | | | |
| | Sea Cucumbers | NO LANDINGS | | | | |
| | Hair Crab | NO LANDINGS | | | | |
| | Snails | NO LANDINGS | | | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | | | |
| | 2005 | Octopus ^c | 55 | | 334 | 438,794 |
| | | Octopus, state-waters ^d | 1 | | 2 | |
| Total | | 56 | 336 | Confidential | | |
| Sea Urchins | | NO LANDINGS | | | | |
| Sea Cucumbers | | NO LANDINGS | | | | |
| Hair Crab | | NO LANDINGS | | | | |
| Snails | | NO LANDINGS | | | | |
| <i>Paralomis multispina</i> | | NO LANDINGS | | | | |
| 2006 | | Octopus ^c | 33 | | 113 | 182,353 |
| | | Octopus, state-waters ^d | 2 | | 0 | |
| | Total | 35 | 113 | 0 | | |
| | Sea Urchins | NO LANDINGS | | | | |
| | Sea Cucumbers | NO LANDINGS | | | | |
| | Hair Crab | NO LANDINGS | | | | |
| | Snails | NO LANDINGS | | | | |
| | <i>Paralomis multispina</i> | NO LANDINGS | | | | |

^a In pounds. Deadloss included.

^b Dives.

^c Octopus incidental harvest in the Pacific cod fishery.

^d Commissioner's permit fishery.

Confidential = Less than three vessels or processors participated in fishery.

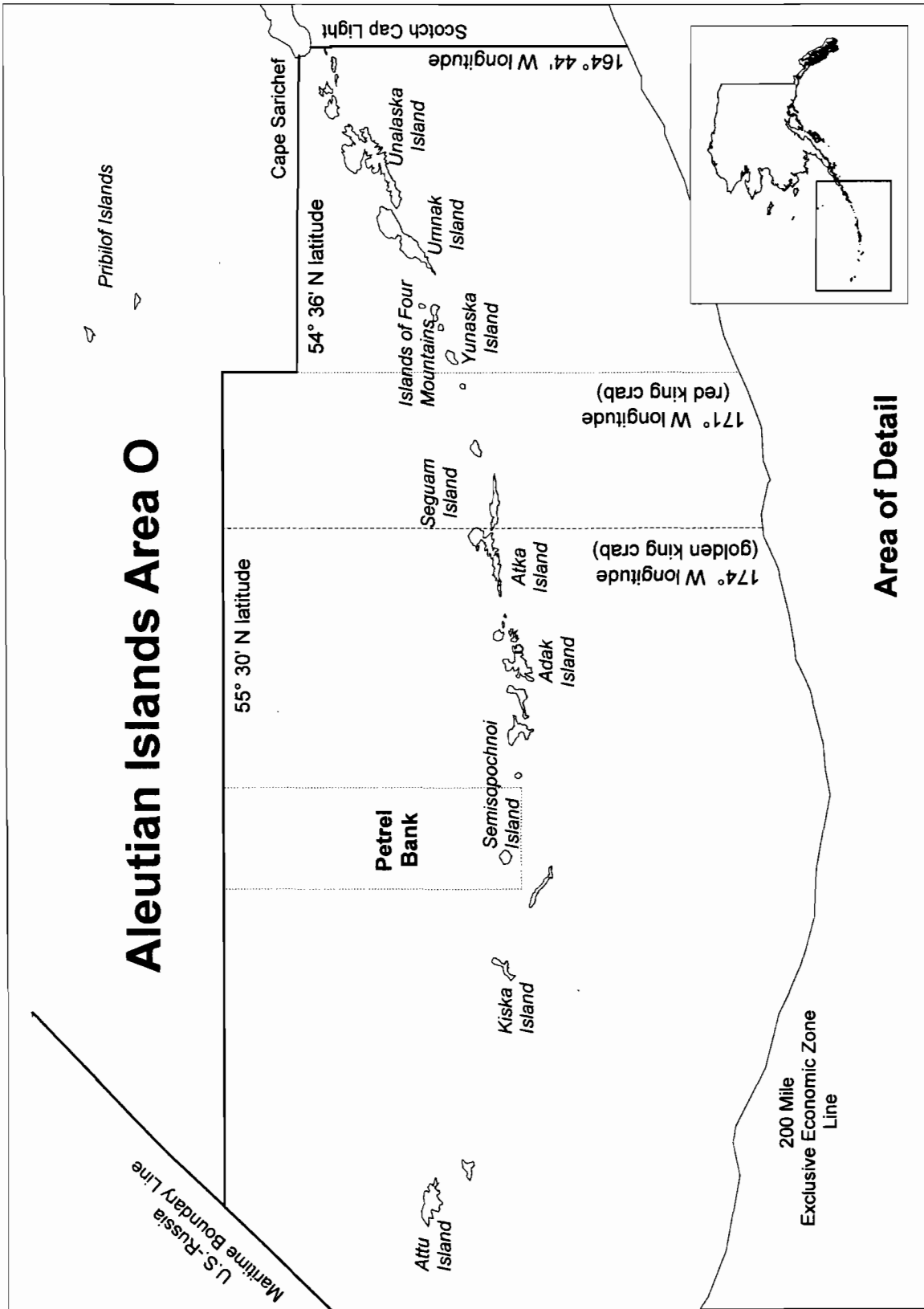


Figure 1-1.-Aleutian Islands, Area O, red and golden king crab management area.

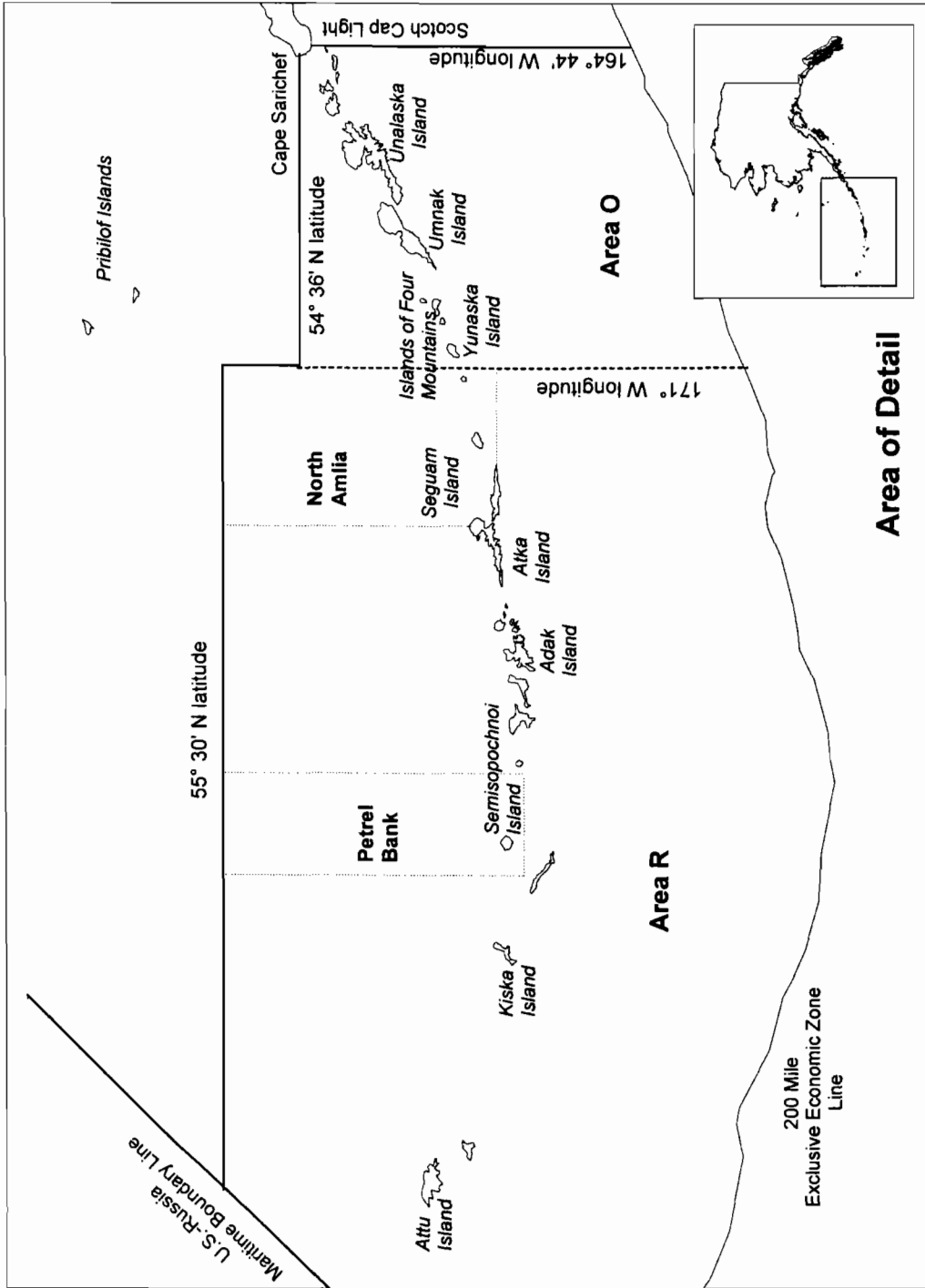


Figure 1-2.-Adak (Area R) and Dutch Harbor (Area O) king crab Registration Areas and Districts 1981/82 – 1996/97.

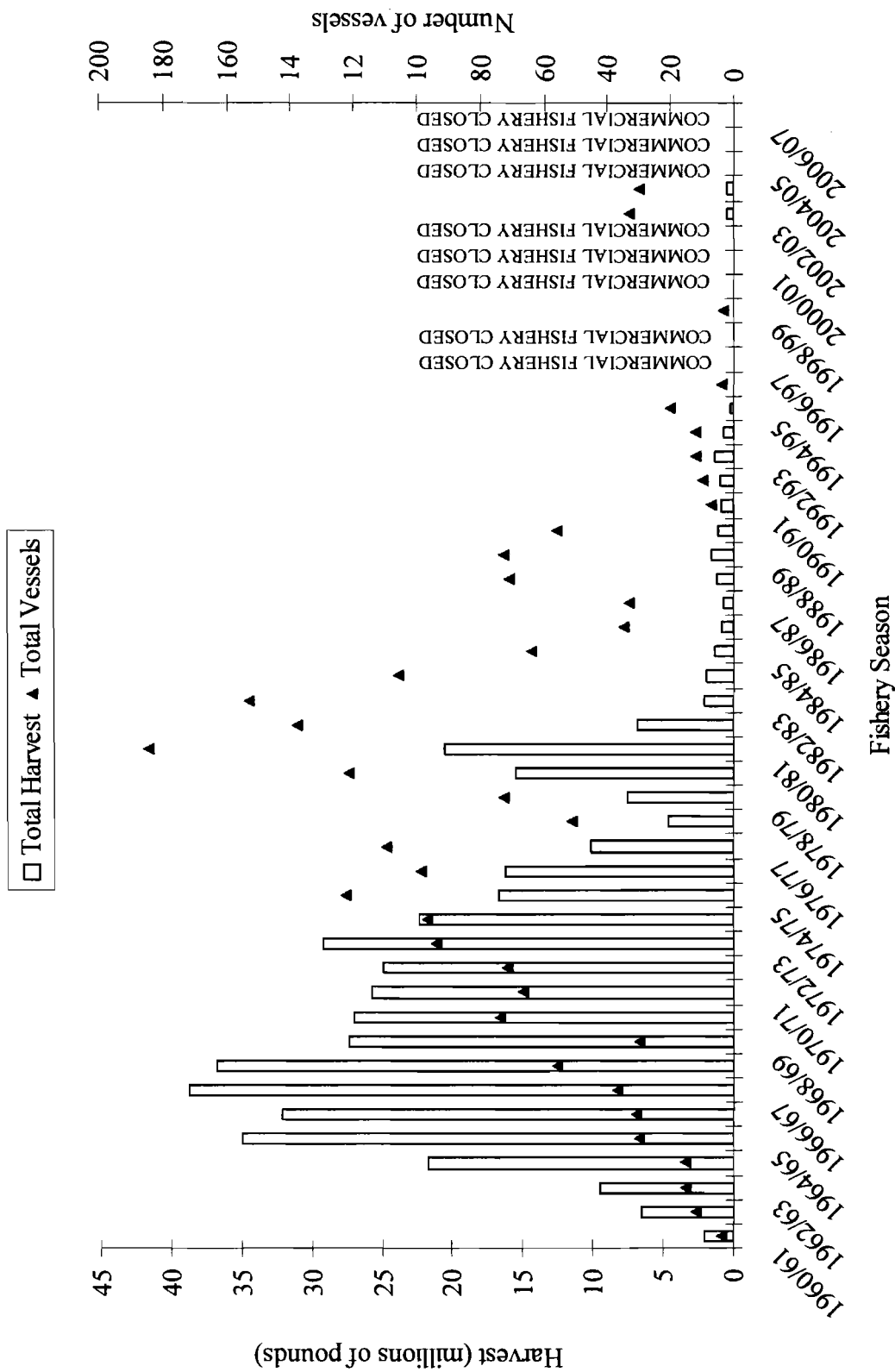


Figure 1-3.—Aleutian Islands red king crab fishery harvest and vessel effort, 1960/61 – 2006/07.

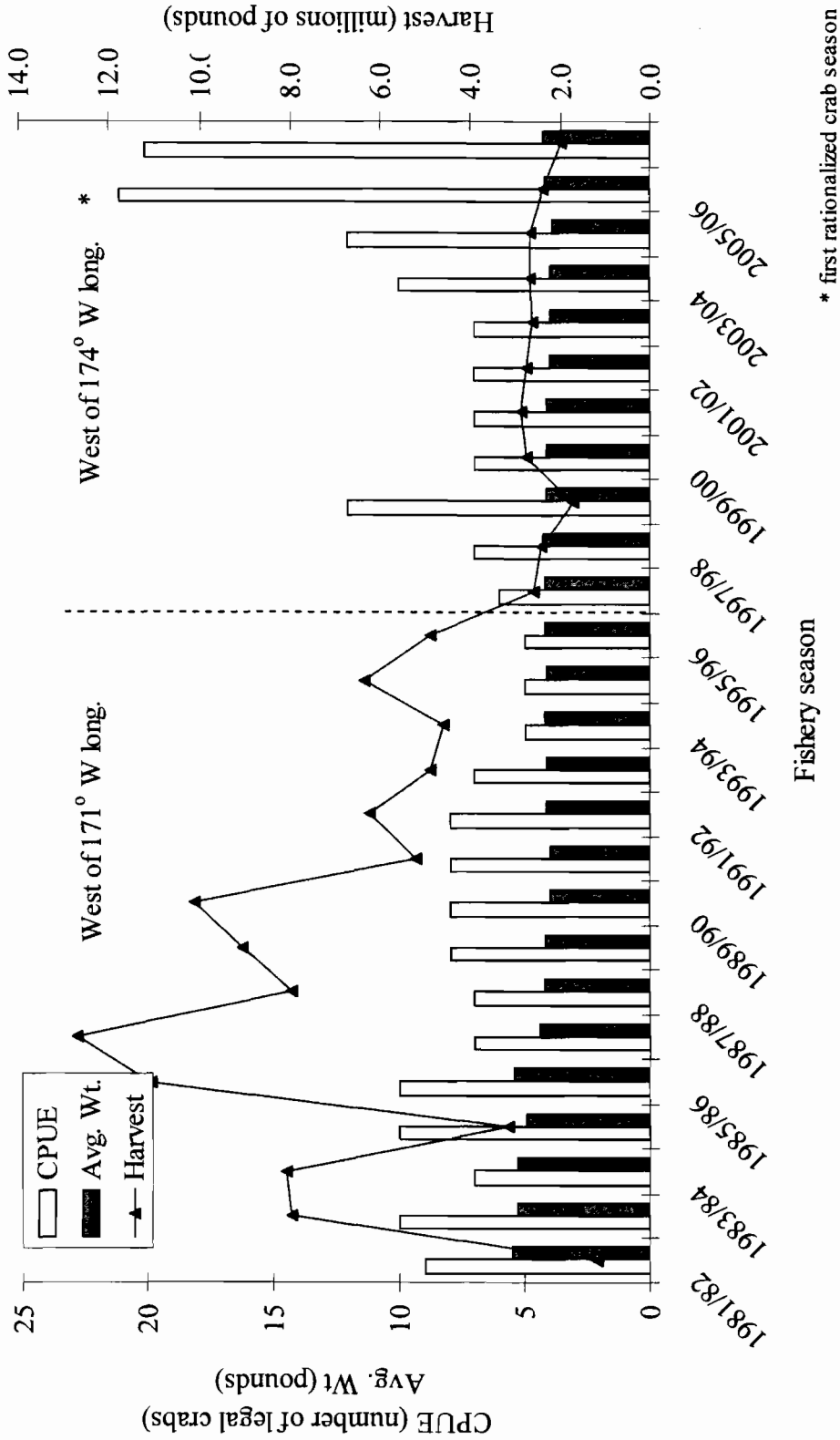


Figure 1-4.—Western Aleutian Islands golden king crab fishery harvest, fishery performance and average weight data for the 1981/82 – 2006/07 seasons, does not include Adak Community Allocation (west of 174° W long) fishery.

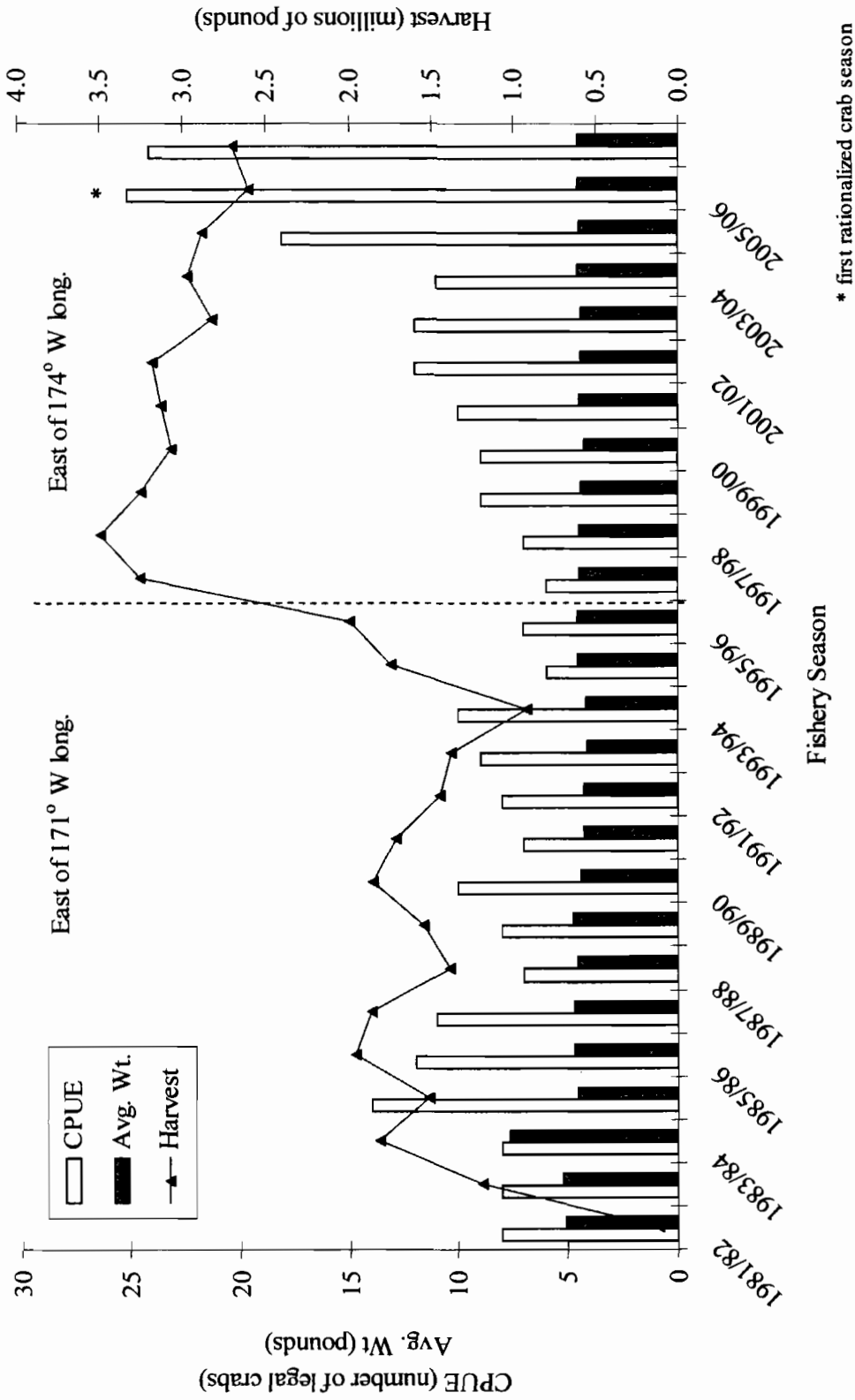


Figure 1-5.—Eastern Aleutian Islands golden king crab fishery harvest, fishery performance and average weight data for the 1981/82 – 2006/07 seasons, does not include Community Development Quota (east of 174° W long) fishery.

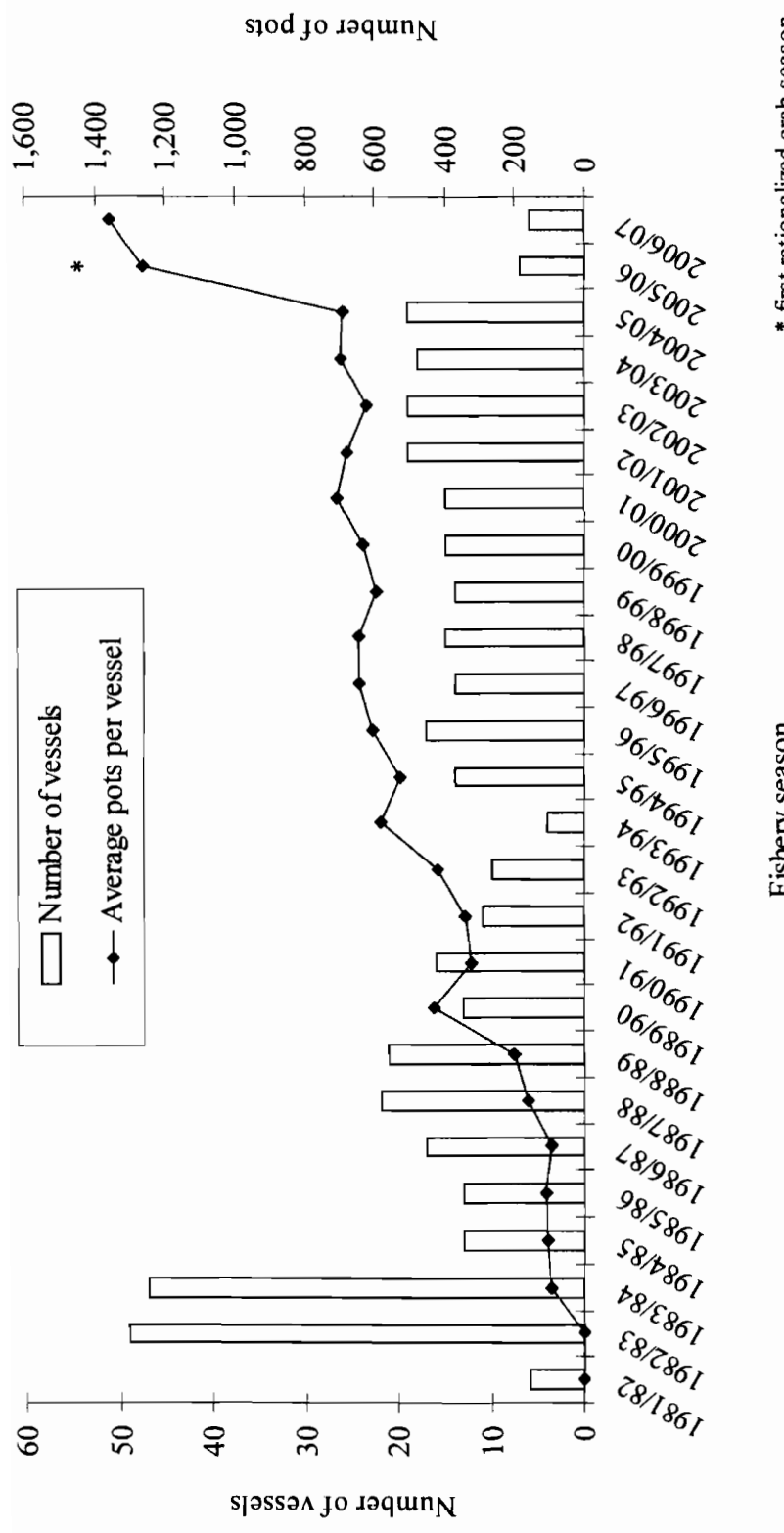
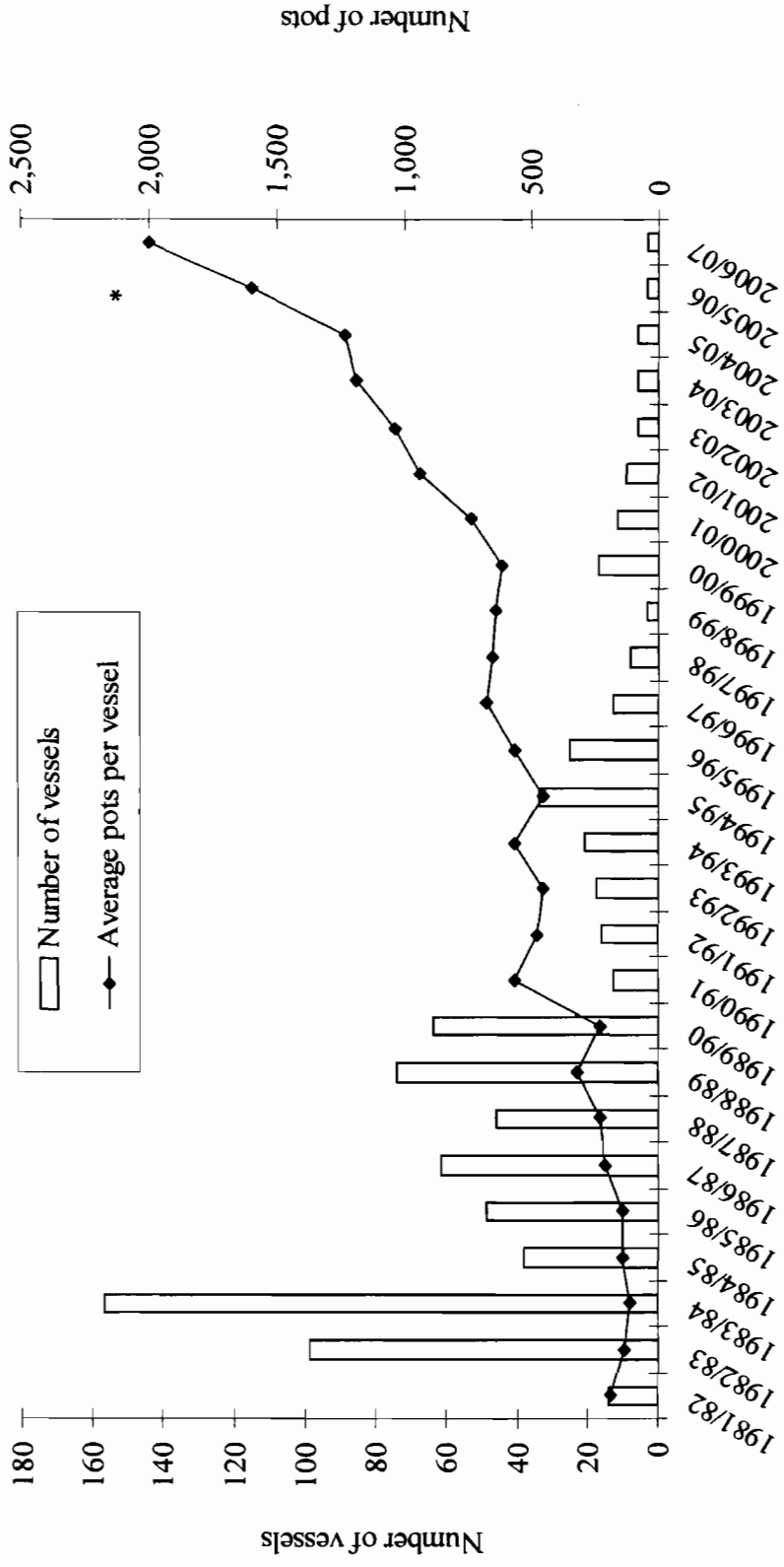


Figure 1-6.—Eastern Aleutian Island golden king crab fishery vessel registrations and average number of pots per vessel 1981/82 - 2006/07, includes Community Development Quota (east of 174° W long) fishery.

* first rationalized crab season



* first rationalized crab season

Fishery season

Figure 1-7.--Western Aleutian Island golden king crab fishery vessel registrations and average number of pots per vessel 1981/82 - 2006/07, includes Adak Community Allocation (west of 174° W long) fishery.

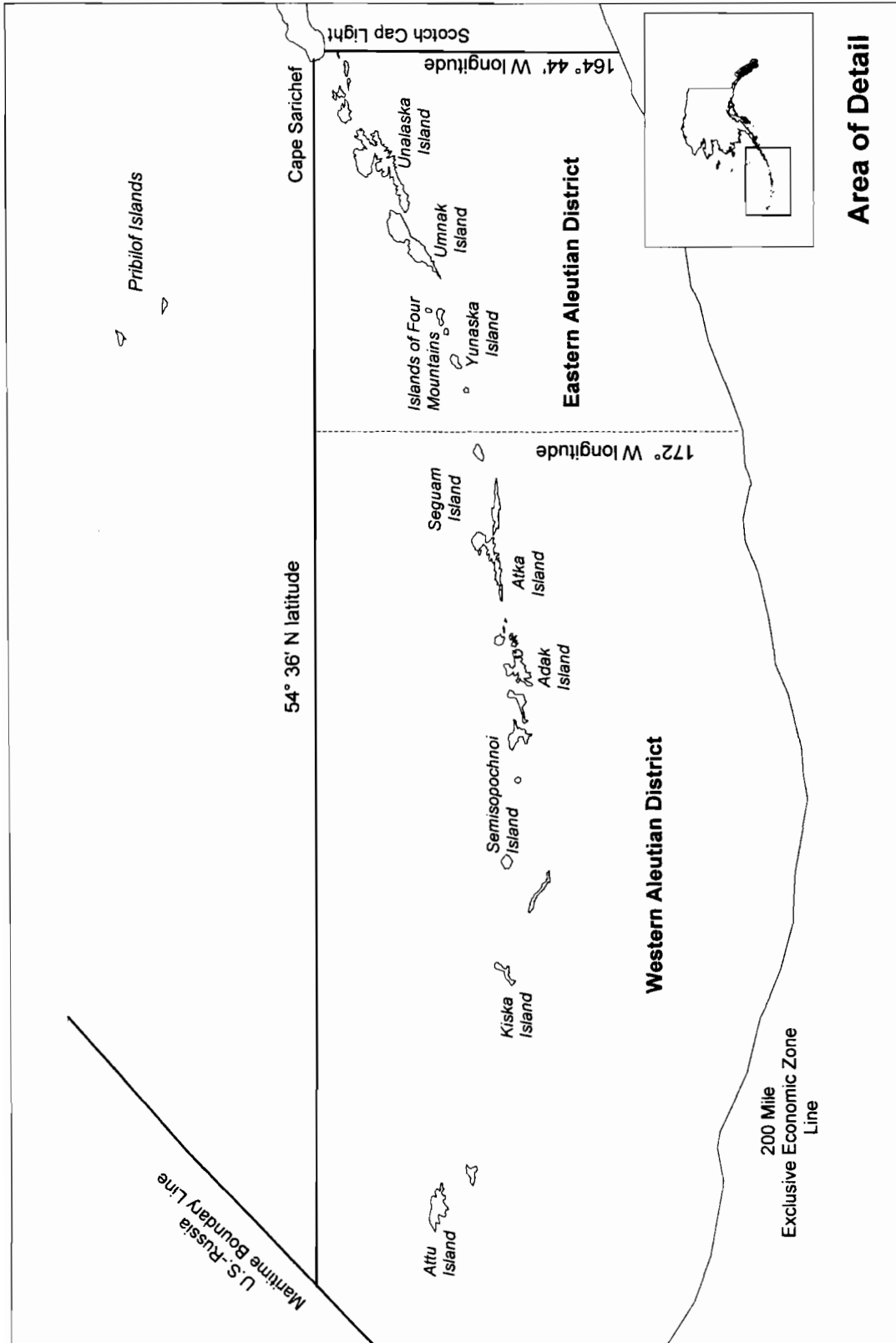


Figure 1-8.—Eastern and Western Aleutian Districts of Tanner crab Registration Area J.

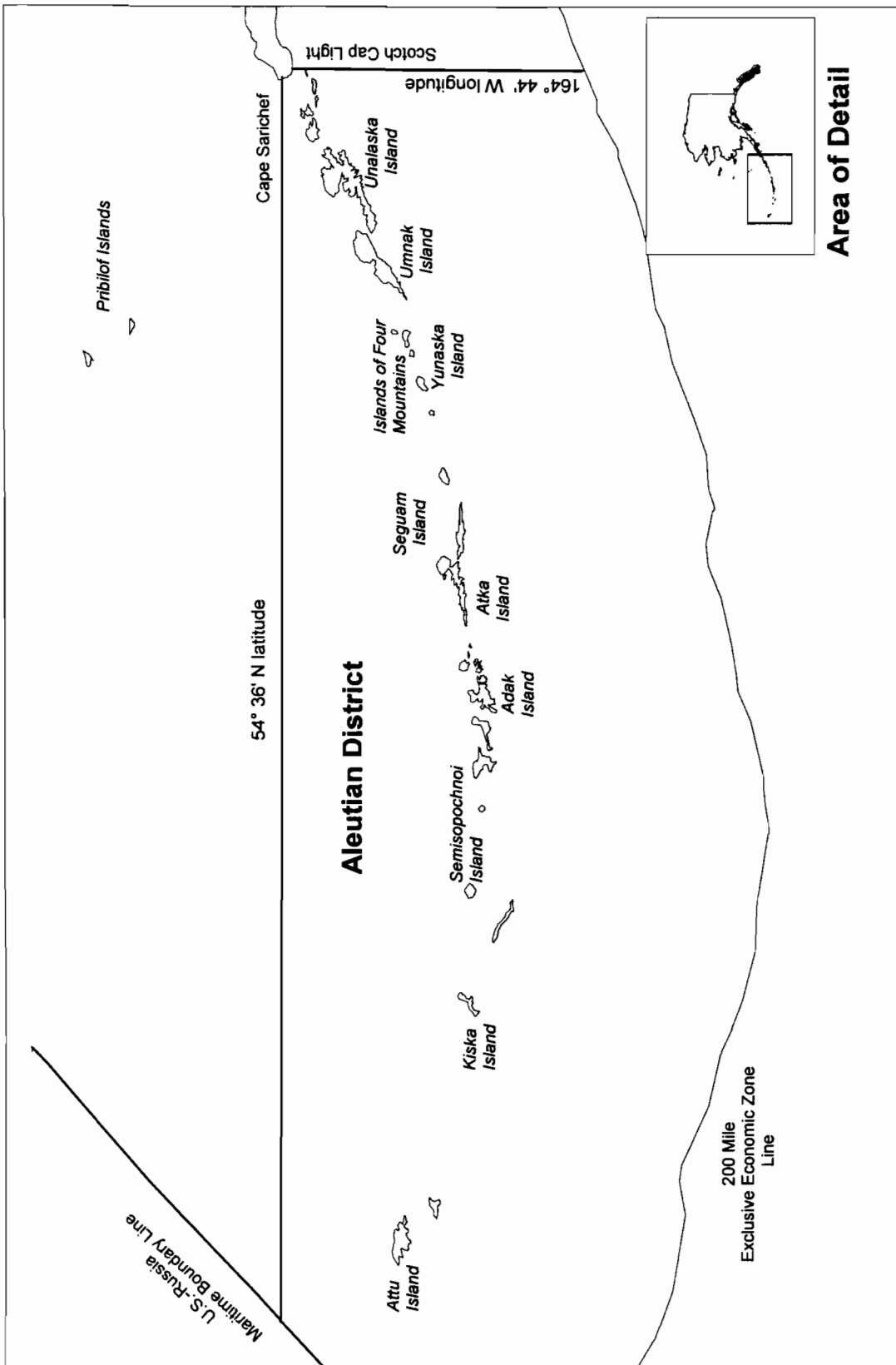


Figure 1-9.—Aleutian District for Dungeness crab management.

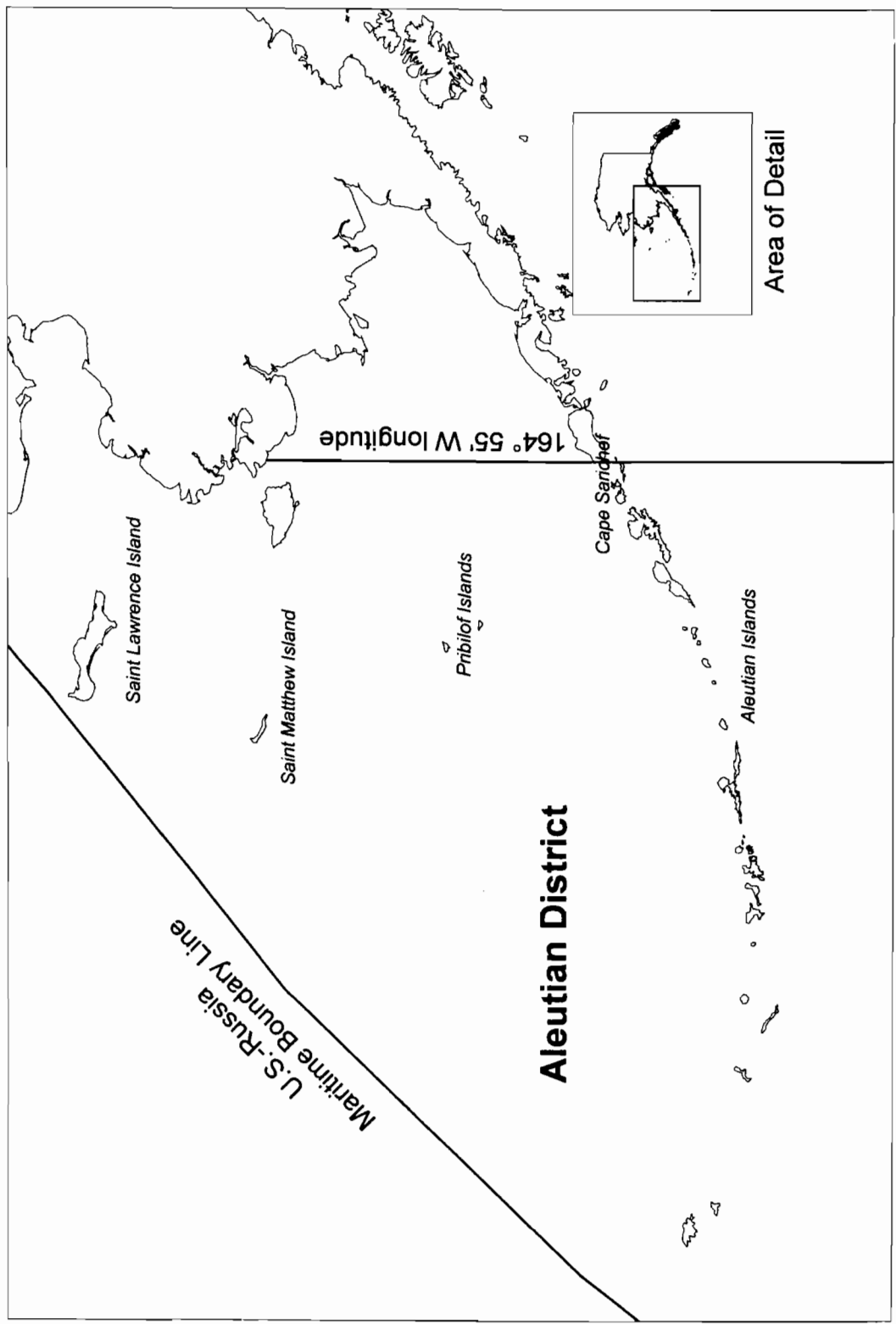


Figure 1-10.--Aleutian District for shrimp management.

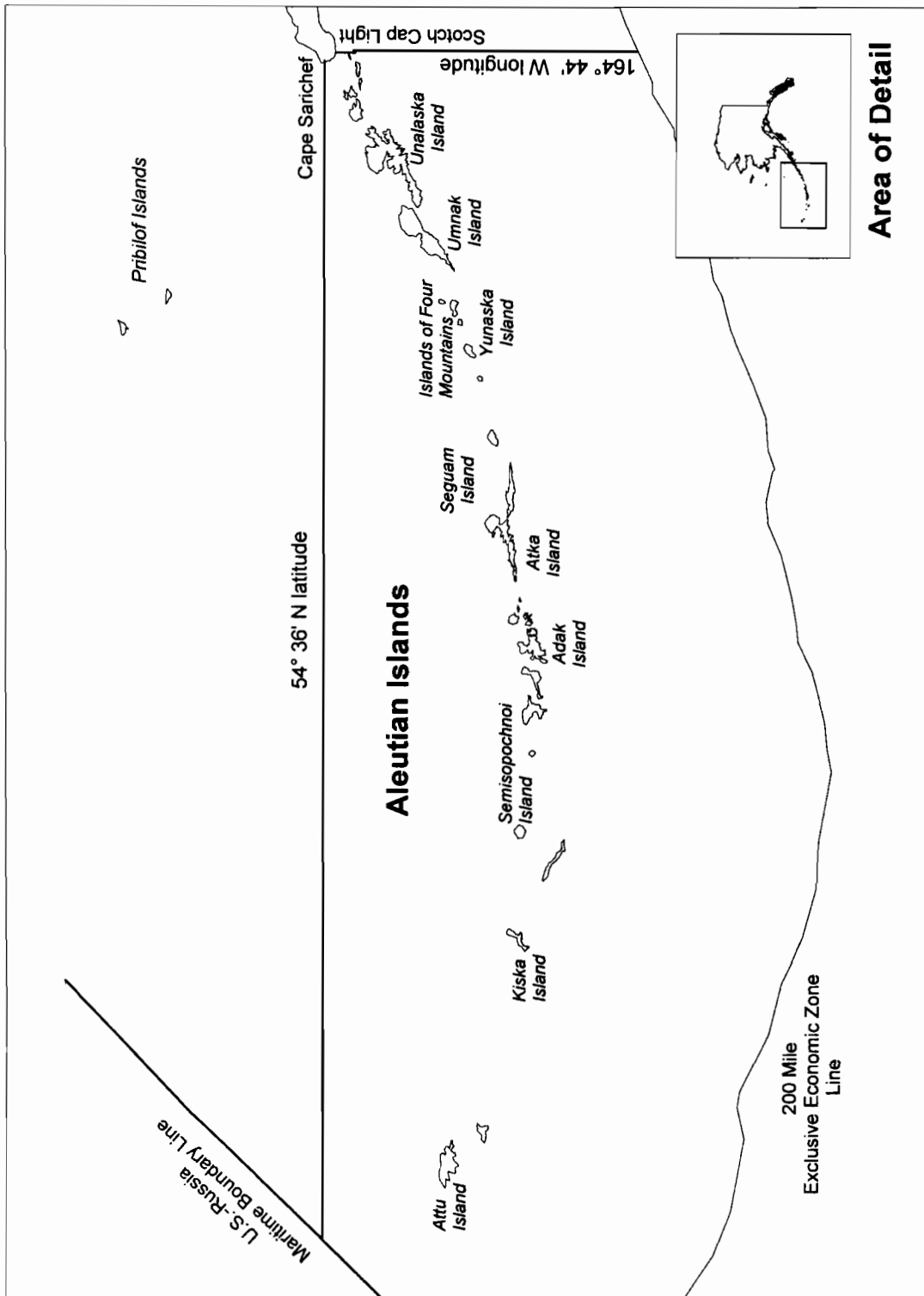


Figure 1-11.--Aleutian Islands District portion of miscellaneous shellfish Registration Area J.

**ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL
SHELLFISH FISHERIES OF THE BERING SEA, 2006/07**

by

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February 2008

KING CRAB REGISTRATION AREA T BRISTOL BAY

DESCRIPTION OF AREA

King crab Registration Area T (Bristol Bay) includes all waters of the Territorial Sea (0-3 nautical miles from shore) and all waters of the Exclusive Economic Zone (EEZ) (3-200 nautical miles from shore) north of the latitude of Cape Sarichef (54° 36' N lat.), east of 168° W long., and south of the latitude of Cape Newenham (58° 39' N lat.) (Figure 2-1).

HISTORIC BACKGROUND

Commercial fishing for red king crabs *Paralithodes camtschaticus* in the Bering Sea began with Japanese harvests in 1930. The Japanese fishery ended in 1940 and resumed again from 1953 until 1974. The Russian king crab fleet operated in the eastern Bering Sea from 1959 through 1971. U.S. fishers entered the eastern Bering Sea fishery with trawl gear in 1947. Effort and catches declined in the 1950s, with no catch reported in 1959. A period of low catches followed through 1966 before the domestic fishery expanded to full-scale in the late 1970s.

The red king crab fishery in the eastern Bering Sea traditionally harvested crabs from waters north of Unimak Island and the Alaska Peninsula from Cape Sarichef to Port Heiden. With the decline of king crab stocks in other areas of the state, U.S. effort in the eastern Bering Sea increased beginning in 1966 with a peak harvest of 129.9 million pounds in 1980 (Table 2-1, Figure 2-2). Since 1980, king crab stocks throughout Alaska, including Bristol Bay, declined sharply and have not recovered to pre-1980 levels, leading to closures of the Bristol Bay red king crab (BBRKC) fishery in 1983, 1994, and 1995. From 1980 to 2005/06, economic value of the BBRKC fishery ranged from \$8.9 million in 1982 to a high of \$115.3 million in 1980 (Table 2-2, Figure 2-3). Exvessel price ranged from \$0.90 per pound in 1980 to a high of \$6.26 per pound in 1999.

In 1980, the Alaska Board of Fisheries (BOF) defined that portion of the Bering Sea south of Cape Newenham and east of 168° W. long. as the Bristol Bay King Crab Registration Area T, and the area was designated an exclusive registration area. During any king crab registration year (June 28 through June 27), vessels registering for and fishing in this area are prohibited from fishing in any other exclusive or super-exclusive king crab registration area. Only non-exclusive areas may be fished once a vessel is registered in Area T.

The National Marine Fisheries Service (NMFS) has conducted annual trawl abundance index surveys of the eastern Bering Sea since 1968. This multi-species (crab and groundfish) survey is conducted during the summer months and the resulting area-swept estimates of abundance are published annually. In 1983, the NMFS trawl survey of the Bering Sea indicated a record low number of legal male crabs and the lowest total king crab population since the survey began in 1968. Small female crabs carrying fewer eggs and high predator abundance were also noted. Consequently, the fishery was closed for the 1983 season. The fishery reopened in 1984 and catches slowly increased to over 20.3 million pounds in 1990. Due to the large number of catcher-processors and floating-processors in the fishery and the inability of the Alaska Department of Fish and Game (ADF&G) to monitor these catches, an onboard observer program was initiated in 1988. Fishing effort increased dramatically from 89 vessels in 1984 to over 300 vessels in 1991 (Table 2-1, Figure 2-3). The number of pots used by the fleet also increased, with almost 90,000 pots registered for the 1991 fishery compared to just under 22,000 pots registered in 1984.

Due to the increased number of pots, the BOF established a 250-pot per vessel limit enforced through a buoy sticker program, which was implemented for the 1992 BBRKC fishery. This measure was intended to improve manageability of the fishery by extending the length of the season as well as reducing the potential for pot loss and gear conflict.

Immediately following the 1992 BBRKC fishery, the 250-pot limit was repealed by NMFS. This action was taken because of inconsistencies between the state regulations and provisions of the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP), mandating application of pot limits in a nondiscriminatory manner (NPFMC 1998). In the spring of 1993, the BOF adopted new regulations, setting pot limits based on overall vessel length. For the BBRKC fishery, vessels in excess of 125 feet in overall length were limited to 250 pots and vessels 125 feet and under in overall length were allowed a maximum of 200 pots. These pot limits were administered through a buoy tag program from the Dutch Harbor and Kodiak ADF&G offices.

Results of the NMFS 1994 summer trawl survey of the Eastern Bering Sea indicated declines in all size-classes of both male and female red king crabs in the Bristol Bay area. Compared to observations made during the 1993 survey, the abundance index of large male crabs decreased 25%. Based on the 1994 survey results, large female abundance was estimated at 7.5 million crabs, which was below the minimum threshold of 8.4 million crabs necessary to allow a fishery. Consequently, the BBRKC fishery was not open for the 1994 season.

To address potential measurement errors in the area-swept trawl abundance estimates, ADF&G developed a length-based analysis (LBA) model for estimating population abundance. This method, used for the first time prior to the 1995 season, incorporates a variety of data sources including dockside sampling and observer collected data, as well as data collected on the annual NMFS survey. The LBA is less susceptible to year-to-year variations in factors unrelated to population abundance (i.e. oceanographic conditions, changes in species distribution, and subsequent availability to the survey gear) and is therefore more likely to produce an accurate estimate of abundance. Analysis of the 1995 NMFS survey using the LBA model indicated no significant difference in the abundance of mature male and female red king crabs from estimates made from the 1994 survey (Zheng et al. 1995). Based on these combined results, the BBRKC fishery remained closed for the 1995 season.

Due to the depressed status of the BBRKC population, the BOF, at their March 1996 meeting adopted a revised harvest strategy to promote stock rebuilding. One of the most significant changes to the harvest strategy was a reduction in the exploitation rate of mature male crabs from 20% to 10% at levels below where the stock is considered rebuilt (55 million pounds of effective spawning biomass (ESB)), or 15% when the stock is considered rebuilt.

Results from the LBA incorporating the 1996 NMFS survey data indicated increased abundance in all size classes of males and females compared to the 1995 estimate (Zheng et al. 1996). Of major importance was an increase in the number of large females in 1996 to 10.2 million crabs, which was well above the threshold of 8.4 million large female crabs necessary to allow a fishery. This was a significant increase relative to the prior two years where fishery closures occurred due to insufficient numbers of large female crabs. Based on a 10% mature male exploitation rate, the 1996 guideline harvest level (GHL) was set at 5.0 million pounds. The 1996 fishery lasted four days and a total of 8.4 million pounds were harvested, exceeding the GHL by 68%.

To address the difficulty in managing this fishery at low GHLs, the BOF held a special meeting in August of 1997 implementing new pot limits and vessel preseason registration requirements. Also adopted were regulations that extended the tank inspection window for the BBRKC fishery from 24 to 30 hours and allowed fishers to leave baited pots on the fishing grounds when a fishery closure announcement is made with less than 24 hours of advance notice. New pot limits were based on vessel overall length, the preseason GHL, and the number of vessels preseason registered for the fishery. These new pot limit regulations were adopted with a sunset provision of December 31, 1998, to provide for reevaluation at the 1999 BOF meeting.

The LBA, using the 1997 NMFS survey data, indicated that all components of the BBRKC stock increased from levels observed in 1996 (Zheng et al. 1997), ESB was below the 55 million pound threshold necessary to allow a 15% harvest rate. Therefore, a 10% mature male exploitation rate was used, generating a general fishery GHL of 7.0 million pounds for the 1997 season. Based on the GHL and number of vessels that filed a preseason registration, pot limits were set at 100 and 125 pots for small and for large vessels, respectively. The 1997 fishery lasted four days and a total of 8.8 million pounds were harvested. The 1997 harvest exceeded the GHL by 26%, largely due to extremely high catch rates in the final hours of the fishery.

Analysis of the 1998 NMFS survey data indicated the abundance of pre-recruit male red king crabs increased by 85%, resulting in an increase in the fishable stock of mature male crabs for the 1998 season. The abundance of large females (>89 mm carapace length (CL)) increased by 42% (Stevens et al. 1998a). Effective spawning biomass was estimated to be over 55 million pounds, resulting in a 15% harvest rate on mature male crabs. 1998 was the first year that the GHL was split into CDQ and general fishery components (CDQ fishery information is summarized later in this report). The GHL for the 1998 general fishery was 15.8 million pounds. Because the GHL was in excess of 12 million pounds, the preseason registration requirement was waived and pot limits were set at 200 for vessels less than or equal to 125 feet in length and 250 for vessels greater than 125 feet in length. Total harvest in the 1998 fishery, which lasted five days, was 14.29 million pounds.

At the March 1999 meeting, the BOF made permanent the interim management measures that were adopted in the fall of 1997. The BOF also passed anti-prospecting regulations that were amended in 2000. The regulations prohibit vessels from participating in the Bristol Bay king crab fishery if they have operated pot, longline, or trawl gear in that portion of Registration Area T north of 55° 30' N lat. and east of 164° W long. during the 30 days immediately prior to the opening of the king crab season. However, an exception was made for vessels participating in a directed walleye pollock (*Theragra chalcogramma*) fishery with trawl gear in Area T north of 55° 30' N lat. and east of 164° W long. during the 14 days prior to the red king crab season. These vessels may participate in the BBRKC fishery if they delivered to an offshore processor or had 100 percent federal groundfish onboard observer coverage for the entire 14 days prior to the opening. The BOF also adopted a regulation that moved the opening date of the commercial red king crab fishery in Bristol Bay from November 1 to October 15. The change to an earlier opening was intended to improve fleet and industry efficiency by reducing the hiatus between the BBRKC fishery and the Bering Sea king crab fisheries, opening on September 15.

The LBA, including the 1999 NMFS survey data, indicated that while the abundance of legal and mature male red king crabs in Bristol Bay increased, all other classes decreased from the 1998 level: small males by 57%, pre-recruit males by 27%, and large females by 7% (Zheng and Kruse 1999). The LBA estimates resulted in an ESB of 47.0 million pounds. By applying an

exploitation rate of 10% to the mature male population, a general fishery GHL of 10.1 million pounds was set. The 1999 season lasted five days, with a total harvest of 11.1 million pounds.

The LBA, including the 2000 NMFS survey data, indicated that the abundance of almost all size-classes of the Bristol Bay red king crab stock decreased from levels observed in 1999. Small males increased by 192%, but all others decreased: pre-recruit males by 23%, mature males by 14%, and legal males by 3%. Large females also decreased by 10% (Zheng and Kruse 2000). The 2000 ESB was estimated to be 39.9 million pounds, a decrease of 11% compared to 1999. At 39.9 million pounds, ESB was above the threshold for a fishery opening with a 10% exploitation rate on mature males. The 10% exploitation rate on mature males resulted in a general fishery GHL of 7.7 million pounds. The 2000 fishery opened at 4:00 p.m. on October 16 after a 24-hour delay to allow strong winds in the Bristol Bay area to diminish. A total of 239 catcher-only vessels and seven catcher-processors participated. A total of 7.6 million pounds of red king crabs was harvested in the 4.2-day fishery, which was closed by emergency order at 9:00 p.m. on October 20.

Results of the NMFS stock assessment survey and LBA in 2001 gave an estimated ESB of 40.6 million pounds and a mature male abundance estimate of nearly 11 million crabs. When the harvest strategy was applied to these estimates, a general fishery GHL of 6.6 million pounds was the result of using a 10% exploitation rate applied to the mature male abundance estimate. The 2001 fishery opened at 4:00 p.m. on October 15 with 230 vessels participating. The fishery closed at 11:59 p.m. on October 18 after approximately 7.8 million pounds were harvested.

In 2002, survey results provided an estimated ESB of 37.7 million pounds and a mature male abundance estimate of 14.3 million crabs. A 10% exploitation rate was applied to the mature male abundance resulting in a general fishery GHL of 8.56 million pounds. The 2002 fishery opened at 4:00 p.m. on October 15 with 242 vessels registered. The fishery closed at noon on October 18 after approximately 8.9 million pounds were harvested.

In 2003, the BOF modified the BBRKC harvest strategy. The BOF maintained the existing 10% and 15% harvest rates on mature males and implemented a 12.5% harvest rate on mature males when the ESB is greater than or equal to 34.75 million pounds but less than 55 million pounds. NMFS survey and LBA results for 2003 indicated that the stock was above the fishery threshold with an estimated abundance of 29.7 million mature females and an estimated ESB of 60.7 million pounds. Both of these estimates represented substantial increases from those generated in 2002. Since ESB was estimated to be greater than 55.0 million pounds, the harvest strategy specifies an exploitation rate of 15% on mature males. Given an estimated mature male abundance of 16.4 million crabs and an average weight of 6.4 pounds per legal crab, the 2003 GHL was set at 15.7 million pounds, 1.2 million pounds of which were allocated to the Community Development Quota fishery. A total of 252 vessels participated in the 122 hour general fishery and harvested 14,529,124 pounds, or 99.9% of the general fishery GHL.

Preseason vessel registration for the 2004 fishery was required by 5:00 p.m. September 24, 2004. Based on the 252 preseason vessel registrations received prior to that deadline and the 14,267 million pound general fishery GHL, pot limits were set at 200 pots for vessels less than or equal to 125 feet in overall length and 250 pots for vessels greater than 125 feet in overall length. In addition, preseason vessel registrations were used to select catcher vessels to carry onboard observers during the fishery; 21 catcher vessels were selected. Eight catcher processors and one

floating processor registered for the fishery. A total of 251 harvesting vessels registered for the fishery.

The 2004 Bristol Bay red king crab fishery was 80 hours in length, a 34% decrease from the 2003 season length of 122 hours. Only the 2002 season at 68 hours was shorter (Table 2-2). The 2004 legal male CPUE was 23, an increase from the 2003 catch rate of 18 legal crabs per pot lift and the highest legal male CPUE since the 1980 season (Table 2-1). Catch rates were highest north of 56° 30' N lat. Catches were distributed over a broader geographic area in 2004 than in 2003. Harvests of 1.0 million pounds or more were recorded from six ADF&G statistical areas in 2004 compared to four in 2003 and five in 2002. In general, the highest catch rates during the 2004 fishery occurred to the north of the most productive areas in the 2003 fishery. The fleet pulled 90,976 pots to harvest 14,112,438 pounds.

Fishers were paid an average price of \$4.71 per pound by shore plants in Dutch Harbor, Akutan, King Cove, Sand Point and Kodiak. In addition, one floating processor and two catcher processors purchased crabs after the season. The 2004 Bristol Bay red king crab fishery had an exvessel value of \$65.7 million, a 9.6% decrease from the 2003 exvessel value of \$72.7 million.

The 2005/06 Bristol Bay red king crab fishery opened on October 15, 2005 and closed on January 15, 2006. The 2005/06 season was the first to operate under the crab rationalization (CR) program. Under the CR program 90% of the TAC is available to the IFQ fishery, 10% is available for CDQ harvest, the fishing season was expanded to run from October 15 until January 15, pot limits were increased to 450 pots per vessel, and vessel operators may authorize another person to operate their pot gear. Eighty nine vessels participated in the fishery making 264 landings for a total harvest of 16.48 million pounds from a 16.5 million pound total allowable catch (TAC). Deadloss was less than 1% of the total harvest.

The fleet pulled just under 100,000 pots and had a retained CPUE of 25 legal crabs per pot. In addition, approximately 20% of the legal male red king crab caught during the 2005/06 season were discarded at sea primarily due to shell condition (Barnard and Pengilly 2006). Vessel operators used an average of 177 pots each and had an average soak time for the 2005/2006 season of 65 hours as compared to averages of 18 to 31 hours for the 1999-2004 general fisheries.

Approximately two thirds of the 2005/06 harvest had occurred by mid-November, however fishing effort continued until the regulatory closure in January. On average each vessel registered for the fishery was registered for 26 days.

Bristol Bay red king crabs were delivered in Saint Paul, Sitka, Kodiak, Akutan, King Cove and Dutch Harbor. Harvesters were paid an average price of \$4.24 per pound for a total fishery value of \$69.5 million.

2006/07 Fishery

The 2006/07 season opened on October 15, 2006 and closed on January 15, 2007 with 81 vessels participating in 187 landings. The IFQ TAC for the 2006/07 season was 13.9 million pounds. A total of 13.89 million pounds were harvested during the 2006/2007 season, including deadloss, which accounted for less than 1% of the harvest.

Total effort for the 2006/07 season was approximately 64,000 pot lifts. Average weight of harvested crabs was 6.4 pounds, which was below the average weight for the 2005/06 season and slightly greater than the average weight estimate that was used to compute the TAC (6.25 pounds). Although most of the harvest was taken by mid-November 2006, the last deliveries

were made in the first week of December 2006 (Table 2-3). Weekly harvest and CPUE declined from mid-October 2006 through the first week of December 2006, whereas weekly vessel participation remained fairly steady through the last week of November 2006. On average each vessel participating in the fishery was registered for 21 days. Harvests in the 2006/07 season were reported from 20 different statistical areas, however, 90% of the total pot lifts and total harvest during the IFQ fishery occurred in seven statistical areas (625600, 625630, 635600, 635630, 635700, 645630, and 645700) (Table 2-4).

Total fishery CPUE for retained legal crabs was 34 crabs/pot, which is the highest for any season since 1981. Discarding of legal males during the 2006/07 did not occur on the scale estimated to have occurred during the 2005/06 season. The preliminary estimate from observer data is that 4% of captured legal males were not retained during the 2006/07 season. The average soak time during the 2006/07 was 51 hours and vessel operators used an average of 181 pots each (Barnard and Pengilly 2006).

Bristol Bay red king crabs were delivered in Saint Paul, Kodiak, Akutan, King Cove and Dutch Harbor. Harvesters were paid an average price of \$3.48 per pound for a total fishery value of \$48.0 million.

ADF&G conducted cost recovery fishing in Bristol Bay from late-September until late-October 2006. The cost recovery vessel harvested 0.3 million pounds (Table 2-5) of red king crabs generating \$0.646 million (Table 2-6) in revenues used by the State of Alaska to pay for research and observer program activities.

AMERICAN FISHERIES ACT

The American Fisheries Act (AFA), passed in 1998 by Congress, gave pollock fishers exclusive fishing privileges in the Bering Sea/Aleutian Islands (BSAI) pollock fishery. To protect the interests of fishers not directly benefited by the AFA, sideboards were established for AFA fishers qualified to participate in BSAI crab fisheries. To implement the sideboards, the BOF developed a management plan requiring ADF&G to manage AFA vessels with a harvest cap equally apportioned between all AFA qualified vessels or through a cooperative fishery when 100% of AFA qualified participants agree to the cooperative. The harvest cap specified by the AFA was implemented for the first time in the 2000 BBRKC fishery and was set at 10.96% of the general fishery GHL. The AFA harvest cap was in effect for the 2000 to 2004 seasons and was never exceeded. AFA sideboard restrictions were eliminated with the implementation of the CR program in 2005.

PORT SAMPLING

Red king crabs were sampled at dockside from deliveries during the 2006/07 Bristol Bay red king crab fishery. Vessels without observer coverage delivering to shore-based processors in King Cove, Akutan, Kodiak, and Dutch Harbor were sampled by ADF&G personnel. Confidential interviews were conducted with vessel captains to acquire detailed information regarding statistical areas fished, effort and fishery performance. Interview data was supplemented with daily fishing log (DFL) records. Red king crab biological data collected consists of carapace length measurement, average weight, and shell condition determination.

ADF&G port samplers collected data from 116 fishing trips during the 2006/07 season. Landed crabs averaged 6.4 pounds, a decrease of 0.3 pounds per crab from the 2005/06 fishery average weight. Less than 1% of the crabs delivered were sampled for size and shell condition.

Sampling indicated that 73.5% of the crabs measured were new shell, and 26.5% were old or very old shell condition (Table 2-7). Average carapace length was 151 mm. The percentage of recruit-sized crabs in the commercial harvest increased from 57% in 2005/06 to 67% in 2006/07.

STOCK STATUS

The status of the Bristol Bay red king crab stock and fishery are evaluated through the use of abundance based thresholds. When the total mature biomass (TMB) of red king crabs in Bristol Bay falls below the 44.8 million pound minimum stock size threshold (MSST), the stock is considered overfished.

The state harvest strategy for Bristol Bay red king crabs establishes three thresholds that must be met prior to a fishery opening. The first is a threshold abundance level of 8.4 million mature females, the second is an ESB threshold of 14.5 million pounds of ESB, and the third is a minimum TAC threshold of 4.0 million pounds for the IFQ fishery.

The stock has been above MSST for all years that TMB has been computed during 1980-2006 and was above the MSY biomass level specified in the FMP every year during 1997-2006 except for 2001 (NPFMC 2006). From 2003 through 2005, estimated TMB remained relatively stable at approximately 180-million pounds, or two times B_{MSY} ; the estimated TMB for 2005 was 181.9-million pounds. Estimated total mature biomass in 2006 (157.2-million pounds) was down slightly from the estimates of the preceding 3 years (approximately 180-million pounds), but remained well above the MSST and MSY biomass defined for this stock in the Federal FMP (44.8-million pounds and 89.6-million pounds, respectively).

Although far below the levels estimated to have existed in the late 1970s, ADF&G's LBA model for 2006 estimated that abundance of mature males, legal males, and mature females and effective spawning biomass were each at their highest levels since the early 1980s (NPFMC 2006). New recruits to legal size were a large component (approximately one half) of the legal-sized males captured during the 2006 trawl survey. The strong contribution of new recruits to legal size accounted for the low estimated average weight of legal-sized males (5.9 pounds) and a high percentage of legal males in new-shell condition (84%) in the 2006 survey.

A mode of juvenile-sized crabs centered at approximately 72.5-mm CL in the 2005 male and female size-frequency distributions and which tracked to a mode centered at approximately 87.5-mm CL in the size frequency distribution for each sex in 2006 is anticipated to provide some recruitment to the mature female size class (≥ 90 -mm CL) in 2007, but to not provide strong recruitment to the mature male size class (≥ 120 -mm CL) until at least 2008. Representation of juvenile crabs < 70 -mm CL was noted to be poor for both sexes in the 2006 survey as compared to the 2002-2005 surveys thus we should anticipate poor recruitment to the mature female size class for at least the next two years, followed by at least two years of poor recruitment to the mature male size class.

KING CRAB REGISTRATION AREA Q BERING SEA

DESCRIPTION OF AREA

The Bering Sea king crab Registration Area Q has as its southern boundary a line from 54° 36' N lat., 168° W long., to 54° 36' N lat., 171° W long., to 55° 30' N lat., 171° W. long., to 55° 30' N lat., 173° 30' E long., as its northern boundary the latitude of Point Hope (68° 21' N lat.), as its eastern boundary a line from 54° 36' N lat., 168° W long., to 58° 39' N lat., 168° W long., to Cape

Newenham (58° 39' N lat.), and as its western boundary the United States-Russia Maritime Boundary Line of 1991 (Figure 2-4). Area Q is divided into the Pribilof District, which includes waters south of Cape Newenham, and the Northern District, which incorporates all waters north of Cape Newenham. The Northern District is subdivided into three sections: the Saint Matthew Island Section, which includes waters north of Cape Newenham and south of Cape Romanzof; the Norton Sound Section, which includes all waters north of Cape Romanzof, and south of 66° N lat. and the Kotzebue Sound Section, which encompasses all remaining waters of the district. Registration Area Q includes waters of both the Territorial Sea and EEZ.

PRIBILOF DISTRICT RED AND BLUE KING CRAB

Historic Background

The king crab fishery in the Pribilof District began in 1973, when vessels targeted blue king crabs *Paralithodes platypus* in the vicinity of Saint George and Saint Paul Islands. The first reported catch in this area was 1.3 million pounds taken by eight vessels between July 1973 and October 1974. The average weight of crabs harvested was 7.3 pounds and CPUE was 26 legal crabs per pot lift. By the 1980/81 season, fishing effort had increased to 110 vessels, that harvested 11.0 million pounds, the highest catch on record. However, by that time the fishery CPUE had dropped to nine legal crabs per pot lift and continued declining to a low of two crabs per pot by the end of the 1986/87 season. Consequently, the harvest dropped to 260,000 pounds, taken by 16 vessels (Table 2-8, Figure 2-5). Due to this six-year decline in harvest and concurrently low annual population estimates, the blue king crab fishery was closed beginning with the 1988/1989 season and remained closed through the 1994 season (Table 2-9).

In 1993, the BOF adopted regulations that set pot limits based on overall vessel length for all king crab fisheries in the Bering Sea. In the Pribilof District, pot limits were established at 50 for vessels over 125 feet overall length and at 40 for vessels 125 feet overall length or less.

The 1993 NMFS summer trawl survey of the Bering Sea indicated a marked increase in the abundance of red king crabs around the Pribilof Islands. Although no threshold abundance level for opening the fishery was established for Pribilof District red king crabs, survey results indicated a harvestable surplus of legal-sized male crabs. Consequently, a red king crab fishery in the Pribilof District opened for the first time in September 1993. A harvest of 2.6 million pounds was taken from a GHF of 3.4 million pounds. In 1994, the Pribilof District was again opened to the commercial harvest of red king crabs, and 104 vessels harvested 1.3 million pounds.

In 1995, an increase in blue king crab abundance and a continued harvestable surplus of red king crabs resulted in a combined red and blue king crab GHF of 2.5 million pounds. Subsequent declines in red and blue king crab abundance over the next three years resulted in a combined GHF for 1998 of 1.3 million pounds including the CDQ fishery. Poor fishery performance during those seasons resulted in annual harvests below the fishery GHF. From 1999 to 2006/07, blue king crab abundance continued to decline and the Pribilof fishery was not opened.

The economic value of the Pribilof District red king crab fishery peaked at \$13.0 million in 1993 with an exvessel price of \$4.98 per pound, the second highest on record. The value of the Pribilof District blue king crab fishery peaked at \$13.6 million in 1981/1982, with an exvessel price of \$1.50 per pound. Since 1995, the exvessel price of red or blue king crabs has not exceeded \$3.37

per pound. Total value of the fishery declined from \$6.8 million in 1995 to \$2.4 million in 1998 (Table 2-9, Figure 2-6).

ADF&G conducted pot surveys targeting red and blue king crab in the Pribilof District in 2003 and 2005. The objectives of the surveys were to determine the distribution and relative abundance of red and blue king crab in the District and to conduct cost-recovery fishing to cover the costs of the surveys and related expenses. A total of 696 pots were pulled during the 2003 survey with an overall legal male red and blue king crab CPUE of less than one crab per pot lift. An additional 202 pots were pulled as part of the cost-recovery effort. Only 146 legal male red king crab were caught and sold for cost-recovery from the Pribilof District, thus the chartered vessel was directed to Registration Area T for the remainder of the cost-recovery efforts. Results of the 2003 pot survey suggest that the highest catches of blue king crabs occurred at stations with low red king crab catches and stations with high red king crab catches had low blue king crab catches. Distribution of red and blue king crabs in the Pribilof District is patchy and stations with high blue king crab catches were interspersed among stations showing greater red king crab abundance. Catches of red and blue during the 2005 survey were lower than those of the 2003 survey.

The Pribilof District red and blue king crab fishery has not opened and the CR program which began in 2005/06.

2006/07 Season

The blue king crab fishery in the Pribilof District was not opened in 2006/07 due to the continued decline in blue king crab abundance. The stock remains below the threshold level of abundance required for a fishery opening. Due to significant uncertainty surrounding estimated red king crab abundance and concerns for blue king crab bycatch in a directed red king crab fishery, the red king crab fishery also remained closed for the 2006/07 season.

Stock Status

The Pribilof blue king crab stock continued to show declines in the 2006 trawl survey with no indicators for recovery. Estimated TMB for 2006 was 1.6-million pounds, the same as in 2005 and at the second lowest on record. The ADF&G catch-survey analysis (CSA) estimates for abundance of mature males, legal males, and mature females in 2006 were the lowest estimated for the period 1975-2006. Although relatively high numbers of small blue king crab (< 70 mm-CL) were caught, mainly at one haul, during the 2005 trawl survey, there was very little representation of juvenile blue king crabs in the 2006 survey, thus the 2006 data suggest that a continued decline in mature male and female abundance should be expected through at least the 2008 survey.

Because estimated TMB of blue king crabs in 2006 is <13.2-million pounds, the fishery cannot meet the harvest strategy's criteria for opening in the 2007/08 season.

Estimated red king crab TMB for 2006 rose to 19.0-million pounds (NPFMC 2006). In contrast, the 2006 CSA-estimated mature male abundance continued to show a declining trend during 2002-2006. Mature-sized (≥ 120 -mm CL) males captured in the 2006 trawl survey were largely legal sized and legal males were largely post-recruit-sized crabs ≥ 150 -mm CL. The size-frequency distribution of males captured during the 2006 survey provided no expectation for significant recruitment to mature-sized males in 2007; after 2007, future declines in mature-size male abundance for this stock are expected due to the lack of sublegal-sized males <100-mm CL.

ADF&G pot survey results on the geographic distribution and size distribution for the Pribilof red king crab from the generally corroborated results reported from the trawl survey. Neither the 2003 NMFS trawl survey (Rugolo et al. 2003) nor the 2003 ADF&G pot survey (Gish and Pengilly 2004) captured mature-sized or legal-sized male red king crabs west or directly south of St. Paul Island, the area where the highest densities of legal red king crabs in the Pribilof District had been captured during previous NMFS summer trawl surveys. Neither the trawl survey nor the pot survey in 2003 provided evidence of juvenile crabs that could provide future recruitment to the mature or fishable component of the stock. ADF&G performed a pot survey for king crab in the Pribilof Island area during September-October 2005 with 205 4-pot stations (Gish 2006). The catch of legal and sublegal male red king crabs in 2005 was lower than the 2003 survey. On a positive note, 2,285 female red king crab were captured during the 2005 (only 133 were caught in 2003) almost all were mature and carried eggs.

In general, confidence in the estimates of red king crab abundance in the Pribilof District is low. The low confidence in red king crab abundance estimates in the Pribilof District coupled with the potential for blue king crab bycatch in a red king crab fishery, the lack of a formal harvest strategy for red king crabs and poor performance of prior red king crab fisheries has contributed to the closure of the red king crab fishery (NPFMC 2004).

The Pribilof blue king crab stock was declared overfished in September of 2002 and the department developed a rebuilding harvest strategy as part of a comprehensive rebuilding plan for the stock (Zheng and Pengilly 2003). The BOF selected a harvest strategy that includes a 10% harvest rate on mature males and a 500,000 pound minimum IFQ TAC. The Pribilof blue king crab stock is still considered overfished.

SAINT MATHEW ISLAND SECTION BLUE KING CRAB

Historic Background

The commercial blue king crab fishery in the Saint Matthew Island Section of the Northern District was first prosecuted in 1977, resulting in a commercial harvest of 1.2 million pounds. In 1978, the catch increased to almost 2.0 million pounds (Table 2-10). Catches decreased in 1979 and 1980 due to lack of effort. In 1981, several vessels returned to the Saint Matthew Island Section during the Norton Sound Section fishery. Catches were strong, and after the Norton Sound Section closed, additional vessels moved into the Saint Matthew Section, taking 4.6 million pounds of blue king crabs. Catch and effort increased to a peak harvest of 9.5 million pounds in 1983 when 164 vessels participated. In subsequent seasons, catches remained at or below 4.7 million pounds (Figure 2-7).

NMFS trawl surveys from 1983 to 1998 in the Saint Matthew Island section indicated a harvestable surplus of blue king crabs ranging from 1.7 to 8.0 million pounds. In 1998, the legal male abundance decreased by 21% from the 1997 level, resulting in a GHF of 4.0 million pounds. The 1998 season closed due to poor fishery performance and observer information indicating a relatively high incidental capture rate of sublegal male and female crabs. The harvest in 1998 was 0.9 million pounds. The CPUE was seven crabs per pot lift, the second lowest CPUE on record. The 1998 season lasted 11 days, the longest since a 17-day opening in 1983 (Table 2-11), when 9.5 million pounds were harvested. From 1999 to 2005/06, abundance estimates for the Saint Matthew Island Section blue king crab stock were low and the fishery remained closed because harvest strategy abundance thresholds were not met.

In 1993, BOF adopted regulation changes and moved the opening date of the Saint Matthew king crab fishery from September 1 to September 15, concurrent with the king crab fishery in the Pribilof District. This action was taken to improve effort distribution between the Pribilof and Saint Matthew areas, thereby reducing the number of vessels participating in each fishery. Differential pot limits, established in 1993 for the Saint Matthew Island Section, limited vessels over 125 in feet overall length to 75 pots and vessels 125 feet in overall length or less to a maximum of 60 pots.

The exvessel price for Saint Matthew blue king crab during the last open season, 1998, averaged \$1.87 per pound, the lowest on record since 1984 and 1985, when fishers received \$1.75 and \$1.60 per pound, respectively. Total value for this fishery peaked in 1983 at \$25.8 million, and since 1994, has not been higher than \$15.0 million (Table 2-11, Figure 2-8). In contrast, the number of vessels participating has generally increased, from 87 in 1994 to 131 in 1998. Average weight per crab has ranged from 4.0 to 5.0 pounds, depending on the percentage of new recruits entering the fishery each year. The average weight per crab during the last fishery, 1998, was 4.7 pounds (Table 2-10).

Stock status declined after the 1998 fishery and the stock was declared overfished based on results of the 1999 survey. Subsequently a rebuilding plan was developed and implemented (NPFMC 2000).

2006/07 Season

The 2006/07 Saint Matthew Island Section blue king crab fishery remained closed because the TAC calculated from the harvest strategy was below the minimum TAC threshold specified in regulation.

Stock Status

Annual estimates of TMB during 1999-2006 remained below MSST for all years except 2003 (12.8-million pounds) and 2006 (11.2-million pounds TMB; NPFMC 2006). There was a weakly increasing trend in estimated TMB from 1999 through 2003, which was reversed in 2004-2005. However, estimation of TMB for this stock is particularly sensitive to the survey catch of mature females, making it difficult to judge trends. TMB in 2006 was estimated to be at its second highest level since the overfished declaration of 1999, and TMB in 2006 was at approximately one half the "rebuilt" level of 22.0-million pounds, thus the stock is still considered overfished (NPFMC 2006).

There are some promising indications for the stock in the 2006 survey data. Although low relative to pre-1999 levels, NMFS area-swept estimates of sublegal, mature-sized males (105-119 mm CL) and legal-sized males in 2006 were, at 0.7-million and 1.4-million, both more than twice the estimates for 2005. The 2006 ADF&G CSA estimate of the mature-sized male abundance showed the first sign of improvement since the marked stock decline observed between the 1998 and 1999 surveys. ADF&G area-swept estimates of mature-sized males had shown little change from 2002 to 2005; however in 2006 there was a marked increase. The mode of small crab (approximately 65 to 70-mm CL) observed in 2003, followed into 2004 (mode near 80 to 85-mm CL) and again into 2005 (mode between 90 to 95-mm CL). In 2006, that mode had provided some recruitment into the mature size class, although at a higher level than would have been anticipated from the 2005 survey. Males 80 to 104-mm CL that appeared in the 2006

survey were noted as potentially providing recruitment to the mature and legal male component in 2007–2009.

Data from the triennial ADF&G pot surveys during 1995-2004 generally support trawl survey results for the same period. CPUE of males ≥ 105 -mm CL in the pot survey decreased between 1998 and 2001, but not as sharply as the decrease in the abundance estimated from the trawl survey over that period. Data summarized for the 96 stations (384 pot lifts) fished in each of the triennial surveys during 1995 through 2004 (Watson 2005) showed that CPUE of males ≥ 105 -mm CL had increased from 10.1 crabs/pot in 1995 to 11.6 crabs/pot in 1998 and then decreased to 7.2 crabs/pot in 2001 and to only 1.6 crabs/pot in 2004. Along with the decrease in CPUE, the distribution of males in the pot survey had contracted largely to the area just adjacent to the southern margin of St. Matthew Island. CPUE of females also declined markedly from 1995 to 2004 in the pot survey: 4.0 crabs/pot in 1995, increasing to 5.3 crabs/pot in 1998, and decreasing to 1.0 crabs/pot in 2001 and 0.9 crabs/pot in 2004.

PRIBILOF DISTRICT GOLDEN KING CRAB

Historic Background

Golden king crabs *Lithodes aequispina* are found in commercial concentrations in only a few deep canyons in the Bering Sea District and have never sustained large harvests when compared to other Bering Sea king crab fisheries. As with many other crab fisheries in the Bering Sea, the fishery for golden king crabs was pioneered by foreign fishing fleets. A domestic fishery developed during the 1982/83 season after BOF directed ADF&G to regulate fishing for golden king crabs in the Pribilof District by emergency order (ADF&G 1984). By the 1984 season, BOF directed ADF&G to manage the Area Q golden king crab fishery under authority of a commissioner's permit that allowed the fishery to develop and expand into new areas (ADF&G 1985).

The first domestic harvest of golden king crabs in the Bering Sea occurred in June of 1982 when two vessels fished in the Pribilof District. Effort increased to 10 vessels during the following season with a harvest of nearly 70,000 pounds. The size limit for golden king crabs in the Pribilof District was reduced from six and one-half inches to five and one-half inches in 1983. Subsequently, effort in the Pribilof District peaked during the 1983/84 season when 50 vessels harvested 856,000 pounds of golden king crabs. From 1984 to 1992, no more than two vessels participated each year in the fishery. Since the 1983/84 season, harvest has not exceeded 350,000 pounds annually (Table 2-13). The Pribilof District golden king crab fishery reached a maximum exvessel value of just over \$1.1 million in 1995, and the highest price fishers received per pound was \$3.99 in 1994 (Table 2-14). During the last nine years in the Pribilof District fishery an average of five vessels have annually harvested an average of 166,000 pounds. CPUE has averaged seven legal crabs per pot lift with an average weight of 4.0 pounds. Most harvest in the Pribilof District has occurred in the area immediately to the south of the Pribilof Islands.

At the March 1993 meeting, BOF developed pot limits for all king crab fisheries in the Bering Sea. Current pot limits in the Pribilof District are set at 40 pots for vessels 125 feet or less in length and 50 pots for vessels greater than 125 feet in length.

In 2000, the Pribilof District golden king crab fishery opened with a GHLL of 150,000 pounds, which was 50,000 pounds less than the 1999 harvest level. This adjustment better complies with guidelines outlined in the FMP for the king and Tanner crab fisheries of the Bering Sea and

Aleutian Islands and is based on the average harvest from 1983 to 1997. Seven vessels harvested 127,000 pounds in 2000. The GHL was not reached; thus the fishery remained open until the end of the year. In 2001, six vessels harvested 146,000 pounds and the fishery was closed by emergency order (Table 2-14).

The golden king crab fishery in the Bering Sea is managed using inseason catch reports provided by processors and observers. Fishing is restricted to depths of 100 fathoms or greater. Starting in 2001, 100% observer coverage was required for each vessel registered for the fishery to provide fishery and biological data that has not previously been available. In addition, vessel logbooks issued with the commissioner's permit provide location of fishing operations, effort, and estimates of bycatch that supplement data collected by observers. Primary bycatch species include non-retained golden king crabs, Pacific halibut *Hippoglossus stenolepis*, Pacific cod *Gadus macrocephalus* and snow crabs.

The 2002 fishery opened January 1 with a GHL of 150,000 pounds, and closed by emergency order on May 14. The total harvest was 150,434 pounds. CPUE averaged six legal crabs per pot lift, a decrease from the CPUE of eight legal crabs per pot during the 2001 fishery. Landed crabs averaged 4.3 pounds per crab, the same as the 2001 season. The 2002 Pribilof District golden king crab fishery had a total fishery value of \$438,000, which was \$9,000 more than the 2001 fishery value.

The 2003 Pribilof District golden king crab fishery opened on January 1 with a GHL of 150,000 pounds. Three vessels registered for the fishery and began fishing in late March. A fourth vessel registered in April but did not fish. Because only two processors participated in the fishery, most harvest information is confidential. The majority of the harvest in 2003 occurred south of Saint George Island near Pibilof Canyon.

Five vessels registered for the 2004 Pribilof District golden king crab fishery. Fishing effort began in late February and the fishery was closed by emergency order on March 12. Most of the 2004 harvest information is confidential because only two processors purchased the harvest. Catch rates during the 2004 fishery were among the highest on record and the fishery was the shortest ever at approximately three weeks in duration. Most of the 2004 harvest occurred immediately to the south of Saint George Island in the vicinity of the Pribilof Canyon.

Four vessels participated in the 2005 Pribilof District golden king crab fishery, however harvest information is confidential because only two processors purchased the harvest. The entire GHL was not taken in 2005, therefore the fishery was open until December 31, 2005.

2006 Season

No vessels registered for the 2006 Pribilof District golden king crab.

Stock Status

The golden king crab population in the Pribilof District is not surveyed and no estimate of abundance has been made. There are no plans to survey this population, nor has a formal harvest strategy been developed. Population size is believed to be limited by the amount of available habitat in the Pribilof District. The fishery is currently managed using a GHL set from the long-term average harvest. Data collected by onboard observers in conjunction with data from the landed catch are used to annually evaluate the status of the stock. Since 2002, the average size of legal male golden king crab taken during the commercial fishery has decreased while CPUE has

increased suggesting that strong recruitment to the legal male portion of the stock has recently occurred. Management of the Pribilof District golden king crab fishery was not included in the CR program.

NORTHERN DISTRICT GOLDEN KING CRAB

Historic Background

A domestic fishery for golden king crabs in the Saint Matthew Island Section of the Northern District also began in the 1982/83 season. Effort and harvest in the Northern District has been sporadic. Since the initial fishery, harvest has only been documented during ten seasons. Harvest peaked during the 1987 season when 10 vessels harvested over 414,000 pounds (Table 2-15). Since 1988, no more than five vessels have participated during any season. The majority of the golden king crab harvest in the Northern District has occurred west of Saint Matthew Island. There has been no documented harvest of golden king crabs in the Northern District outside of the Saint Matthew Island Section.

At its March 1993 meeting, BOF developed pot limits for all king crab fisheries in the Bering Sea. Current pot limits in the Northern District are set at 60 pots for vessels 125 feet or less in length and 75 pots for vessels greater than 125 feet in length. These pot limits are significantly lower than the average number of pots fished per vessel in the Aleutian Islands golden king crab fishery, which has no pot limit in place. The Northern District fishery has never been closed by emergency order (Table 2-16).

The golden king crab fishery in the Bering Sea is managed using inseason catch reports provided by processors and observers. Starting in 2001, 100% observer coverage was required for each vessel registered for the fishery in order to provide fishery and biological data that has not previously been available. In addition, vessel logbooks issued with the commissioner's permit provide location of fishing operations, effort, and estimates of bycatch that supplement data collected by observers. Primary bycatch species include non-retained golden king crabs, Pacific halibut, Pacific cod, and snow crabs. Fishing is also restricted to depths of 100 fathoms or greater.

2006 season

The fishery opened January 1 with a GHL of 10,000 to 20,000 pounds and closed December 31, 2006. No vessels registered to fish for golden king crabs in the Northern District of Area Q in 2006.

Stock Status

The golden king crab population in the Northern District is not surveyed and no estimate of abundance has been made. There are no plans to survey this population, nor has a formal harvest strategy been developed. Population size is believed to be limited by the amount of available habitat in the Northern District. The current GHL of 10,000 to 20,000 pounds is designed to allow for some exploratory fishing and data gathering. Management of Northern District golden king crabs was not included in the CR program.

BERING SEA SCARLET KING CRAB

Historic Background

Scarlet king crabs *Lithodes couesi* are harvested under authority of a permit issued by the commissioner of ADF&G authorized in 5 AAC 34.082 PERMITS FOR LITHODES COUESI KING CRAB. Harvest of scarlet king crabs in the Bering Sea has primarily occurred as incidental harvest in the grooved Tanner crab *Chionoecetes tanneri* and golden king crab fisheries. Although vessels first registered to fish for Bering Sea scarlet king crabs in 1992, no commercial landings occurred prior to 1995. In 1995, four vessels harvested 26,684 pounds (Table 2-17) and were paid an exvessel price of \$2.45 per pound. Scarlet king crab incidental harvest has been permitted since the species was first commercially exploited by the domestic fleet, however since 2000 incidental harvest has been capped at a rate of 50% of the weight of the target species. Only two vessels participated in 1996, consequently all catch information is confidential. No vessels registered to fish for scarlet king crabs from 1997 to 1999. A single vessel was permitted to retain scarlet king crabs as incidental harvest during the grooved Tanner crab fishery in 2000 and 2001. Since less than three vessels participated, the harvest information is confidential. No vessels registered to retain incidental catch of scarlet king crab in 2002. One vessel registered to retain scarlet king crabs as incidental harvest in 2003 and three registered in 2004 during the Bering Sea golden king and deep-water Tanner crab fisheries. A single vessel registered for scarlet king crabs during 2005. Due to the limited amount of participation in recent incidental fisheries for scarlet king crabs all harvest information is confidential.

2006 Season

No vessels registered for Bering Sea scarlet king crabs in 2006.

Fishery Management and Stock Status

No abundance estimates are available for scarlet king crab, nor have any stock assessment surveys been conducted. Onboard observers have been required on most vessels targeting deepwater crab species since 1994 and have collected information detailing the size and sex composition of the retained and non-retained scarlet king crab and bycatch species. This information will be used to help develop management measures for these deepwater crab stocks. Currently, ADF&G does not intend to register any vessels to fish directly for scarlet king crabs in the Bering Sea. Retention of scarlet king crabs captured in other deepwater crab fisheries will be permitted at low levels. Management of the Bering Sea scarlet king crab fishery was not impacted by implementation of the CR program.

BERING SEA TANNER CRAB MANAGEMENT DISTRICT

DESCRIPTION OF AREA

The Bering Sea District of Tanner crab Registration Area J includes all waters of the Bering Sea north of Cape Sarichef at 54° 36' N lat. and east of the U.S.-Russia Maritime Boundary Line of 1991. This district is divided into the Eastern and Western Subdistricts at 173° W long. The Eastern Subdistrict is further divided at the Norton Sound Section north of the latitude of Cape Romanzof and east of 168° W long. and the General Section to the south and west of the Norton Sound Section (Figure 2-9).

BERING SEA TANNER CRAB

Historic Background

The first reported U.S. harvest of Tanner crabs *Chionoecetes bairdi* occurred in 1968, incidental to the harvest of red king crabs in Bristol Bay. In 1974, a directed Tanner crab fishery began. Harvest peaked at 66.6 million pounds during the 1977/78 season (Table 2-18). In the fall of 1978, NMFS predicted sharp declines in Tanner crab abundance beginning with the 1978/79 fishing season. As anticipated, Tanner crab stocks declined, and by 1984 the commercial harvest fell to 1.2 million pounds (Figure 2-10). Further stock declines led to a fishery closure during the 1986 and 1987 seasons.

In 1992, in an effort to slow the harvest rate in order to provide sufficient time for inseason management of the Tanner crab fishery, the BOF adopted regulations which restricted all participating vessels to fishing a maximum of 250 pots. In 1993, in order to comply with federal law regarding application of pot limits in a nondiscriminatory manner, differential pot limits based on vessel length were implemented. Vessels 125 feet or less in overall length were limited to a maximum of 200 pots, while vessels longer than 125 feet in overall length were limited to a maximum of 250 pots.

Also in 1993, BOF adopted regulations that opened and closed that portion of the Eastern Subdistrict east of 168° W long., to Tanner crab fishing concurrent with the regulatory opening and emergency order closure of the Bristol Bay red king crab fishery. If sufficient GHL remained to be taken, the BOF mandated a reopening of the Eastern Subdistrict between 163° and 173° W long. for the directed Tanner crab fishery 10 days after the closure of the Bristol Bay red king crab fishery. In the event the Bristol Bay red king crab fishery failed to open, the portion of the Eastern Subdistrict west of 163° W long. would open to a directed Tanner crab fishery on November 1. These BOF actions were based on observer bycatch data and historic harvest patterns indicating that the majority of female king crab bycatch in the Bristol Bay red king crab and Bering Sea Tanner crab fisheries came from waters east of 163° W long.

During the 1994 and 1995 seasons, the Bristol Bay red king crab fishery did not open due to low stock abundance. As a result, the Tanner crab fishery opened on November 1 in the Eastern Subdistrict west of 163° W long. The commercial Tanner crab harvest in 1994 was 7.8 million pounds; in 1995 the harvest declined to 4.2 million pounds (Table 2-19).

The GHL for the 1996 Tanner crab fishery was 8.4 million pounds (Table 2-20). Due to poor fishery performance, the fishery was closed before the GHL was reached; a total of 1.8 million pounds was harvested. The average size of crabs harvested in 1996 was 152 mm carapace width (CW). This compares to an average of 149 mm CW observed in 1995.

Based on poor fishery performance in 1996 and results from the 1997 NMFS survey indicating significant declines in most segments of the Tanner crab population (Stevens et al. 1998a), the Bering Sea Tanner crab fishery remained closed for the 1997 season. The 1998 NMFS survey indicated further declines in Tanner crab abundance and the fishery did not open in 1998. Abundance of large male and female Tanner crabs continued to decline to the lowest level in the history of the survey (Stevens et al. 1998b). Because the stock fell below the MSST established in the FMP for this fishery, the stock was declared overfished by NMFS in 1998, necessitating the establishment of a rebuilding plan.

At the March 1999 BOF meeting, a revised harvest strategy was adopted as part of a comprehensive Bering Sea Tanner crab rebuilding plan. The harvest strategy for the Eastern Subdistrict specifies a threshold of 21.0 million pounds of mature female biomass that, for management purposes, are females ≥ 80 mm CW. No directed crab fishery is prosecuted when female biomass is below that threshold. When the mature female biomass is between 21.0 million and 45.0 million pounds, a maximum harvest rate of 10% is applied to “molting mature males”, or those mature male crabs likely to continue to grow, defined as 100% of new-shell and 15% of old-shell males greater than 112 mm CW. When the mature female biomass is above 45.0 million pounds the harvest rate is set at a maximum of 20% of molting mature males.

When establishing a harvest level, no more than 50% of the exploitable legal-size male abundance may be harvested. Exploitable legal-size male abundance is 100% of new shell and 32% of old-shell male crabs greater than 140 mm CW. The current management plan establishes separate harvest levels for the areas east and west of 166° W long. The BOF eliminated the minimum harvest level for this fishery in spring 2006. If the fishery is not opened because it did not meet threshold requirements, the fishery may reopen the following season, but only half of the calculated TAC may be taken that year. This safeguard was established to protect against survey bias in the year following a closure due to low stock abundance.

Pre-recruit crab abundance began increasing in 1998 and 1999, but this trend reversed in 2000 and 2001. In addition, the stock remained below fishery threshold level established in the harvest strategy and the fishery was closed from 1999 through the 2005 season.

From results of the 2005 NMFS survey, the stock was estimated to be above the minimum mature female biomass threshold and the fishery opened for the 2005/06 season in the area west of 166° W long. with the TAC set at 1.5-million pounds for the IFQ fishery. In computing the TAC for the area west of 166° W long., the abundance of exploitable legal male Tanner crabs estimated for statistical area 695700 was not included in the TAC computation; although this statistical area accounted for approximately 27% of the exploitable legal male Tanner crabs west of 166° W long. estimated from the 2005 trawl survey, the area was closed to commercial fishing to protect the Pribilof blue king crab stock. The 2005/06 season did not open in the area east of 166° W long. because the TAC as calculated according to the harvest strategy (1.02-million pounds) was below the minimum 4.0 million pound TAC that was in regulation at that time for the area east of 166° W long. Forty-three vessels harvested Tanner crab during the 2005/06 season, but only six of those fished directly on Tanner crab with Tanner crab gear; the remainder harvested incidentally captured legal Tanner crab while directing their fishing on snow crab with snow crab gear. Only 0.791 million pounds of the TAC for 2005/06 was harvested, apparently due to the fact that many harvesters were unaware that the Tanner crab season closed more than a month earlier than the snow crab season.

The 2005/06 season was the first CR Tanner crab fishery. The CR program resulted in a substantial reduction in fleet size compared to the pre-CR fisheries in the early 1990s and a lengthened fishing season. As part of the CR program the pot limit for Bering Sea Tanner crab was raised to 450 pots per vessel however the average vessel operator used less than 200 pots.

2006/07 Season

After the 2005/06 season the BOF eliminated the minimum TAC for Bering Sea Tanner crabs. The 2006/07 Bering Sea Tanner crab TAC was set at 1.875 million pounds for the area east of 166° W long. and 1.94 million pounds for the area west of 166° W long. Although the 2006/07

fishery opened on 15 October 2006, most catch and effort in the area east of 166° W long. occurred during January–March 2007. Most of the harvest in the area east of 166° W long. was taken in statistical areas 645501 and 655500; i.e., between 164° and 166° W long. and between 55°00' and 55°30' N lat. (Table 2-21). Thirty-seven vessels harvested 1.27-million pounds during the IFQ fishery. Average weight of landed catch in the IFQ fishery in the area east of 166° W long. was 2.4 pounds. Vessels fishing for Tanner crabs in the area east of 166° W long. could direct effort on Tanner crabs with Tanner crab gear or retain Tanner crabs that were captured in king crab gear while directing fishing on Bristol Bay red king crabs, making summaries of catch per unit effort, size frequencies, or bycatch for the entire 2006/07 season difficult to produce or to interpret.

Like the fishery for the area east of 166° W long., most catch and effort in the area west of 166° W long. occurred during January–March 2007, with only limited catch and effort during October–November 2006. Most of the harvest in the area west of 166° W long. was taken in statistical area 695631, just north of St. George Island. Thirty-eight vessels harvested 0.633-million pounds during the IFQ fishery. Average weight of landed catch in the area west of 166° W long. was 2.1 pounds. Vessels fishing for Tanner crabs in the area west of 166° W long. could direct effort on Tanner crabs with Tanner crab gear or retain Tanner crabs that were captured in snow crab gear while directing fishing on snow crabs, making summaries of catch per unit effort, size frequencies, or bycatch for the entire 2006/07 season difficult to produce or to interpret.

Harvesters were paid an average price of \$1.29 per pound for Bering Sea Tanner crabs for a total fishery value of \$2.4 million.

Port Sampling

Bering Sea Tanner crabs taken during the 2006/07 season were delivered in Dutch Harbor, Akutan and King Cove. ADF&G port samplers collected data from 35 Tanner crab trips. Landed crabs averaged 2.3 pounds compared to 2.2 in 2005/06 and had an average carapace width of 150.0 mm compared to 144.5 mm in 2005/06. Only 35.9% of the 2006/07 catch consisted of new shell crabs while 92.1% of the crabs landed in 2005/06 were classified as new shell (Table 2-22).

Stock Status

ADF&G's area-swept estimates for mature-sized female abundance in the Eastern Subdistrict increased by approximately 50% between 2005 and 2006 to 65.5 million crabs. The area-swept abundance estimates for mature-sized males in the Eastern Subdistrict also increased between 2005 and 2006, to an estimated 65.793-million crabs. As in 2005, two-thirds of the estimated abundance of mature-sized males in 2006 was from the area west of 166° W long. The abundance of legal males in the Eastern Subdistrict estimated for 2006 (11.141-million crabs) was essentially unchanged from the estimate for 2005 (10.954-million crabs). However, due to a higher incidence of old-shell and older legal males in 2006, the estimated abundance of exploitable legal males in 2006 (5.135-million crabs) was lower than in 2005 (6.913-million crabs). The abundance estimates of legal males and of exploitable legal males in the areas east and west of 166° W long. in 2006 were comparable (2.668-million crabs in the east and 2.467-million crabs in the west).

There was a relatively large mode at approximately 75-mm CW in the size frequency distributions for both males and females in 2006; hence continued recruitment into the mature size classes would be expected in the near-term. However, unlike the size frequency distributions for the previous four years, there was very poor representation of males or females <50-mm CW in 2006, which was not a promising sign for continued recruitment to mature size classes. Old and very old shelled crabs represented 80% of the legal-sized males and more than one-half of the sublegal, mature-sized males (Rugolo et al. 2006) during the 2006 survey. Although, the high incidence of old or older-shelled crab among those males could have been due to later than usual molting associated with the cold water temperatures recorded during the 2006 summer survey, it is more likely that the old shell crabs represented males that terminally molted to maturity a year or more earlier. Hence, in terms of growth, low future productivity would be expected from the mature-sized males and, especially, the legal males that were present during the 2006 survey.

The distribution of legal-sized males in the 2006 trawl survey shows that catches of legal males in the Western Subdistrict (i.e., the area west of 173° W long.) were low and sporadic during the survey.

The Bering Sea Tanner crab stock was below the rebuilt level during the 2006/07 season.

BERING SEA SNOW CRAB

Historic Background

The first commercial landings of snow crabs from the Bering Sea were recorded in 1977, incidental to the harvest of Tanner crabs. In 1981, a reduction in the Tanner crab harvest resulted in increased snow crab harvest. The harvest of snow crabs fell from 52.8 million pounds in 1981 to 26.1 million by 1983 (Table 2-23, Figure 2-11). In 1984, harvest increased slightly, and in 1985, 65 million pounds were landed. In 1986, the harvest increased to 98.0 million pounds. The commercial catch continued to increase annually to a high of 328.6 million pounds in 1991. Although stocks began to decline, the harvest of snow crabs remained over 100 million pounds through the 1994 season. In 1996, the harvest declined to 65.7 million pounds, the lowest in the preceding eleven seasons. The GHL more than doubled in 1997 to 117.0 million pounds and the fleet harvested 119.5 million pounds. In the 1998 general fishery, 229 vessels harvested 243.5 million pounds.

The NMFS stock assessment survey in 1998 indicated that the estimate of large male snow crabs declined by 17% from the prior year's survey, resulting in a general fishery GHL of 186.2 million pounds. Two hundred and forty one vessels landed 184.7 million pounds during the 1999 general fishery, ending on March 22.

In 1999, the surveyed stock was 60% of the minimum stock size threshold, defined as half the long term average mature biomass established in the FMP for Bering Sea and Aleutian Islands king and Tanner Crab (NPFMC 1998). In response to significant stock decline, ADF&G initially reduced the 58% exploitation rate on 102 mm CW and larger male snow crabs by 50%. The revised 29% exploitation rate would still have resulted in a removal rate from the estimated mature biomass close to the long-term average. Thus, in accordance with NMFS guidelines for stock rebuilding, the harvest rate was reduced by an additional 25% to 22%, which also took into consideration handling mortality during the fishery and high natural mortality during the six

month hiatus between the survey and the fishery opening. This reduction in exploitation rate resulted in a GHL of 28.5 million pounds for the 2000 season.

The 2000 snow crab fishery was scheduled to open by regulation at noon on January 15. However, by early January, a significant portion of the fishing grounds were ice covered. The ADF&G and industry had concerns about potential gear conflicts and gear loss due to sea ice and vessel interactions because of the limited fishing area. ADF&G was also concerned with the handling effects and the potential for increased handling mortality and limb loss of captured crabs in a derby-style fishery under extreme weather conditions. ADF&G received input from representatives of the crab industry and the majority indicated a desire to delay the season. The USCG was also in favor of delaying the season due to vessel safety concerns during severe vessel icing conditions. On January 7, ADF&G announced by news release that the fishery would be delayed and would not open prior to April 1, and that two weeks advance notice would be provided to industry prior to an opening. On March 7, ADF&G issued a news release defining criteria that would be used to open the fishery. These criteria, developed with input from industry, specified that at least 50% of the fishing grounds had to be ice free at the time of the opening, and that the ice edge at 167° W long. could be no further south than 58° N lat. On March 15, ADF&G issued a news release indicating opening criteria had been met and that the fishery would open at noon on April 1.

The 2000 general fishery opened at noon on April 1 and closed at noon on April 8 (Table 2-24). A total of 229 vessels, including nine catcher-processors, registered and received tank inspections in Akutan, Dutch Harbor, King Cove, and Saint Paul Island. In addition, five floating processors registered to purchase and process crabs on the grounds during the fishery. In 1999, 241 vessels, including 10 catcher-processors, participated along with 11 floating processors.

Due to the relatively small GHL, management of the 2000 fishery was based on daily inseason reports from fishers. A total of 75 vessel operators or 33% of the fleet reported numbers of pots fished and number of crabs retained daily. Reports were received via marine telex and over single side band radio every 24 hours and were used to generate inseason estimates of harvest.

The 2000 snow crab harvest of 30.8 million pounds exceeded the 26.4 million pound general fishery GHL by 17% and the fishery CPUE was 137 retained crabs per pot compared to 160 in 1999.

Based on inseason reports, fishers made a total of 170,064 pot pulls throughout the course of the seven-day 2000 fishery. The average number of pot pulls per day was 24,700 and ranged from 2,241 on the first day of the fishery to 43,905 on the day of the closure. In comparison, the 1999 fishery lasted 66 days and the average number of pots pulled per day was 13,621.

Harvest from the Eastern Subdistrict was 20.9 million pounds from 217 landings, or 68% of the total harvest (Table 2-25). In recent years the majority of the harvest has occurred in the Eastern Subdistrict. Total harvest from the Western Subdistrict was 9.8 million pounds from 92 landings. The majority of the Eastern Subdistrict harvest came from six statistical areas surrounding the Pribilof Islands. The majority of the harvest in the Western Subdistrict came from four statistical areas along the 100 fathom depth contour, between 173° and 174° W long. In both subdistricts the majority of the harvest came from areas which have, in recent years, contributed the majority of the harvest.

Analysis of observer and dockside sampling data indicated an average weight of 1.3 pounds for crabs landed during the 2000 fishery. New-shell crabs made up 95.2% of the harvest. In 1999, new-

shell crabs made up 97.7% of the harvest and the overall average weight was 1.3 pounds. Crabs less than 102 mm CW made up 6.5 percent of the 2000 harvest (Table 2-26).

The exvessel price for snow crabs harvested in the 2000 fishery was two-tiered due to concerns for higher than normal old-shell crabs expected in the catch. Fishers were offered \$1.85 per pound for new-shell crabs and \$1.00 per pound for old-shell crabs. Fishers reported encountering high percentages of old-shell crabs in the first two days of the fishery, but thereafter located areas which contained predominantly new-shell animals. As a result, less than 10% of crabs landed were old-shell animals. Based on an average exvessel price of \$1.81 per pound, the 2000 snow crab fishery was worth \$55.1 million. This compares to an exvessel price of \$0.88 per pound and an overall fishery value in excess of \$161 million in 1999 (Table 2-27).

Analysis of the 2000 National Marine Fisheries Service summer trawl survey of the Eastern Bering Sea indicated a 19% decrease in the abundance of large (≥ 102 mm CW) male crabs from the 1999 survey. However, small (< 102 mm CW) male and large (≥ 50 mm CW) female abundance increased 100% and 212%, respectively. Due to the large increase in both small male and large female abundance, the spawning biomass, estimated at 472.7 million pounds, was slightly above the minimum stock size threshold of 460.8 million pounds.

In the spring of 2000, the BOF adopted a harvest strategy specifying a stepped harvest rate on mature male crabs that is dependant on estimated spawning biomass and that would rebuild the stock. The rebuilding plan specifies an exploitation rate of 16.875% of the mature male biomass when the spawning biomass is between 460.8 and 921.6 million pounds, resulting in a GHL for the 2001 season of 27.3 million pounds with 25.3 available to the general fishery and 2.0 million pounds allocated to the CDQ fishery.

The 2001 Bering Sea snow crab general fishery opened by regulation at noon on January 15 and closed by emergency order at 11:59 p.m. on February 14. The fleet harvested 23,382,046 pounds, or 92% of the GHL. A total of 207 vessels, including 7 catcher-processors participated in the 2001 fishery. The average exvessel price per pound in 2001 was \$1.53, resulting in a total fishery value of \$32.1 million, a significant decrease from the 2000 fishery value of \$55.1 million.

The 2001 NMFS trawl survey of the Eastern Bering Sea indicated a 2% increase in the abundance of large male crabs when compared to the 2000 survey. Pre-recruit male and large female abundance increased 114% and 3%, respectively. The total mature biomass of snow crab in the Bering Sea was estimated to be 571.0 million pounds which is above the minimum stock size threshold of 460.8 million pounds.

Given the estimated total mature biomass of 571.0 million pounds and current harvest strategy requirements, the GHL was set using a 16.875% exploitation rate. The calculated GHL of 51.0 million pounds constituted a harvest greater than 50% of the estimated exploitable legal male abundance and thus, according to harvest strategy requirements was adjusted down to not exceed 50% of the exploitable legal male abundance. The resultant 2002 Bering Sea snow crab GHL was 30.8 million pounds with 28.5 million pounds available to the general fishery. The remaining 2.31 million pounds were allocated to the CDQ fishery.

The 2002 Bering Sea snow crab general fishery opened by regulation at noon on January 15 and closed by emergency order at noon on February 8. Total harvest was 30,252,501 pounds, exceeding the general fishery GHL by 1.8 million pounds (6.4%).

A total of 191 vessels, including eight catcher-processors, participated in the 2002 fishery. Three floating processors also registered and purchased crabs on the grounds during and after the fishery. A total of five shore-based processors in Dutch Harbor, two in Saint Paul, one in King Cove and two in Kodiak also purchased and processed snow crabs. In addition, two catcher-processor vessels purchased snow crabs from catcher vessels after the fishery.

Analysis of the 2002 National Marine Fisheries Service summer trawl survey of the Eastern Bering Sea indicated a 2% decrease in the abundance of large (≥ 102 mm cw) male crabs when compared to the 2001 survey. Small (< 102 mm cw) male and large (≥ 50 mm cw) female abundance decreased 12% and 67%, respectively. TMB of snow crab in the Bering Sea was estimated to be 313.0 million pounds which is below the minimum stock size threshold of 460.8 million pounds, and is a decrease from the 2001 TMB estimate of 571.0 million pounds.

Given the estimated total mature biomass of 313.0 million pounds and harvest strategy requirements, the GHl was set using an 11.5% exploitation rate. The resultant 2003 Bering Sea snow crab GHl was 25.61 million pounds with 23.69 million pounds available to the general fishery. The remaining 1.92 million pounds were allocated to the CDQ fishery.

The 2003 Bering Sea snow crab general fishery opened by regulation at noon on January 15 and closed by emergency order at 6:00 a.m. on January 25. Fish ticket data indicate a harvest of 26.34 million pounds, which exceeds the general fishery GHl by 2.65 million pounds (11.2%). A total of 192 vessels, including five catcher processors participated in the 2003 fishery. Three floating processors also registered and purchased crabs on the grounds during and after the fishery. A total of six shore-based processors in Dutch Harbor, two in Saint Paul, one in King Cove and one in Kodiak also purchased and processed snow crabs. In addition, two catcher processor vessels purchased snow crabs from catcher vessels after the fishery.

The estimated average weight of crabs landed during the 2003 fishery was 1.2 pounds, a slight decrease from the 2002 average weight of 1.3 pounds. Port sampling data does not indicate a significant difference in average weight between crabs harvested in the Eastern and Western Subdistricts (Table 2-25). In 2003, relatively little of the snow crab harvest occurred in the Eastern Subdistrict, a sharp contrast to the fisheries of the 1990s when the majority of the harvest occurred east of 173° W long. During 2003, approximately 4.0 million pounds (15%) of snow crabs were harvested east of 173° W long.

As in 2002, representatives of the snow crab fleet voted to accept a price offer from processors prior to the start of tank inspections. The fleet voted to accept \$1.85 per pound for new-shell crabs that were four inch and greater CW, a substantial increase from the 2002 price of \$1.40 per pound. In contrast to 2002, the fleet did not encounter large numbers of old or very old shell crabs on the grounds (Table 2-26) resulting in an average exvessel price of \$1.83 per pound and a total exvessel value of nearly \$47 million, an increase from the 2002 exvessel value of \$44 million (Table 2-27).

Analysis of the 2003 National Marine Fisheries Service summer trawl survey of the Eastern Bering Sea indicated a 16% decrease in the abundance of large (≥ 102 mm cw) male crabs when compared to the 2002 survey. The TMB of snow crab in the Bering Sea was estimated to be 306.2 million pounds which is below the minimum stock size threshold of 460.8 million pounds, and is a decrease from the 2002 TMB estimate of 313.0 million pounds.

Given the estimated total mature biomass of 306.2 million pounds and current harvest strategy requirements, the GHL was set using an 11.5% exploitation rate. The resultant 2004 Bering Sea snow crab GHL was 20.83 million pounds with 19.27 million pounds available to the general fishery. The remaining 1.56 million pounds were allocated to the CDQ fishery.

Based upon the GHL, regulatory pot limits for vessels under 125 feet in overall length were limited to 70 pots and 90 pots for vessels over 125 feet in overall length. The fleet purchased a total of 14,460 buoy tags, which was a decrease from a total of 20,452 buoy tags purchased in 2003.

The 2004 Bering Sea snow crab general fishery opened by regulation at noon on January 15 and closed by emergency order at 10:00 p.m. on January 23. Fish ticket data indicate a harvest of 22.17 million pounds, exceeding the general fishery GHL of 19.27 million pounds by 2.9 million pounds (15%).

During the vessel tank inspection process over 50% of the fleet volunteered to make daily catch and effort reports to the department. A total of 189 vessels participated in the 2004 fishery. The overall CPUE was 157 crabs per pot lift from 110,087 pot lifts.

ADF&G dockside sampling staff was present at 112 of the landings made by vessels without observer coverage to collect confidential interviews and biological data during offloads. Approximately 2% of the crabs from the 2004 fishery were sampled generating an average estimate of 1.31 pounds per crab. Less than 1% of the crabs delivered were sampled for carapace width and shell condition. Average carapace width for sampled crabs was 110.4 mm. Of the measured crabs, 86% were new shell, 13% old shell and 1% very old shell. 10.2% of sampled crabs were less than 102 mm CW.

Three floating processors registered and purchased crabs on the grounds during and after the fishery. Six shore-based processors in Dutch Harbor, two in Saint Paul, one in King Cove and two in Kodiak also purchased and processed snow crabs. In addition, two catcher processor vessels purchased snow crabs from catcher vessels after the fishery. Processors paid an average price of \$2.05 per pound for a total fishery value of \$44.99 million.

Analysis of the 2004 National Marine Fisheries Service summer trawl survey of the Eastern Bering Sea indicated a 4% increase in the abundance of large (≥ 102 mm cw) male crabs when compared to the 2003 survey. Small (< 102 mm cw) male abundance decreased 2% and large (≥ 50 mm cw) female abundance increased 32%. TMB of snow crab in the Bering Sea is estimated to be 343.7 million pounds which is below the minimum stock size threshold of 460.8 million pounds and is an increase from the 2003 TMB estimate of 306.2 million pounds.

Given the estimated total mature biomass of 343.7 million pounds and harvest strategy requirements, the GHL was set using an 11.5% exploitation rate. The 2005 Bering Sea snow crab GHL was 20.932 million pounds with 19.362 million pounds available to the general fishery. The remaining 1.57 million pounds were allocated to the CDQ fishery. The general fishery opened at noon on January 15 and closed by emergency order at 11:59 p.m. on January 20. Fish ticket data indicate a harvest of 23.036 million pounds, which exceeds the general fishery GHL by 3.674 million pounds (19%). Fishery CPUE was 239 retained crabs per pot, the highest on record.

A total of 169 vessels registered for the 2005 fishery. Two floating processors registered and purchased crabs on the grounds during and after the fishery. Six shore-based processors in

Dutch Harbor, two in Saint Paul, one in King Cove, and one in Kodiak also purchased and processed snow crabs. In addition, one catcher processor vessel purchased snow crabs from catcher vessels after the fishery.

The fleet accepted \$1.80 per pound for new-shell crabs that were four inches and greater in carapace width, a decrease from the 2004 price of \$2.05 per pound. The fleet did not encounter large numbers of old or very old shell crabs on the grounds resulting in an exvessel price of \$1.80 per pound and an exvessel fishery value of \$41 million, a slight decrease from the 2004 exvessel fishery value of \$45 million.

The first rationalized season for snow crab (2005/06) opened on October 15, 2005 with an IFQ TAC of 33.5 million pounds and 78 vessels participating. A total of 33.26 million pounds were harvested. Average weight of harvested crabs was 1.51 pounds, 11% greater than the preseason estimate (1.35 pounds) and greater than any average weight for this fishery since 1981. Harvests in the 2005/2006 season were reported from more than 40 different statistical areas, but 82% of the total pot lifts and 89% of the total harvest occurred in just 10 statistical areas. The single statistical area with the greatest effort (18,823 pot lifts) and largest catch (5.84-million pounds) was statistical area 715630, which accounted for 16% of the season's total harvest. Harvest from the Eastern Subdistrict (i.e., east of 173° W long.) accounted for 62% of the total snow crab harvest and 71% of the harvest was from areas south of 58°30' N latitude. In general, harvest location has shifted to the southeast compared to the 2000-2005 seasons.

Total fishery CPUE for retained legal crabs in the 2005/06 fishery was 204 crabs per pot, which was lower than that for the pre-rationalized 2005 general fishery (239 crabs per pot), but which was otherwise the highest CPUE since the 1999 season. Estimated average soak time for the 2005/06 season was 65 hours (Barnard and Burt 2007) as compared 21 hours for the pre-rationalized 2004 and 2005 general fishery seasons (Burt and Barnard 2006, Barnard and Burt 2006). Compared to the short (≤ 9 days) general fisheries of the pre-rationalized 2003-2005 seasons, the 2005/2006 season was prolonged and had varying levels of vessel participation, catch, effort, and catch rates over a 7.5-month period

2006/07 Season

The area-swept estimate of TMB for the stock in 2006 was estimated from the 2006 trawl survey to be 547.6-million pounds (NPFMC 2006), which was above the state harvest strategy threshold for a fishery opening (230.4-million pounds). However, TAC calculations for the 2006/07 season were based on the 2006 snow crab assessment model "survey" estimates. That was the first time that estimates from the snow crab assessment model were used to calculate the snow crab TAC. The choice to use the snow crab assessment model estimates was due to the uncertainty in the area-swept abundance estimate of males ≥ 4 -inches CW, the unexpected doubling of the area-swept abundance of males ≥ 4 -inches CW between 2005 and 2006, and the influence of the uncertain and unexpected area-swept abundance estimate of males ≥ 4 -inches on the area-swept estimate of TMB. Overall, the 2006 snow crab model "survey" estimates were considered by the NPFMC Crab Plan Team to be more accurate in 2006 than the area-swept estimates. Application of the harvest strategy to the 2006 snow crab model "survey" estimates resulted in a TAC of 38.814-million pounds. The TAC was determined by the 58% "exploited legal cap" on an estimated exploited legal male abundance of 50.375-million crabs (using 25% as the estimate for old-shell fishery selectivity) with an estimated average weight of 1.26 pounds. The 2006/07 EBS snow crab IFQ TAC was reduced to 32.9 million pounds to account for the

closure of statistical area 695700, which was closed to protect Pribilof blue king crab from bycatch.

The 2006/07 season opened on 15 October 2006 and 69 vessels participated. A total of 32.7 million pounds were harvested of which 1.1% was deadloss. Total effort was approximately 80,000 pot lifts for the IFQ fishery and the CPUE was 332 crabs per pot, a value that is more than 60% higher than that of the 2005/06 season and which is the highest in the record of the fishery. Additional to the landed crabs, approximately 5% of the 4-inch males captured during the fishery were not retained. On average each vessel operator used 162 pots compared to 176 pots during the 2005/06 season. Estimated average soak time during the 2006/07 season was 63 hours, which was comparable to the estimated average soak time during the 2005/06 season (65 hours), but three times greater than the average soak times for the pre-rationalized 2004 and 2005 general fishery seasons (21 hours). First landings were made in early November 2006 and landings continued into early May 2007; most of the harvest occurred during mid-January through mid-April 2007 (Table 2-28). On average each snow crab vessel was registered for 36 days compared to 42 during the 2005/06 season.

Effort during the 2006/07 IFQ fishery was reported from 29 statistical areas (Table 2-29). By comparison, harvests were reported from more than 40 statistical areas during the 2005/06 season. Nearly one-half (48%) of the 2006/07 harvest occurred in only two statistical areas (715700 and 725700) and more than 90% occurred in only seven statistical areas. Four statistical areas to the west of the Pribilof Islands (715630, 725630, 715700, and 725700) accounted for 74% of the total harvest. Statistical areas south of 58° 30' N lat. accounted for 95% of the harvest. Harvests from the Eastern Subdistrict (i.e., east of 173° W long.) accounted for 87% of the total harvest. Statistical area 735800, which was a high-producing statistical area in the more recent pre-rationalized seasons, accounted for only 1% of the total catch.

Processors paid an average price of \$1.40 per pound for Bering Sea snow crabs during the 2006/07 season for a total fishery value of \$36.85 million.

Port Sampling

ADF&G port samplers stationed in Dutch Harbor, Kodiak, Akutan and King Cove collected biological data from 77 trips during the 2006/07 snow crab fishery. Sampled crabs averaged 1.2 pounds live weight, a 0.3 pound decrease from the 2005/06 average weight of 1.5 pounds. Eighty-eight percent of sampled crabs were classified as having new shells and the average CW was 109 mm, a slight decrease from the 2005/06 fishery. Approximately 9% of sampled crabs were less than 4" CW.

Stock Status

Results of the summer 2006 EBS trawl survey yielded an area-swept estimate of TMB of 547.6-million pounds, down slightly from the estimate for 2005, but still above MSST. Area-swept estimates of TMB continue to remain near the MSST level without any apparent trend towards rebuilding to the B_{MSY} level (NPFMC 2006). The 2006 snow crab assessment model estimated that the survey TMB was 500.2-million pounds and that TMB had slowly risen from 2003 through 2006 (NPFMC 2006); moreover, the 2006 snow crab assessment model projected TMB to increase through 2010 and then decline.

The area-swept abundance estimate of males ≥ 4 -inches (102-mm) CW in the standard survey area for 2006 (144-million crabs) was double the estimate for 2005 and the highest since 1998.

Seventy-five percent of the males ≥ 4 -inches CW were estimated by the area-swept method to be in new-shell condition. However, the area-swept estimate for 4-inch males was highly influenced by results from a single tow, was high in comparison with expectations from the preceding surveys, and was associated with extremely poor precision. The 2006 area-swept abundance estimate of males 78–101 (288-million crabs) was essentially the same as for 2005 (284-million) and comparable to annual estimates during 1999–2004 ranging from 106-million (2004) to 288-million (2001). The 2006 area-swept abundance estimate of males < 78 -mm CW (1,107-million crabs) was lower than the 2005 estimate (1,911-million) and, although greater than each of the annual estimates for 1997–2000, was lower than 4 out of the 5 annual estimates for 2001–2005. The area-swept abundance estimate for females ≥ 50 -mm CW in 2006 (1,045-million crabs) was 64% of the 2005 estimate and the abundance estimate for females < 50 -mm CW (670-million crabs) was 48% of the 2005 estimate. Estimated abundance of females ≥ 50 -mm CW during the 1999–2005 surveys had ranged from 511-million (2002) to 1,631-million (2005), whereas estimated abundance of females < 50 -mm CW had ranged from 181-million (2002) to 1,869-million (2004). The area-swept estimate of mature female biomass was also lower in 2006 (215-million pounds) than in 2005 (313-million pounds). The area-swept estimate of mature male biomass in 2006 (333-million pounds) was up slightly from the 2005 estimate (298-million pounds), but more than half of that estimate was attributable to males ≥ 4 -inches CW and, hence, highly influenced by the results from one tow.

Relative to FMP criteria, the Bering Sea snow crab stock remains below the rebuilt level.

BERING SEA GROOVED TANNER CRAB

Historic Background

In 1988, BOF established a special permit season for deepwater Tanner crabs. However, no commercial harvest of grooved Tanner crabs from the Bering Sea occurred until 1992. In 1993, ADF&G restricted the harvest to male crabs with a CW of 127 mm (5 inches) or greater. Six vessels harvested just less than 660,000 pounds. The following year, differential pot limits, based on vessel size, were applied to vessels fishing for deepwater Tanner crabs in the Bering Sea. Effort and landings consequently decreased as four vessels harvested slightly over 300,000 pounds (Table 2-30).

At the March 1995 meeting, BOF determined that pot limits should not apply to the deepwater permit fisheries of the Westward Region. Effort increased significantly that year when eight vessels harvested under one million pounds with a fishery value exceeding \$2.0 million. Since 1995, the number of vessels registered for Bering Sea District grooved Tanner crabs has not exceeded four vessels for any year. Catch per unit effort was highest in 1994 at 11 legal crabs per pot lift and declined to four in 1996. Harvests decreased from just under 1,000,000 pounds in 1995 to 96,000 pounds in 1996. No vessels registered to fish grooved Tanner crabs in the Bering Sea District from 1997 to 1999, while only one vessel registered each year in 2000 and 2001. Four vessels registered for the directed Bering Sea grooved Tanner crab fishery in 2004. Two additional vessels registered to retain grooved Tanner crab incidentally taken during the Pribilof District golden king crab fishery, but did not harvest any grooved Tanner crab. The Bering Sea District grooved Tanner crab harvest in 2004 was confidential because only one processor participated in the fishery. There was one vessel registered to fish for grooved Tanner crab in the Bering Sea during 2005. Historically, fishing effort has been concentrated in a few statistical areas immediately south of Saint George Island.

In 1997, ADF&G set GHLS for grooved Tanner crabs that were based on prior harvest information. In the past, the Bering Sea, Alaska Peninsula, and Eastern Aleutian Districts supported the largest catches of grooved Tanner crabs. A GHLS of 200,000 pounds was established for each of these districts. A GHLS of 100,000 pounds was established in the Kodiak and Western Aleutian Districts to allow for exploratory fishing. Additionally, due to concerns about handling mortality on undersized and female deepwater crabs caught and released, ADF&G began to require a minimum of two escape rings per pot with a minimum inside ring diameter of 4.5 inches.

Given fishery performance and declining harvests of the mid-1990s, the department reevaluated deepwater Tanner crab harvest levels in 1999. A GHLS range of 50,000 to 200,000 pounds was established for the Bering Sea District. The GHLS was set as a range to provide greater flexibility for inseason management and to better inform the public of the department's management goals for the fishery. The fishery is managed so that the upper end of the GHLS range is reached only when catch rates similar to or greater than those documented prior to the harvest declines of the mid 1990s are observed. In addition to new GHLS requirements, the department specified that four 4.5" escape rings be placed on the lower third of each pot and required that pots be fished over multiple depth strata. Since 1994, observers have been deployed to collect biological and fishery data on each vessel registered for the fishery.

2006 Fishery

There were no vessels registered to fish for grooved Tanner crab in the Bering Sea during 2006.

Stock Status

The grooved Tanner crab population in the Bering Sea District is not surveyed; subsequently, no estimates of population abundance are available for this stock. Fishery data is the primary source of information regarding abundance and stock status. Based on the available information, the Bering Sea grooved Tanner crab stock was heavily exploited in the mid-1990s and catch rates decreased to a level where the commercial fishery was no longer economically viable. Since then, the stock has been managed more conservatively and based on the most recent fishery performance data, appears to have stabilized or recovered slightly.

BERING SEA TRIANGLE TANNER CRAB

Historic Background

Historically, triangle Tanner crabs *Chionoecetes angulatus* were taken as incidental harvest in the grooved Tanner crab fishery. Vessel operators have verbally reported retention of triangle Tanner crabs before 1994. To obtain biological information on grooved Tanner crabs, ADF&G implemented 100% onboard observer coverage in 1994. That year, onboard observers documented a single incidence of triangle Tanner crab bycatch, but prior to 1995, this species had not been commercially harvested. In 1995, four vessels registered to retain triangle Tanner crabs, and harvested 40,991 pounds for a total fishery value of \$60,000 (Table 2-31). In 1996, 2000, and 2001, only one vessel delivered triangle Tanner crabs as incidental harvest each year. No vessels registered to fish triangle Tanner crabs in the Bering Sea District in 1997, 1998, 1999, or 2002 (Table 2-31). Four vessels registered to retain triangle Tanner crab incidentally taken during the Pribilof District golden king and Bering Sea grooved Tanner crab fisheries on 2004. There were no vessels registered to fish for triangle Tanner crabs in the Bering Sea District during 2005.

Due to the lack of stock abundance data for this species, additional fishing for triangle Tanner crabs in the Bering Sea District will be limited to incidental harvest during the grooved Tanner and Pribilof District golden king crab fisheries. Vessels registered to fish for grooved Tanner crabs will be permitted to retain incidentally taken triangle Tanner crabs at up to 50% of the weight of the target species. In the Pribilof District golden king crab fishery, incidentally taken triangle Tanner crabs may be retained at up to 5% of the weight of the target species onboard the vessel. This harvest level is consistent with the historic catches and allows for limited retention of this deepwater species that is believed to experience significant handling mortality when caught and released.

2006 Fishery

There were no vessels registered to fish for triangle Tanner crabs in the Bering Sea District during 2006.

Stock Status

Surveys of population abundance are not conducted for triangle Tanner crabs in the Bering Sea; thus the status of this stock is unknown. There are currently no plans to survey this population.

MISCELLANEOUS SHELLFISH SPECIES BERING SEA

DESCRIPTION OF AREA

The Bering Sea portion of Registration Area J, as described herein for miscellaneous shellfish, includes all Bering Sea waters of both the Territorial Sea and the EEZ north of the latitude of Cape Sarichef at 54° 36' N lat. and east of the United States-Russia Maritime Boundary Line of 1991 (Figure 2-12).

INTRODUCTION

Miscellaneous shellfish species include hair crabs *Erimacrus isenbeckii*, green sea urchins *Strongylocentrotus droebachiensis*, red sea cucumbers *Parastichopus californicus*, snails *Neptunea* and *Buccinum*, octopus *Octopus dofleini*, and *Paralomis multispina*, a deepwater crab closely related to king crabs. These species have been harvested in relatively small amounts when compared to the commercial king and Tanner crab fisheries in the Bering Sea. Prior to 1999, commercial fishing for miscellaneous shellfish species was allowed under authority of a commissioner's permit described in 5 AAC 38.062. PERMITS FOR OCTOPI, SQUID, HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, CORAL, AND OTHER MARINE INVERTEBRATES. Typical permit conditions were general and not fully developed on an individual species basis. Fisheries for miscellaneous shellfish species occurred without prior knowledge of stock abundance or distribution and no harvest limits were established. More recently ADF&G has developed species-specific permit terms when sufficient information has been available to do so. ADF&G will only register vessels for those fisheries with an established GHL, or when sufficient data to develop a conservative GHL can be collected.

Those species of current or historic interest in the Bering Sea include *P. multispina*, hair and Dungeness crabs *Cancer magister*, octopus, and snails. North Peninsula District shrimp do not fall under the miscellaneous species category, but are included in this report due to low or infrequent annual harvests.

BERING SEA HAIR CRABS

Description of Area

The Bering Sea hair crab fishery is prosecuted in an area that includes all waters north of 54° 36' N lat., south of 60° N lat., east of the United States-Russia Maritime Boundary Line of 1991, and west of 168° W long. (Figure 2-13). There is no formal hair crab registration area established in regulation; rather, the fishing area is set using the terms of a commissioner's permit.

Historic Background

The fishery for hair crabs in the Bering Sea was pioneered by the Japanese fleet during the 1960s and first commercially exploited by the U. S. fleet in 1979. In its early years, the domestic hair crab season was opened by emergency order concurrent with the Bering Sea Tanner crab fishery. In 1980, the BOF established a year-long season within a three-mile area of the Pribilof Islands. In 1984, under conditions of a commissioner's permit issued by ADF&G, the year-round hair crab fishery was expanded in the Bering Sea District. Between 1979 and 1992, however, the majority of hair crabs landed was reported as incidental catch in the Bering Sea Tanner crab fisheries.

Beginning in the fall of 1993, under the terms of the commissioner's permit, all vessels fishing for hair crabs were required to carry an observer during all fishing activities (ADF&G 1996). In 1994, hair crab pots were defined by BOF as pots with a rigid tunnel opening in the top of the pot, with a tunnel perimeter not to exceed 26 inches and a base that does not exceed 48 inches in any one direction. Legal retention of hair crabs is permitted only from hair crab pots.

In 1996, due to a steady increase in the number of vessels participating in this fishery, the Alaska Legislature authorized the Commercial Fisheries Entry Commission (CFEC) to regulate vessel licenses in the Bering Sea hair crab fishery. Vessel qualification was based on participation in at least one of the qualifying years from 1992 to 1995. Licenses were issued to 23 vessels for those waters beyond five nautical miles of Saint George and Saint Paul Islands. Also included in this legislation were provisions which allow any vessel 58 feet and under to fish within five nautical miles of Saint George and Saint Paul Islands. In addition, it was the intent of the Legislature, expressed in the moratorium, that BOF maintain 100% observer coverage on all vessels participating in the Bering Sea hair crab fishery. ADF&G exempted vessels under 44 feet in length from mandatory observer coverage because of observer safety considerations (ADF&G 1998).

Observers provide catch and effort reports that are expanded into harvest estimates. Their data, along with information collected from vessel operators and processors, allow ADF&G to manage the Bering Sea hair crab fishery inseason. Catch reports from processors are used to verify estimates generated from observer data. Reports from fishers provide information regarding distribution of crabs, gear conflicts, weather, and other fishing conditions.

Participation and harvest in the Bering Sea hair crab fishery has varied greatly over the history of the U. S. fishery. Effort and harvest reached a peak of 67 vessels and 2.4 million pounds in 1980 when the fishery was prosecuted as an incidental harvest fishery during the Tanner crab season (Table 2-32, Figure 2-14). Between 1985 and 1990, effort was minimal due to low stock abundance. Since the 1996 CFEC moratorium, effort has remained at 19 or fewer vessels and in 2000 only three vessels made landings. In the 1990s, harvest reached a peak of 2.3 million pounds in the 1993/94 season. Total fishery value peaked in 1995 at \$5.7 million (Table 2-33). Since 1995, both effort and

GHL have been declining. During the 2000 season, only 1,500 pounds of hair crabs were harvested, for a total fishery value of \$5,000.

Since the establishment of the year-round permit fishery in the Bering Sea in 1984, average weight and CPUE have also fluctuated significantly. The highest CPUE of 10 crabs per pot was recorded in 1991, while CPUE dropped to less than one crab per pot during the spring 1993 and 2000 seasons. Average weight of retained hair crabs was highest during the early years of the U.S. fishery at 2.1 pounds, but decreased to 0.9 pound in 1991. In the late 1990s, the average weight of retained hair crabs was around 1.6 pounds (Table 2-32).

Beginning in 1993, the hair crab fishing season opening date was set at November 1, which conflicted with the Bristol Bay red king crab fishery. In 1998, ADF&G solicited comments from industry regarding a new opening date. A consensus was reached that the fishery would open 10 days after the closure of the Pribilof District or Saint Matthew Island Section king crab fisheries, whichever closed later. The fishery opened on October 8 in 1998. In 1999, BOF changed the Bristol Bay red king crab season opening to October 15; thus the hair crab fishery was again in conflict. Consensus was reached with industry to conduct the fishery 10 days after the closure of the Bristol Bay red king crab fishery. Subsequently, in 1999 and 2000, the hair crab season opened on October 30. No fisheries for hair crab have occurred since the start of the CR program. It is likely that any future fisheries for hair crab in the Bering Sea would open on October 15 and may continue until March 31.

The GHL for Bering Sea hair crabs is established using results of the NMFS Bering Sea trawl survey. Since there are no registration areas, districts, or sections established in regulation for hair crabs, survey results are described in terms of Bering Sea king crab registration areas, districts and sections (Figure 2-4). Because confidence in the results of this survey is relatively low, a 20% fishery exploitation on large males rate has been used to determine the GHL. Male hair crabs ≥ 83 mm in CW are defined as legal crabs in the commissioner's permit for this fishery.

Typically, the majority of legal-sized male hair crabs encountered during the trawl survey have been found in the vicinity of the Pribilof Islands and the fishery harvest has occurred primarily in the area east of Saint Paul Island. During the 1999 survey, however, 65% of the large male hair crab population in the Bering Sea was found in the Northern District instead of the traditional Pribilof District. Subsequently, in 2000, the Pribilof District was closed to commercial hair crab fishing due to low stock abundance, and for the first time, a directed hair crab fishery was opened in the Northern District of king crab Registration Area Q. Given the experimental nature of the fishery, the low abundance of small male crabs found during the 2000 survey, the relative size of the stock, and lack of fishery data from the Northern District, the harvest rate was set conservatively at 10% of the estimated large male hair crab abundance. As a result of low stock abundance, the Bering Sea was closed to hair crab fishing from 2001 to 2005.

In 2003, CFEC instituted a vessel-based limited entry program for the Bering Sea hair crab fishery and issued hair crab permits to qualified vessel owners. Thirteen permits have been issued and three others may be issued to qualified entities. The vessel-based limited entry program is due to sunset on December 30, 2008 and may be reauthorized by the Alaska Legislature.

2006 Season

The 2006 Bering Sea hair crab fishery was closed in both the Northern and Pribilof Districts due to low stock abundance.

Stock Status

Abundance of hair crabs in the Pribilof District has decreased since the early 1990s and large male abundance is currently at near historic low levels and survey data do not indicate that recruitment to the large male size-class is likely in the near term. Estimates of abundance for the Bristol Bay and Northern District portion of the stock are larger than those for the Pribilof District, but show considerable variability from one year to the next.

Population trends observed during the last eight years and weak performance of the most recent commercial fisheries indicate that the Bering Sea hair crab population is severely depressed and is unable to sustain a commercial fishery. Precise estimates of total female and small male hair crab abundance have never been available from current trawl survey data. In general, the biology and habitat usage of hair crabs makes them difficult to survey with trawl gear. Large male abundance is thought to be better estimated because general recruitment trends can be followed in the survey results and fishery harvests.

BERING SEA OCTOPUS

The last directed fishery for octopus in the Bering Sea occurred in 1995, with areas fished covering both Aleutian Islands and Bering Sea waters. Less than three vessels made landings; therefore, the harvest information is confidential. Since 1995, all reported harvests in the Bering Sea have been incidental to other fisheries. Any vessel registered for groundfish in the Westward Region using a miscellaneous finfish permit may retain incidentally caught octopus at up to 20% of the weight of the target species.

In 2004, 132 vessels registered for incidental octopus harvest in the Bering Sea/Aleutian Islands area. Ninety one of these vessels made 190 landings with 61,230 pounds of octopus landed. Another 25,527 pounds were discarded at sea (Table 2-34). The majority of the octopi caught in the Bering Sea are retained for use as bait in other fisheries.

The incidental harvest of octopi in Bering Sea groundfish fisheries more than doubled from 2002 to 2003, but the 2004 harvest decreased 35% from the 2003 level. Octopus harvest in 2005 approximately doubled from the 2004 level, but dropped back to approximately the 2004 level in 2006. Verbal reports from fishers and processors indicate that market interest in octopuses increased in the 2002-2004 period and that some fishers operated to increase their incidental harvest of octopuses while remaining below the maximum retainable amount. The department intends to closely monitor effort in the octopus fishery as well as the spatial and temporal distribution of the incidental harvest.

PARLOMIS MULTISPINA

Fishing for *P. multispina* is managed under the terms of a commissioner's permit. Although one vessel was registered to fish for *P. multispina* in 1995, no commercial harvest was reported. One vessel, for which landing data is confidential, participated in the 1996 fishery. No vessels requested commissioner's permits to fish for *P. multispina* in the Bering Sea District from 1997 through 2006. Given the lack of available data on this stock, the department will not issue permits allowing harvest of *P. multispina*.

SEA CUCUMBERS AND SEA URCHINS

ADF&G annually issues a news release announcing the GHL for red sea cucumbers and green sea urchins in the Westward Region. The season in the Bering Sea Area opens October 1 under terms of a commissioner's permit with a GHL of 5,000 pounds of eviscerated red sea cucumbers and 5,000 pounds round weight for green sea urchins. The small GHLs were established to permit conservative commercial exploration of areas that lacked historic harvest data and to allow ADF&G to collect critical information for future management purposes (Ruccio and Jackson 2000). No commercial harvest of either species occurred in the Bering Sea District in 2001. In 2002, a separate guideline harvest range of 30,000 to 60,000 pounds was established for the waters around Saint George Island. This harvest level was based on abundance estimates obtained from dive survey data and marketing factors. One diver harvested green sea urchins in the Saint George Island area in 2002, therefore all harvest information is confidential.

In 2006, the GHL for the Bering Sea Area was set at 5,000 pounds each, for red sea cucumbers and green sea urchins. No divers registered to harvest green sea urchins or red sea cucumbers in 2006.

SNAILS

Historic Background

Commercial fishing for snails in the Bering Sea was initiated by the Japanese fleet in 1971 and continued until 1987, little information is available from this early fishery, however. The Fishery Conservation and Management Act of 1976 required that foreign nations provide the United States with records concerning fisheries occurring inside the U.S. EEZ and the Japanese began to provide fishing records following the passage of the act (MacIntosh 1979). NMFS recorded 14 vessels participating in 1971, five vessels in 1972, no vessels in 1973, and six vessels in 1974. No fishing occurred in 1975 and 1976. In 1977, records indicate that participation in the fishery increased to three vessels (MacIntosh 1980). In the 1980s all fishing was conducted by catcher-processor vessels. The majority of the retained catch during this early fishery was composed of Pribilof Neptune *Neptunea pribiloffensis*. Smaller components of the retained catch were composed of *Buccinum angulossum* and *B. scalariforme* (MacIntosh 1980). Exvessel value was \$242 thousand in 1977, increasing to \$1.3 million by 1979. Russian vessels began fishing for snails in the same area in 1989.

The Foreign Fisheries Observer Program assigned observers to Japanese catcher-processors in the years 1984-1987 and later to Russian vessels in 1989. The Russian venture only lasted one year with minimal return. Converted Tanner crab pots were used in the early foreign fishery. Pots were long-lined in depths from 100 to 150 fathoms. Data from the Foreign Fisheries Observer Program showed the Japanese vessels pulled an average of 2,779 pots per day with an average soak time of 50 hours while the Russian vessels averaged just 1,219 pot lifts per day with an average soak time of 80 hours.

The U.S. fishery began in 1992 when two vessels registered to fish for snails. One vessel harvested snails as incidental harvest in the Tanner crab fishery and the second participated in a directed fishery for snails after the June closure of the hair crab fishery. Fishing for snails was limited to waters of the Bering Sea District west of 168° W long. from 1994 to 1996. In 1997, snail fishing was limited to waters west of 164° W long.

Observer coverage was required as a condition of the commissioner's permit issued in 1993 under 5 AAC 39.210 (h) MANAGEMENT PLAN FOR HIGH IMPACT EMERGING FISHERIES. Minimal crab bycatch was observed in the area west of 168° W long. Bycatch of legal sized king crabs was less than one animal per pot. Female snow crabs had the highest incidence of bycatch at one animal per pot (Tracy 1995).

Observer coverage was not required again until 1997 when two vessel operators expressed interest in fishing east of 168° W long. Vessels were restricted to grounds west of 164° W long, and north of 54° 36' N lat. These restrictions were conditions of the permit issued under 5 AAC 38.062 PERMITS FOR OCTOPI, SQUID, HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, CORAL, AND OTHER MARINE INVERTEBRATES. There was no bycatch of red or blue king crabs; however, bycatch of Tanner crabs was observed. An estimated 17,300 female and 2,100 sublegal male Tanner crabs, in addition to 57,600 sublegal snow crabs, were captured in the 192,000 pots pulled.

In the 1997 fishery, average CPUE was 16 snails per pot, equal to the CPUE from vessels fishing northwest of the Pribilof Islands in the 1996 fishery. The majority of the catch for the 1997 season was composed of the genera *Neptunea* and *Buccinum*. Catches increased from 313,000 pounds in 1993 to 3,570,000 pounds in 1996 and then declined to 932,000 pounds in 1997 (Table 2-35). The value of the fishery increased from \$125 thousand in 1993 to over \$1.05 million in 1996 and then dropped to \$308 thousand in 1997 (Table 2-36). From 1998 to 2005, no fishing effort for snails occurred in the Bering Sea.

2006 Season

No vessels registered to harvest snails from the Bering Sea in 2006.

Stock Status

The NMFS eastern Bering Sea trawl survey provides distribution and relative abundance information on Bering Sea snail populations. However, differential catchability of various species of snails makes accurate population estimates difficult.

NORTH PENINSULA DISTRICT

DESCRIPTION OF AREA

The North Peninsula District for shrimp management includes all Bering Sea waters of both the Territorial Sea and the EEZ east of the long. of Cape Sarichef at 164° 55'30" W long. (Figure 2-15).

The North Peninsula District for management of Dungeness crabs includes all waters of both the Territorial Sea and the EEZ north of the latitude of Cape Sarichef at 54° 36' N lat. (Figure 2-16).

SHRIMP

No vessels have registered for the North Peninsula District pot or trawl shrimp fishery since 1994. Currently, shrimp fishing is not permitted in this district due to a lack of data concerning the shrimp stocks.

DUNGENESS CRABS

Fishing effort for Dungeness crabs in the North Peninsula District has been sporadic, with few vessels participating. Typically the fishery has occurred north of Unimak Island. In 1995, six vessels made 19 deliveries for a harvest of 134,407 pounds. Catch information from 1996 to 1998 is confidential, as less than three vessels participated in each of those years. The average annual harvest in the three-year period from 1996-1998 was approximately 48,000 pounds. No vessels registered to fish in 1999. One vessel, for which landings are confidential, participated in the 2000 fishery. No vessels registered in 2001. In 2002, three vessels registered and harvested less than 22,000 pounds (Table 2-37). In 2003 no vessels registered. A single vessel registered in 2004 and all harvest information is confidential. No vessels registered in 2005 or 2006.

Stock Status

There is no population data available to determine the status of the North Peninsula Dungeness crab stock. This fishery is managed using size, sex, and season restrictions. Currently in this District only male Dungeness crabs with a shoulder width of 165 mm or larger may be taken between 12:00 noon May 1 through 12:00 noon October 18.

BERING SEA KING AND TANNER CRAB

BUOY IDENTIFICATION PROGRAM

INTRODUCTION AND BACKGROUND

Early 1990s BSAI crab fisheries were characterized by increased fishing effort, decreased GHLs, and shorter fishing seasons than prior years. In response to these changes, the BSAI crab industry submitted a petition regarding pot limits to the BOF. The petition was supported by data from ADF&G indicating impaired conservation and management during low GHL fisheries due in part to the amount of gear fishing on the grounds. On March 20, 1991 the BOF proposed an agenda change request regarding this issue and subsequently adopted BSAI pot limit regulations. Effective August 1, 1992 these regulations limited the number of pots a vessel may operate while harvesting BSAI king and Tanner crabs. The buoy identification program was created to help implement these regulations and designed to be completely self-supportive by generating revenue to cover program costs.

Buoy identification stickers were first implemented during 1992 Bristol Bay red king crab season, but were temporarily suspended due to product failure. Pot limit requirements for Bering Sea Tanner crab fisheries remained in effect until repealed by National Marine Fisheries Services on November 30, 1992. According to the Fishery Management Plan for Bering Sea /Aleutian Island King and Tanner Crab, pot limit regulation is a category II measure (NPFMC 1998). Category II measures may be adopted at the state level but are subject to the federal appeal process and must adhere to national standards requiring regulation application to be nondiscriminatory. Consequently, in February 1993 BOF passed differential pot limit regulations. Those regulations established specific pot limits based on vessel overall length (OAL). Vessels in excess of 125 feet OAL were entitled to operate the maximum number of pots allowed for a fishery, and vessels 125 feet or less in OAL were permitted 80% of the maximum pot limit. Further differential pot limit regulations for the Bristol Bay red king crab fishery were adopted on an interim basis August 27, 1997. The regulations created an 11-tier pot limit system dependent on fishery GHL and anticipated fleet size. The tiered system was made permanent

March 1999. With the implementation of crab rationalization in 2005/06, the BOF revised regulations to allow a maximum of 450 pots per vessel regardless of vessel length for most CR fisheries (Table 2-38).

Implementation

Beginning with 1992-1993 Bristol Bay king and Bering Sea Tanner crab seasons, ADF&G leased additional office space and employed a Fish and Wildlife Technician III to administer the buoy identification program. Regulations providing implementation of the buoy identification program are stated in Alaska Statute 16.05.050. POWERS AND DUTIES OF THE COMMISSIONER and Alaska Statute 16.05.632. IDENTIFICATION OF SHELLFISH POTS OR BUOYS, OR BOTH, USED IN THE TAKING OF KING CRAB AND REQUIREMENTS FOR BUOYS.

By May 1993, heavy-duty, self-locking, nylon, zip tie tags had taken the place of buoy stickers. After use in several fisheries, numerous quality control problems and industry complaints prompted ADF&G to initiate trial tests of other manufactured tags. Eventually, a new style buoy tag was procured which required an independent means of attachment. The Alaska Department of Fish and Game initially supplied zip ties for tag attachment at no additional charge, but dispersal was discontinued due to high failure rates. Consequently, industry is now responsible for tag attachment. The new style tags were first issued in September 1998 and continue to be used.

Replacement Tags

Buoy tag replacement issues were resolved during the initial BOF meeting regarding pot limits. Regulations were written based on concerns from the Division of Fish and Wildlife Protection regarding prosecution of cases involving replacement tags. Specifics regarding replacement tag sales are included in 5 AAC 34.826. (b) KING CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA T, 5 AAC 34.926. (b) KING CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA Q, and 5 AAC 35.526. (b) TANNER CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA J.

In the fall of 1994, the Dutch Harbor ADF&G office received input from fishers concerned with tag replacement regulations. At the time, vessels delivering to remote areas such as King Cove or Saint Paul were unable to obtain replacement tags without travel to Dutch Harbor. Some vessel operators felt the cost of traveling to Dutch Harbor with three crewmembers was prohibitive to obtaining replacement tags and would promote illegal fishing.

During 1998-1999 seasons, stakeholders reiterated buoy tag replacement issues. In response to these concerns, ADF&G began allowing permit holders to file an official affidavit in Saint Paul or King Cove, however ADF&G personnel must be available for verification. This change was implemented prior to 2000 Bering Sea snow crab fishery.

Buoy Identification Tag Refunds

Since the inception of the tag program, refunds for buoy tags have not been offered because the \$2.00 fee per tag covers administrative and program implementation costs. However, during the 2001 Bering Sea snow crab fishery, two buoy tag refunds were issued as per 15 AAC 116.120. REFUND OF LICENSE FEES.

Requests for buoy identification tag refunds may be procured only through ADF&G Headquarters in Juneau. To request a refund, the following information must be sent by the tag administrator to administrative staff in Kodiak: name, address, and social security number of the permit holder, vessel name and ADF&G number, a copy of the check used for original payment, number of tags purchased/returned, the imprinted sequential tag numbers, return date of unused, complete set of tags and person who received the tags, budget code for refunding, and a statement from the permit holder explaining the refund request. All refund requests are out of the tag program administrator's jurisdiction and will be evaluated by ADF&G Headquarters in Juneau.

Administration of the Buoy Identification Program

Bering Sea buoy tags are issued from the ADF&G offices in Kodiak and Dutch Harbor for an administrative fee of \$2.00 per tag. Tags are issued to the holder of a valid, fishery specific, Commercial Fisheries Entry Commission interim use permit card. An authorized agent may be issued tags if an affidavit is signed by the permit holder and filed with ADF&G in Dutch Harbor. Also upon request, ADF&G Dutch Harbor office will send buoy tags through the U.S. Mail, via priority mail with insurance and return receipt.

2006/07 Buoy Tag Sales

Several of the Bering Sea crab fisheries were not open to commercial harvest because stocks did not meet minimum threshold levels. The Pribilof Island red king and blue king crab and Saint Matthew Island blue king crab fisheries were closed for the 2006/07 seasons. Tags for these fisheries are stored in Dutch Harbor ready for issue when needed.

There were no tags procured for the 2006/07 Bering Sea snow crab fishery. Tag sales for this fishery are as follows: from Dutch Harbor 61 vessels purchased 11,025 tags and in Kodiak seven vessels purchased 1,335 tags for a total of 12,360 tags (Table 2-39). This is the second year separate tags were not required for the CDQ fisheries. CDQ fishers were allowed to use the same tags purchased for the corresponding IFQ fishery.

There were no tags procured for the 2006/07 Bering Sea Tanner crab fishery. Tag sales for this fishery are as follows: from Dutch Harbor 18 vessels purchased 3,186 tags and in Kodiak three vessels purchased 415 tags. Twenty-eight vessels purchased a total of 3,601 tags.

There were no tags procured for the 2006 Eastern Aleutian District Tanner crab fishery. Ten vessels purchased 200 tags and two replacement tags were issued for a total of 202 tags.

There were no new tags procured for the 2006/07 Bristol Bay red king crab fishery. Tag sales for this fishery are as follows: from Dutch Harbor 68 vessels purchased 13,740 tags and in Kodiak 14 vessels purchased 2,025 tags. Eighty-two vessels purchased a total of 15,765 tags.

The 2006/07 Petrel Bank red king crab fishery was not open to commercial harvest because stocks did not meet minimum threshold levels.

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TABLES AND FIGURES

Table 2-1.-Bristol Bay commercial red king crab fishery harvest data, 1966 - 2006/07.

| Season | Number of | | | Number of Pots | | | CPUJ ^c | Deadloss ^b |
|--------|----------------------|----------|--------------------|------------------------|----------------|---------|-------------------|-----------------------|
| | Vessels ^d | Landings | Crabs ^a | Harvest ^{a,b} | Registered | Pulled | | |
| 1966 | 9 | 15 | 140,554 | 997,321 | NA | 2,720 | 52 | NA |
| 1967 | 20 | 61 | 397,307 | 3,102,443 | NA | 10,621 | 37 | NA |
| 1968 | 59 | 261 | 1,278,592 | 8,686,546 | NA | 47,496 | 27 | NA |
| 1969 | 65 | 377 | 1,749,022 | 10,403,283 | NA | 98,426 | 18 | NA |
| 1970 | 51 | 309 | 1,682,591 | 8,559,178 | NA | 96,658 | 17 | NA |
| 1971 | 52 | 394 | 2,404,681 | 12,955,776 | NA | 118,522 | 20 | NA |
| 1972 | 64 | 611 | 3,994,356 | 21,744,924 | NA | 205,045 | 19 | NA |
| 1973 | 67 | 441 | 4,825,963 | 26,913,636 | NA | 194,095 | 25 | NA |
| 1974 | 104 | 605 | 7,710,317 | 42,266,274 | NA | 212,915 | 36 | NA |
| 1975 | 102 | 592 | 8,745,294 | 51,326,259 | NA | 205,096 | 43 | 1,639,483 |
| 1976 | 141 | 984 | 10,603,367 | 63,919,728 | NA | 321,010 | 33 | 875,327 |
| 1977 | 130 | 1,020 | 11,733,101 | 69,967,868 | NA | 451,273 | 26 | 730,279 |
| 1978 | 162 | 926 | 14,745,709 | 87,618,320 | NA | 406,165 | 36 | 1,273,037 |
| 1979 | 236 | 889 | 16,808,605 | 107,828,057 | NA | 315,226 | 53 | 3,555,891 |
| 1980 | 236 | 1,251 | 20,845,350 | 129,948,463 | 78,352 | 567,292 | 37 | 1,858,668 |
| 1981 | 177 | 1,013 | 5,273,530 | 33,372,832 | 75,756 | 536,646 | 10 | 706,489 |
| 1982 | 89 | 253 | 538,925 | 2,990,082 | 36,166 | 140,492 | 4 | 95,834 |
| 1983 | | | | | FISHERY CLOSED | | | |
| 1984 | 89 | 133 | 793,046 | 4,083,612 | 21,762 | 107,406 | 7 | 35,101 |
| 1985 | 128 | 130 | 780,791 | 4,090,305 | 30,117 | 84,443 | 9 | 6,436 |
| 1986 | 159 | 229 | 2,083,496 | 11,306,084 | 32,468 | 175,753 | 12 | 284,126 |
| 1987 | 236 | 311 | 2,122,341 | 12,289,067 | 63,000 | 220,971 | 10 | 120,388 |
| 1988 | 200 | 201 | 1,231,731 | 7,361,026 | 50,099 | 146,179 | 8 | 23,537 |
| 1989 | 211 | 287 | 1,667,405 | 10,156,849 | 55,000 | 205,528 | 8 | 81,334 |

-Continued-

Table 2-1.--Page 2 of 2.

| Season | Number of | | | Number of Pots | | | CPUE ^e | Deadloss ^b |
|----------------------|----------------------|----------|--------------------|------------------------|------------|---------|-------------------|-----------------------|
| | Vessels ^d | Landings | Crabs ^a | Harvest ^{a,b} | Registered | Pulled | | |
| 1990 | 240 | 331 | 3,134,082 | 20,443,043 | 69,906 | 262,761 | 12 | 141,067 |
| 1991 | 302 | 322 | 2,597,994 | 16,971,365 | 89,068 | 227,555 | 12 | 106,853 |
| 1992 | 281 | 288 | 1,189,443 | 7,996,040 | 68,189 | 206,172 | 6 | 6,000 |
| 1993 | 292 | 360 | 2,254,989 | 14,587,704 | 58,881 | 253,794 | 9 | 133,314 |
| 1994 | | | | | | | | |
| 1995 | | | | | | | | |
| 1996 | 196 | 198 | 1,249,005 | 8,405,614 | 39,461 | 76,433 | 16 | 24,166 |
| 1997 | 256 | 265 | 1,315,969 | 8,756,490 | 27,499 | 90,427 | 15 | 13,771 |
| 1998 | 274 | 284 | 2,140,604 | 14,290,271 | 56,420 | 141,707 | 15 | 53,716 |
| 1999 | 257 | 268 | 1,812,357 | 11,070,729 | 42,403 | 146,997 | 12 | 44,132 |
| 2000 | 246 | 256 | 1,166,796 | 7,546,145 | 26,352 | 98,694 | 12 | 32,118 |
| 2001 | 230 | 238 | 1,196,469 | 7,786,446 | 24,571 | 63,242 | 19 | 57,294 |
| 2002 | 242 | 254 | 1,377,922 | 8,856,828 | 25,833 | 68,328 | 20 | 32,177 |
| 2003 | 252 | 275 | 2,344,436 | 14,529,124 | 46,964 | 128,430 | 18 | 228,270 |
| 2004 | 251 | 270 | 2,075,622 | 14,112,438 | 49,506 | 90,976 | 23 | 160,563 |
| 2005/06 ^c | 89 | 264 | 2,460,856 | 16,478,458 | 15,713 | 99,573 | 25 | 77,507 |
| 2006/07 ^f | 81 | 187 | 2,186,967 | 13,892,044 | 14,685 | 64,325 | 34 | 98,720 |

^aGeneral fishery only. Includes AFA fishery 2000 - 2004. Does not include CDQ. Deadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dVessel totals are vessels that registered but may not have actively participated in the fishery.

^eIFQ fishery beginning in 2005.

NA = Not available.

Table 2-2.—Bristol Bay commercial red king crab fishery economic data, 1980 - 2006/07.

| Season | GHL/TAC ^a | Value | | Season Length | |
|-------------------|----------------------|------------------------|--------------------|---------------|-------------|
| | | Ex-vessel ^b | Total ^c | Days | Dates |
| 1980 | 70-120 | \$0.90 | \$115.3 | 40 | 09/10-10/20 |
| 1981 | 70-100 | \$1.50 | \$49.3 | 91 | 09/10-12/15 |
| 1982 | 10-20 ^d | \$3.05 | \$8.9 | 30 | 09/10-10/10 |
| 1983 | | FISHERY CLOSED | | | |
| 1984 | 2.5-6.0 | \$2.60 | \$10.8 | 15 | 10/01-10/16 |
| 1985 | 3.0-5.0 | \$2.90 | \$12.1 | 8 | 09/25-10/02 |
| 1986 | 6.0-13.0 | \$4.05 | \$45.0 | 13 | 09/25-10/07 |
| 1987 | 8.5-17.7 | \$4.00 | \$48.7 | 12 | 09/25-10/06 |
| 1988 | 7.5 | \$5.10 | \$37.6 | 8 | 09/25-10/02 |
| 1989 | 16.5 | \$5.00 | \$50.9 | 12 | 09/25-10/06 |
| 1990 | 17.1 | \$5.00 | \$101.2 | 12 | 11/01-11/13 |
| 1991 | 18.0 | \$3.00 | \$51.2 | 7 | 11/01-11-08 |
| 1992 | 10.3 | \$5.00 | \$40.2 | 7 | 11/01-11/08 |
| 1993 | 16.8 | \$3.80 | \$55.1 | 9 | 11/01-11/10 |
| 1994 | | FISHERY CLOSED | | | |
| 1995 | | FISHERY CLOSED | | | |
| 1996 | 5.0 | \$4.01 | \$33.6 | 4 | 11/01-11/05 |
| 1997 | 7.0 | \$3.26 | \$28.5 | 4 | 11/01-11/05 |
| 1998 | 15.8 | \$2.64 | \$37.4 | 5 | 11/01-11/06 |
| 1999 | 10.1 | \$6.26 | \$69.1 | 5 | 10/15-10/20 |
| 2000 ^e | 7.7 | \$4.81 | \$36.0 | 4 | 10/16-10/20 |
| 2001 | 6.6 | \$4.81 | \$37.5 | 3.3 | 10/15-10/18 |
| 2002 | 8.6 | \$6.14 | \$54.2 | 2.8 | 10/15-10/18 |
| 2003 | 14.5 | \$5.08 | \$72.7 | 5.1 | 10/15-10/20 |
| 2004 | 14.3 | \$4.71 | \$65.7 | 3.3 | 10/15-10/18 |
| 2005/06 | 16.5 | \$4.24 | \$69.5 | 93 | 10/15-1/15 |
| 2006/07 | 13.9 | \$3.48 | \$48.0 | 93 | 10/15-1/15 |

^aGuideline harvest level for general fishery only, millions of pounds. Total allowable catch for IFQ fishery beginning in 2005.

^bAverage price per pound.

^cMillions of dollars.

^dInseason revision to 4.7 million pounds.

^eDelayed start due to weather.

Table 2-3.--Bristol Bay commercial red king crab fishery harvest and effort by week, 2006/07.

| Week ending | Number of | | | | | Harvest ^{a,b} | Pot pulls | CPUE ^c | Deadloss ^b |
|--------------|-----------|------------|--------------------|--|--|------------------------|---------------|-------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | | | | | | |
| 21-Oct | 71 | 83 | 1,293,648 | | | 8,163,570 | 39,500 | 33 | 72,583 |
| 28-Oct | 31 | 37 | 313,311 | | | 1,989,716 | 9,730 | 32 | 9,498 |
| 4-Nov | 36 | 45 | 450,925 | | | 2,884,492 | 12,187 | 37 | 14,010 |
| 11-Nov | 15 | 16 | 112,834 | | | 744,868 | 2,493 | 45 | 2,443 |
| 18-Nov | 3 | 3 | 8,446 | | | 56,122 | 216 | 39 | 120 |
| 25-Nov | 2 | | | | | CONFIDENTIAL | | | |
| 2-Dec | 1 | | | | | CONFIDENTIAL | | | |
| Total | 81 | 187 | 2,186,967 | | | 13,892,044 | 64,325 | 34 | 98,720 |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

Table 2-4.—Bristol Bay commercial red king crab fishery catch by statistical area, 2006/07.

| Statistical Area | Number of | | | Harvest ^{a,b} | Average | | Deadloss ^b |
|--------------------|------------------|--------------------|-------------|------------------------|---------------------|-------------------|-----------------------|
| | Landings | Crabs ^a | Pots Lifted | | Weight ^b | CPUE ^c | |
| 615630 | 19 | 93,000 | 2,564 | 574,445 | 6.2 | 36 | 5,627 |
| 625600 | 54 | 199,867 | 6,103 | 1,194,160 | 6.0 | 32 | 12,940 |
| 625630 | 57 | 354,176 | 10,259 | 2,199,809 | 6.2 | 34 | 13,903 |
| 625700 | 27 | 72,840 | 1,921 | 469,091 | 6.4 | 38 | 2,489 |
| 635530 | 6 | 7,664 | 312 | 46,667 | 6.1 | 26 | 393 |
| 635600 | 54 | 196,912 | 6,744 | 1,210,503 | 6.1 | 29 | 9,574 |
| 635630 | 64 | 226,951 | 7,436 | 1,471,513 | 6.5 | 30 | 8,207 |
| 635700 | 71 | 381,452 | 9,448 | 2,492,559 | 6.5 | 40 | 14,166 |
| 645600 | 18 | 16,551 | 838 | 108,168 | 6.5 | 20 | 377 |
| 645630 | 63 | 470,085 | 13,576 | 3,032,713 | 6.5 | 34 | 21,187 |
| 645700 | 42 | 159,598 | 4,274 | 1,041,071 | 6.5 | 37 | 9,466 |
| Other ^d | 17 | 7,871 | 850 | 51,345 | 6.5 | 9 | 392 |
| Total | 492 ^e | 2,186,967 | 64,325 | 13,892,044 | 6.4 | 34 | 98,720 |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dCombination of nine statistical areas from which less than three vessels made landings in each statistical area.

^eNumber of statistical area landings is greater than the total number of landings because a single vessel may fish in several statistical areas.

Table 2-5.--Bristol Bay red king crab cost-recovery harvest data, 1990 - 2006.

| Year ^a | Number of | | | | Average | | | Deadloss ^c |
|---------------------|-----------|--------------------|-------------|------------------------|---------------------|-------------------|--------|-----------------------|
| | Landings | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Weight ^c | CPUE ^d | | |
| 1990 | 3 | 9,567 | 870 | 80,701 | 5.9 | 16 | 24,540 | |
| 1991 | 2 | 30,351 | 518 | 205,851 | 6.4 | 62 | 12,817 | |
| 1992 | 1 | 11,213 | 670 | 74,089 | 6.3 | 17 | 3,000 | |
| 1993 | 1 | 8,384 | 464 | 53,200 | 6.3 | 18 | 800 | |
| 1994 | 1 | 14,806 | 732 | 93,336 | 6.0 | 21 | 4,500 | |
| 1995 | 2 | 14,123 | 564 | 80,158 | 5.5 | 26 | 2,339 | |
| 1996 | 3 | 15,390 | 355 | 107,955 | 6.9 | 44 | 1,918 | |
| 1997 | 4 | 21,698 | 658 | 154,739 | 6.3 | 37 | 18,040 | |
| 1998 | 2 | 22,230 | 738 | 188,176 | 7.0 | 36 | 32,564 | |
| 1999 ^e | 4 | 29,368 | 1,239 | 185,944 | 6.3 | 24 | 410 | |
| 2000 ^f | 2 | 14,196 | 702 | 86,218 | 6.1 | 20 | 347 | |
| 2001 ^e | 3 | 17,605 | 597 | 120,435 | 6.8 | 29 | 138 | |
| 2002 ^e | 2 | 14,528 | 277 | 96,221 | 6.6 | 52 | 181 | |
| 2003 ^{f,g} | 1 | 5,327 | 584 | 33,817 | 6.4 | 9 | 143 | |
| 2004 ^e | 3 | 29,733 | 1,286 | 201,579 | 6.8 | 23 | 638 | |
| 2005 ^e | 4 | 30,585 | 1,376 | 208,828 | 6.8 | 22 | 1,500 | |
| 2006 ^e | 4 | 47,215 | 1,067 | 303,867 | 6.4 | 44 | 3,313 | |

^aAll cost recovery from 1990-1998 was conducted to fund the Bering Sea and Aleutian Islands shellfish research program.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eBering Sea and Aleutian Islands shellfish research and observer program cost recovery.

^fBering Sea and Aleutian Islands shellfish research program cost recovery.

^gIncludes 1,222 pounds harvested in the Pribilof District.

Table 2-6.—Bristol Bay red king crab cost-recovery economic performance data, 1990 - 2006.

| Year ^a | Value | | | Charter dates | Charter length ^d |
|---------------------|----------------------|------------------------|-------------|-------------------------------------|-----------------------------|
| | Harvest ^b | Ex-vessel ^c | Total | | |
| 1990 | 56,161 | \$5.10 | \$286,421 | 8/7-9/7 | 30 |
| 1991 | 193,034 | \$3.75 | \$723,878 | 9/2-10/7 | 35 |
| 1992 | 71,089 | \$5.24 | \$372,506 | 10/8-10/23 | 15 |
| 1993 | 52,400 | \$6.57 | \$344,268 | 8/20-9/20 | 31 |
| 1994 | 88,836 | \$5.21 | \$462,836 | 9/25-10/25 | 30 |
| 1995 | 77,819 | \$6.65 | \$517,496 | 8/1-8/31 | 31 |
| 1996 | 106,037 | \$4.53 | \$480,348 | 8/1-8/31 | 31 |
| 1997 | 136,699 | \$3.55 | \$485,281 | 7/25-8/21 | 28 |
| 1998 | 155,612 | \$3.25 | \$505,739 | 8/1-8/28 | 28 |
| 1999 ^e | 185,944 | \$6.18 | \$1,148,695 | 9/25-10/11,10/25-11/10 | 34 |
| 2000 ^f | 85,871 | \$5.82 | \$499,769 | 9/20-10/04 | 15 |
| 2001 ^e | 120,297 | \$5.18 | \$623,138 | 9/22-10/10, 10/23-11/8 | 36 |
| 2002 ^e | 96,087 | \$6.45 | \$619,761 | 9/23-10/9, 10/17-10/27 | 27 |
| 2003 ^{f,g} | 33,674 | \$5.56 | \$187,227 | 9/1-10/4 | 34 |
| 2004 ^e | 200,941 | \$4.98 | \$1,000,686 | 10/21-10/25,10/23-10/31,10/27-11/01 | 20 |
| 2005 ^e | 208,828 | \$5.07 | \$1,051,153 | 11/12-12/2 | 19 |
| 2006 ^e | 300,563 | \$2.15 | \$646,210 | 9/23-10/23 | 31 |

^aAll cost recovery from 1990-1998 was conducted to fund the Bering Sea and Aleutian Islands shellfish research program.

^bIn pounds. Deadloss not included.

^cAverage price per pound.

^dIn days.

^eBering Sea and Aleutian Islands shellfish research and observer program cost recovery.

^fBering Sea and Aleutian Islands shellfish research program cost recovery.

^gIncludes 1,204 pounds harvested in the Pribilof District.

Table 2-7.—Bristol Bay commercial red king crab fishery harvest composition by fishing season, 1973 - 2006/07.

| Season | Percent | | Size | Average | | % Old |
|-------------------|---------|--------------------------|--------------------|---------------------|---------------------|-------|
| | Recruit | Postrecruit ^a | Limit ^b | Weight ^c | Length ^d | Shell |
| 1973 | 63 | 37 | 6¼ | 5.6 | NA | NA |
| 1974 | 60 | 40 | 6¼ | 5.5 | NA | NA |
| 1975 ^e | 21 | 79 | 6¼ | 5.7 | NA | NA |
| 1976 | 56 | 44 | 6½ | 6.0 | 148 | 27.4 |
| 1977 | 67 | 33 | 6½ | 5.9 | 148 | 13.0 |
| 1978 | 75 | 25 | 6½ | 5.9 | 147 | 6.9 |
| 1979 | 47 | 53 | 6½ | 6.4 | 152 | 10.4 |
| 1980 | 44 | 56 | 6½ | 6.2 | 151 | 11.0 |
| 1981 ^f | 14 | 86 | 6½ | 6.3 | 151 | 47.4 |
| 1982 | 68 | 32 | 6½ | 5.5 | 145 | 24.6 |
| 1983 | | | FISHERY CLOSED | | | |
| 1984 | 59 | 41 | 6½ | 5.2 | 142 | 26.5 |
| 1985 | 66 | 34 | 6½ | 5.2 | 142 | 25.8 |
| 1986 | 65 | 35 | 6½ | 5.4 | 142 | 25.5 |
| 1987 | 77 | 23 | 6½ | 5.8 | 145 | 19.0 |
| 1988 | 59 | 41 | 6½ | 6.0 | 147 | 15.1 |
| 1989 | 58 | 42 | 6½ | 6.1 | 148 | 17.7 |
| 1990 | 49 | 51 | 6½ | 6.5 | 152 | 14.7 |
| 1991 | 44 | 56 | 6½ | 6.5 | 152 | 12.1 |
| 1992 | 33 | 67 | 6½ | 6.7 | 153 | 22.3 |
| 1993 | 33 | 67 | 6½ | 6.5 | 152 | 15.2 |
| 1994 | | | FISHERY CLOSED | | | |
| 1995 | | | FISHERY CLOSED | | | |
| 1996 | 31 | 69 | 6½ | 6.7 | 153 | 24.3 |
| 1997 | 28 | 72 | 6½ | 6.7 | 152 | 11.0 |
| 1998 | 40 | 60 | 6½ | 6.7 | 152 | 19.1 |
| 1999 | 72 | 28 | 6½ | 6.1 | 148 | 6.3 |
| 2000 | 65 | 35 | 6½ | 6.5 | 151 | 16.3 |
| 2001 | 54 | 46 | 6½ | 6.5 | 151 | 22.3 |
| 2002 | 61 | 39 | 6½ | 6.4 | 151 | 22.2 |
| 2003 | 72 | 28 | 6½ | 6.2 | 149 | 21.9 |
| 2004 | 52 | 48 | 6½ | 6.8 | 154 | 21.2 |
| 2005/06 | 57 | 43 | 6½ | 6.7 | 152 | 21.4 |
| 2006/07 | 65 | 35 | 6½ | 6.4 | 151 | 26.5 |

^a Legal sized old and new shell greater than 153mm carapace length.

^b Minimum carapace width in inches.

^c In pounds.

^d Carapace length in millimeters.

^e 6½ inches after 11/01.

^f 7 inches after 10/20.

NA = Not Available.

Table 2-8.-Pribilof District commercial red and blue king crab fishery data, 1973/74 - 2006/07.

| Season ^a | Number of | | | Number of Pots | | | Average | | | Deadloss ^c | |
|---------------------|-----------|----------|--------------------|------------------------|----------------|---------|---------------------|-------------------|---------------------|-----------------------|--|
| | Vessels | Landings | Crabs ^b | Harvest ^{b,c} | Registered | Pulled | Weight ^c | CPUE ^d | Length ^e | | |
| 1973/74 | 8 | 13 | 174,420 | 1,276,533 | NA | 6,814 | 7.3 | 26 | NA | NA | |
| 1974/75 | 70 | 101 | 908,072 | 7,107,294 | NA | 45,518 | 7.8 | 20 | 157.8 | NA | |
| 1975/76 | 20 | 54 | 314,931 | 2,433,714 | NA | 16,297 | 7.7 | 19 | 159.1 | NA | |
| 1976/77 | 47 | 113 | 855,505 | 6,611,084 | NA | 71,738 | 7.7 | 12 | 158.1 | NA | |
| 1977/78 | 34 | 104 | 807,092 | 6,456,738 | NA | 106,983 | 7.9 | 8 | 158.9 | 159,269 | |
| 1978/79 | 58 | 154 | 797,364 | 6,395,512 | NA | 101,117 | 8.1 | 8 | 159.3 | 63,140 | |
| 1979/80 | 46 | 115 | 815,557 | 5,995,231 | NA | 83,527 | 7.7 | 10 | 155.9 | 284,555 | |
| 1980/81 | 110 | 258 | 1,497,101 | 10,970,346 | 31,636 | 167,684 | 7.3 | 9 | 155.7 | 287,285 | |
| 1981/82 | 99 | 312 | 1,202,499 | 9,080,729 | 25,408 | 176,168 | 7.6 | 7 | 158.2 | 250,699 | |
| 1982/83 | 122 | 281 | 587,908 | 4,405,353 | 34,429 | 127,728 | 7.5 | 5 | 159.8 | 51,703 | |
| 1983/84 | 126 | 221 | 276,364 | 2,193,395 | 36,439 | 86,428 | 7.9 | 3 | 159.9 | 4,562 | |
| 1984/85 | 16 | 25 | 40,427 | 306,699 | 3,122 | 15,147 | 7.6 | 3 | 155.5 | NA | |
| 1985/86 | 26 | 49 | 76,945 | 528,164 | 6,038 | 23,062 | 6.9 | 3 | 146.5 | 7,500 | |
| 1986/87 | 16 | 25 | 36,988 | 258,939 | 4,376 | 15,740 | 7.0 | 2 | NA | 5,450 | |
| 1987/88 | 38 | 68 | 95,130 | 701,337 | 9,594 | 40,707 | 7.4 | 2 | 152.7 | 9,910 | |
| 1988/89-92/93 | | | | | FISHERY CLOSED | | | | | | |
| 1993 ^f | 112 | 135 | 380,286 | 2,608,106 | 4,860 | 35,942 | 6.9 | 11 | 154.4 | 472 | |
| 1994 ^f | 104 | 121 | 167,520 | 1,338,953 | 4,675 | 28,976 | 8.0 | 6 | 162.1 | 2,929 | |
| 1995 ^f | 117 | 151 | 110,834 | 897,979 | | 34,885 | 8.1 | 3 | 162.5 | 15,348 | |
| 1995 ^g | 119 | 152 | 190,951 | 1,384,674 | | 36,878 | 7.3 | 5 | N/A | 71,333 | |
| 1995 ^h | 127 | 162 | 301,785 | 2,282,653 | 5,400 | 37,643 | NA | 8 | | 86,681 | |
| 1996 ^f | 66 | 90 | 25,383 | 200,304 | | 29,411 | 7.9 | <1 | 161.0 | 319 | |
| 1996 ^g | 66 | 92 | 127,712 | 937,032 | | 30,607 | 7.3 | 4 | 153.1 | 14,997 | |
| 1996 ^h | 66 | 92 | 153,095 | 1,137,336 | 2,730 | 30,607 | 7.4 | 3 | | 15,316 | |

-Continued-

Table 2-8.-Page 2 of 2.

| Season ^a | Number of | | | Number of Pots | | | Average | | | |
|---------------------|-----------|----------|--------------------|------------------------|------------|--------|---------------------|-------------------|---------------------|-----------------------|
| | Vessels | Landings | Crabs ^b | Harvest ^{b,c} | Registered | Pulled | Weight ^c | CPUE ^d | Length ^e | Deadloss ^c |
| 1997 ^f | 53 | 110 | 90,641 | 756,818 | | 28,458 | 8.4 | 3 | 164.3 | 18,807 |
| 1997 ^g | 51 | 105 | 68,603 | 512,374 | | 27,652 | 7.5 | 3 | 163.6 | 16,747 |
| 1997 ^h | 53 | 110 | 159,244 | 1,269,192 | 2,230 | 30,400 | 8.0 | 5 | | 35,554 |
| 1998 ^f | 57 | 84 | 68,129 | 510,365 | | 23,381 | 7.5 | 3 | 158.8 | 8,703 |
| 1998 ^g | 57 | 83 | 68,419 | 516,306 | | 22,965 | 7.5 | 3 | 156.1 | 21,599 |
| 1998 ^h | 57 | 84 | 136,548 | 1,026,671 | 2,398 | 23,381 | 7.5 | 3 | | 30,302 |
| 1999 - 2006/07 | | | | | | | | | | |

FISHERY CLOSED

^aBlue king crab, 1973 - 1988.

^bDeadloss included.

^cIn pounds

^dNumber of legal crabs per pot lift.

^eCarapace length in millimeters.

^fRed king crab.

^gBlue king crab.

^hBlue and red king crab fisheries combined.

NA = Not available.

Table 2-9.—Harvest level, economic performance and season length summary for the Pribilof District commercial red and blue king crab fishery, 1980/81 - 2006/07.

| Season ^a | GHL/TAC ^b | Value | | Season Length | |
|---------------------|----------------------|---------------------------|--------------------|---------------|-------------|
| | | Ex-vessel ^f | Total ^d | Days | Dates |
| 1980/81 | 5.0-8.0 | \$0.90 | \$9.6 | 60 | 09/15-11/15 |
| 1981/82 | 5.0-8.0 | \$1.50 | \$13.6 | 47 | 09/10-10/28 |
| 1982/83 | 5.0-8.0 | \$3.05 | \$13.4 | 15 | 09/10-09/25 |
| 1983/84 | 4.0 | \$3.00 | \$6.6 | 10 | 09/01-09/11 |
| 1984/85 | 0.5-1.0 | \$2.50 | \$0.1 | 15 | 09/01-09/16 |
| 1985/86 | 0.3-0.8 | \$2.90 | \$1.4 | 26 | 09/25-10/21 |
| 1986/87 | 0.3-0.8 | \$4.05 | \$1.2 | 55 | 09/25-11/20 |
| 1987/88 | 0.3-1.7 | \$4.00 | \$2.8 | 86 | 09/25-12/20 |
| 1988/89 - 1992/93 | | F I S H E R Y C L O S E D | | | |
| 1993 ^e | 3.4 | \$4.98 | \$13.0 | 6 | 09/15-09/21 |
| 1994 ^e | 2.0 | \$6.45 | \$8.6 | 6 | 09/15-09/21 |
| 1995 ^e | 2.5 ^g | \$3.37 | \$2.9 | 7 | 09/15-09/22 |
| 1995 ^f | 2.5 ^g | \$2.92 | \$3.9 | 7 | 09/15-09/22 |
| 1996 ^e | 1.8 ^g | \$2.76 | \$0.6 | 11 | 09/15-09/26 |
| 1996 ^f | 1.8 ^g | \$2.65 | \$2.4 | 11 | 09/15-09/26 |
| 1997 ^e | 1.5 ^g | \$3.09 | \$2.3 | 14 | 09/15-09/29 |
| 1997 ^f | 1.5 ^g | \$2.82 | \$1.4 | 14 | 09/15-09/29 |
| 1998 ^e | 1.25 ^g | \$2.39 | \$1.2 | 13 | 09/15-09/28 |
| 1998 ^f | 1.25 ^g | \$2.34 | \$1.2 | 13 | 09/15-09/28 |
| 1999 - 2006/07 | | F I S H E R Y C L O S E D | | | |

^aBlue king crab, 1980-1988.

^bGuideline harvest level, millions of pounds. Total allowable catch for IFQ fishery beginning in 2005/06.

^cAverage price per pound.

^dMillions of dollars.

^eRed king crab.

^fBlue king crab.

^gCombined red and blue king crab.

Table 2-10.—Saint Matthew Island Section commercial blue king crab fishery data, 1977 - 2006/07.

| Season | Number of | | | Number of Pots | | | Percent | | | Average | | |
|--------------|-----------|----------|--------------------|------------------------|----------------|---------|----------|---------------------|-------------------|---------------------|-----------------------|--|
| | Vessels | Landings | Crabs ^a | Harvest ^{a,b} | Registered | Pulled | Recruits | Weight ^b | CPUE ^c | Length ^d | Deadloss ^b | |
| 1977 | 10 | 24 | 281,665 | 1,202,066 | NA | 17,370 | 7 | 4.3 | 16 | 130.4 | 129,148 | |
| 1978 | 22 | 70 | 436,126 | 1,984,251 | NA | 43,754 | NA | 4.5 | 10 | 132.2 | 116,037 | |
| 1979 | 18 | 25 | 52,966 | 210,819 | NA | 9,877 | 81 | 4.0 | 5 | 128.8 | 128.8 | |
| 1980 | | | | | CONFIDENTIAL | | | | | | | |
| 1981 | 31 | 119 | 1,045,619 | 4,627,761 | NA | 58,550 | NA | 4.4 | 18 | NA | 53,355 | |
| 1982 | 96 | 269 | 1,935,886 | 8,844,789 | NA | 165,618 | 20 | 4.6 | 12 | 135.1 | 142,973 | |
| 1983 | 164 | 235 | 1,931,990 | 9,454,323 | 38,000 | 133,944 | 27 | 4.8 | 14 | 137.2 | 828,994 | |
| 1984 | 90 | 169 | 841,017 | 3,764,592 | 14,800 | 73,320 | 34 | 4.5 | 11 | 135.5 | 31,983 | |
| 1985 | 79 | 103 | 441,479 | 2,200,781 | 13,000 | 47,748 | 9 | 5.0 | 9 | 139 | 2,613 | |
| 1986 | 38 | 43 | 219,548 | 1,003,162 | 5,600 | 22,073 | 10 | 4.6 | 10 | 134.3 | 32,560 | |
| 1987 | 61 | 62 | 227,447 | 1,039,779 | 9,370 | 28,230 | 5 | 4.6 | 8 | 134.1 | 600 | |
| 1988 | 46 | 46 | 302,098 | 1,325,185 | 7,780 | 23,058 | 65 | 4.4 | 30 | 133.3 | 10,160 | |
| 1989 | 69 | 69 | 247,641 | 1,166,258 | 11,983 | 30,803 | 9 | 4.7 | 8 | 134.6 | 3,754 | |
| 1990 | 31 | 38 | 391,405 | 1,725,349 | 6,000 | 26,264 | 4 | 4.4 | 15 | 134.3 | 17,416 | |
| 1991 | 68 | 69 | 726,519 | 3,372,066 | 13,100 | 37,104 | 12 | 4.6 | 20 | 134.1 | 216,459 | |
| 1992 | 174 | 179 | 545,222 | 2,475,916 | 17,400 | 56,630 | 9 | 4.6 | 10 | 134.1 | 1,836 | |
| 1993 | 92 | 136 | 630,353 | 3,003,089 | 5,895 | 58,647 | 6 | 4.8 | 11 | 135.4 | 3,168 | |
| 1994 | 87 | 133 | 827,015 | 3,764,262 | 5,685 | 60,860 | 60 | 4.6 | 14 | 133.3 | 46,699 | |
| 1995 | 90 | 111 | 666,905 | 3,166,093 | 5,970 | 48,560 | 45 | 4.8 | 14 | 135 | 90,191 | |
| 1996 | 122 | 189 | 660,665 | 3,078,959 | 8,010 | 91,085 | 47 | 4.7 | 7 | 134.6 | 36,892 | |
| 1997 | 117 | 166 | 939,822 | 4,649,660 | 7,650 | 81,117 | 31 | 4.9 | 12 | 139.5 | 209,490 | |
| 1998 | 131 | 255 | 612,440 | 2,869,655 | 8,561 | 89,500 | 46 | 4.7 | 7 | 135.8 | 15,107 | |
| 1999-2006/07 | | | | | FISHERY CLOSED | | | | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dCarapace length in millimeters.

NA = Not available.

Table 2-11.—Harvest level, economic performance and season length summary for the Saint Matthew Island Section commercial blue king crab fishery, 1983 -2006/07.

| Season | GHL/TAC ^a | Value | | Season Length | |
|--------------|----------------------|------------------------|--------------------|----------------|----------------|
| | | Ex-vessel ^b | Total ^c | Days | Dates |
| 1983 | 8 | \$3.00 | \$25.80 | 17 | 08/20-09/06 |
| 1984 | 2.0-4.0 | \$1.75 | \$6.50 | 7 | 09/01-09/08 |
| 1985 | 0.9-1.9 | \$1.60 | \$3.80 | 5 | 09/01-09/06 |
| 1986 | 0.2-0.5 | \$3.20 | \$3.20 | 5 | 09/01-09/06 |
| 1987 | 0.6-1.3 | \$2.85 | \$3.10 | 4 | 09/01-09/05 |
| 1988 | 0.7-1.5 | \$3.10 | \$4.00 | 4 | 09/01-09/05 |
| 1989 | 1.7 | \$2.90 | \$3.50 | 3 ^d | 09/01-09/04 |
| 1990 | 1.9 | \$3.35 | \$5.70 | 6 | 09/01-09/07 |
| 1991 | 3.2 | \$2.80 | \$9.00 | 4 | 09/16-09/20 |
| 1992 | 3.1 | \$3.00 | \$7.40 | 3 ^d | 09/04-09/07 |
| 1993 | 4.4 | \$3.23 | \$9.70 | 6 | 09/15-09/21 |
| 1994 | 3.0 | \$4.00 | \$15.00 | 7 | 09/15-09/22 |
| 1995 | 2.4 | \$2.32 | \$7.10 | 5 | 09/15-09/20 |
| 1996 | 4.3 | \$2.20 | \$6.70 | 8 | 09/15-09/23 |
| 1997 | 5.0 | \$2.21 | \$9.80 | 7 | 09/15-09/22 |
| 1998 | 4.0 ^e | \$1.87 | \$5.34 | 11 | 09/15-09/26 |
| 1999-2006/07 | | | | | FISHERY CLOSED |

^aGuideline harvest level in millions of pounds. Total allowable catch for IFQ beginning in 2005.

^bAverage price per pound.

^cMillions of dollars.

^dActual length - 60 hours.

^eGeneral fishery only.

Table 2-12.—Commercial harvest of blue king crabs by season for the Saint Matthew Island Section, 1977 - 2006/07.

| Season | Date | | Harvest ^a | Minimum | | Price per Pound |
|---------------------|--------|----------------------|------------------------|-------------------|--------------|-----------------|
| | Opened | Closed | | Size ^b | | |
| 1977 | Jun-07 | Aug. 16 | 1,202,066 | 5 1/2 | | \$1.00 |
| 1978 | Jul-15 | Sept. 3 | 1,984,251 | 5 1/2 | | \$0.95 |
| 1979 | Jul-15 | Aug. 24 | 210,819 | 5 1/2 | | \$0.70 |
| 1980 | Jul-15 | Sept. 3 | CONFIDENTIAL | 5 1/2 | CONFIDENTIAL | CONFIDENTIAL |
| 1981 | Jul-15 | Aug. 21 | 4,627,761 | 5 1/2 | | \$0.90 |
| 1982 | Aug-01 | Aug. 16 | 8,844,789 | 5 1/2 | | \$2.00 |
| 1983 ^{c,d} | Aug-20 | Sept. 6 ^c | 9,506,880 ^d | 5 1/2 | | \$3.00 |
| 1984 | Aug-01 | Sept. 8 | 3,764,592 | 5 1/2 | | \$1.75 |
| 1985 | Sep-01 | Sept. 6 | 2,200,781 | 5 1/2 | | \$1.60 |
| 1986 | Sep-01 | Sept. 6 | 1,003,162 | 5 1/2 | | \$3.20 |
| 1987 | Sep-01 | Sep-05 | 1,039,779 | 5 1/2 | | \$2.85 |
| 1988 | Sep-01 | Sep-05 | 1,325,185 | 5 1/2 | | \$3.10 |
| 1989 | Jan-01 | Sep-04 | 1,166,258 | 5 1/2 | | \$2.90 |
| 1990 | Sep-01 | Sep-07 | 1,725,349 | 5 1/2 | | \$3.35 |
| 1991 | Sep-16 | Sep-20 | 3,372,066 | 5 1/2 | | \$2.80 |
| 1992 | Sep-04 | Sep-07 | 2,475,916 | 5 1/2 | | \$3.00 |
| 1993 | Sep-15 | Sep-21 | 3,003,089 | 5 1/2 | | \$3.23 |
| 1994 | Sep-15 | Sep-22 | 3,764,262 | 5 1/2 | | \$4.00 |
| 1995 | Sep-15 | Sep-22 | 3,166,093 | 5 1/2 | | \$2.32 |
| 1996 | Sep-15 | Sep-16 | 3,078,959 | 5 1/2 | | \$2.20 |
| 1997 | Sep-15 | Sep-22 | 4,649,660 | 5 1/2 | | \$2.21 |
| 1998 | Sep-15 | Sep-26 | 2,869,655 | 5 1/2 | | \$1.87 |
| 1999-2006/07 | | | FISHERY CLOSED | | | |

^aIn pounds, deadloss included.

^bCarapace width in inches.

^cPart of Northern District open until September 20.

^dSaint Lawrence Island harvest of 52,557 pounds included.

Table 2-13.--Pribilof District golden king crab fishery harvest data, 1981/82 - 2006 seasons.

| Season | Number of | | | | Harvest ^{a,b} | Weight ^b | Average | | | Deadloss ^b |
|---------|-----------|----------|--------------------|-------------|------------------------|---------------------|-------------------|---------------------|---------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | Pots lifted | | | CPUE ^c | Length ^d | Length ^d | |
| 1981/82 | 2 | | | | CONFIDENTIAL | | | | | |
| 1982/83 | 10 | 19 | 15,330 | 5,252 | 69,970 | 4.6 | 3 | 151 | 570 | |
| 1983/84 | 50 | 115 | 253,162 | 26,035 | 856,475 | 3.4 | 10 | 127 | 20,041 | |
| 1984 | 0 | | | | NO LANDINGS | | | | | |
| 1985 | 1 | | | | CONFIDENTIAL | | | | | |
| 1986 | 0 | | | | NO LANDINGS | | | | | |
| 1987 | 1 | | | | CONFIDENTIAL | | | | | |
| 1988 | 2 | | | | CONFIDENTIAL | | | | | |
| 1989 | 2 | | | | CONFIDENTIAL | | | | | |
| 1990 | 0 | | | | NO LANDINGS | | | | | |
| 1991 | 0 | | | | NO LANDINGS | | | | | |
| 1992 | 0 | | | | NO LANDINGS | | | | | |
| 1993 | 5 | 15 | 17,643 | 15,395 | 67,458 | 3.8 | 1 | NA | 0 | |
| 1994 | 3 | 5 | 21,477 | 1,845 | 88,985 | 4.1 | 12 | NA | 730 | |
| 1995 | 7 | 22 | 82,489 | 9,551 | 341,908 | 4.1 | 9 | NA | 716 | |
| 1996 | 6 | 32 | 91,947 | 9,952 | 329,009 | 3.6 | 9 | NA | 3,570 | |
| 1997 | 7 | 23 | 43,305 | 4,673 | 179,249 | 4.1 | 9 | NA | 5,554 | |
| 1998 | 3 | 9 | 9,205 | 1,530 | 35,722 | 3.9 | 6 | NA | 474 | |
| 1999 | 3 | 9 | 44,098 | 2,995 | 177,108 | 4.0 | 15 | NA | 319 | |
| 2000 | 7 | 19 | 29,145 | 5,450 | 127,217 | 4.4 | 5 | NA | 4,599 | |
| 2001 | 6 | 14 | 33,723 | 4,262 | 145,876 | 4.3 | 8 | 143 | 8,227 | |
| 2002 | 8 | 20 | 34,860 | 5,279 | 150,434 | 4.3 | 6 | 144 | 8,984 | |
| 2003 | 3 | | | | CONFIDENTIAL | | | | | |
| 2004 | 5 | | | | CONFIDENTIAL | | | | | |
| 2005 | 4 | | | | CONFIDENTIAL | | | | | |
| 2006 | 0 | | | | NO LANDINGS | | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dCarapace length in millimeters.

NA = Not available.

Confidential = Less than three vessels or processors participated in the fishery.

Table 2-14.—Pribilof District golden king crab fishery economic data, 1991 - 2006 seasons.

| Season | Value | | Season Length | |
|--------|------------------------|-------------|---------------|-----------|
| | Ex-vessel ^a | Total | Days | Dates |
| 1991 | NO LANDINGS | | 365 | 1/1-12/31 |
| 1992 | NO LANDINGS | | 365 | 1/1-12/31 |
| 1993 | \$2.42 | \$163,248 | 365 | 1/1-12/31 |
| 1994 | \$3.99 | \$355,050 | 365 | 1/1-12/31 |
| 1995 | \$3.23 | \$1,104,363 | 365 | 1/1-12/31 |
| 1996 | \$2.10 | \$690,919 | 365 | 1/1-12/31 |
| 1997 | \$2.23 | \$387,340 | 365 | 1/1-12/31 |
| 1998 | \$2.06 | \$72,611 | 365 | 1/1-12/31 |
| 1999 | \$2.34 | \$413,686 | 162 | 1/1-6/10 |
| 2000 | \$3.22 | \$392,436 | 365 | 1/1-12/31 |
| 2001 | \$3.12 | \$429,464 | 105 | 1/1-4/15 |
| 2002 | \$3.10 | \$438,495 | 134 | 1/1-5/14 |
| 2003 | CONFIDENTIAL | | 121 | 1/1-5/1 |
| 2004 | CONFIDENTIAL | | 72 | 1/1-3/12 |
| 2005 | CONFIDENTIAL | | 365 | 1/1-12/31 |
| 2006 | NO LANDINGS | | 365 | 1/1-12/31 |

^aAverage price per pound.

Confidential = Less than three vessels or processors participated in fishery.

Table 2-15.—Saint Matthew Island Section commercial golden king crab fishery harvest data, 1982/83 - 2006 seasons.

| Season | Number of | | | | | Average | | | Deadloss ^b |
|-----------|-----------|----------|--------------------|--------------|------------------------|---------------------|-------------------|---------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | Pots lifted | Harvest ^{a,b} | Weight ^b | CPUE ^c | Length ^d | |
| 1982/83 | 22 | 30 | 51,714 | 7,825 | 193,507 | 3.7 | 7 | 138 | 957 |
| 1983/84 | 0 | | | NO LANDINGS | | | | | |
| 1985 | 0 | | | NO LANDINGS | | | | | |
| 1986 | 0 | | | NO LANDINGS | | | | | |
| 1987 | 10 | 28 | 99,101 | 13,825 | 414,034 | 4.2 | 7 | 142 | 12,750 |
| 1988 | 10 | 22 | 36,470 | 11,672 | 160,441 | 4.4 | 3 | 150 | 14,000 |
| 1989 | 2 | | | CONFIDENTIAL | | | | | |
| 1990 | 0 | | | NO LANDINGS | | | | | |
| 1991 | 0 | | | NO LANDINGS | | | | | |
| 1992 | 1 | | | CONFIDENTIAL | | | | | |
| 1993 | 0 | | | NO LANDINGS | | | | | |
| 1994 | 1 | | | CONFIDENTIAL | | | | | |
| 1995 | 5 | 5 | 212 | 313 | 992 | 4.7 | 1 | NA | 0 |
| 1996 | 1 | | | CONFIDENTIAL | | | | | |
| 1997-2000 | 0 | | | NO LANDINGS | | | | | |
| 2001 | 1 | | | CONFIDENTIAL | | | | | |
| 2002 | 0 | | | NO LANDINGS | | | | | |
| 2003 | 1 | | | CONFIDENTIAL | | | | | |
| 2004-2006 | 0 | | | NO LANDINGS | | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dCarapace length in millimeters.

NA = Not available.

Confidential = Less than three vessels or processors participated in the fishery.

Table 2-16.—Saint Matthew Island Section commercial golden king crab fishery economic data, 1991 - 2006 seasons.

| Season | Value | | Season Length | |
|-----------|------------------------|--------------|---------------|-----------|
| | Ex-vessel ^a | Total | Days | Dates |
| 1991 | | NO LANDINGS | 365 | 1/1-12/31 |
| 1992 | | CONFIDENTIAL | 365 | 1/1-12/31 |
| 1993 | | NO LANDINGS | 365 | 1/1-12/31 |
| 1994 | | CONFIDENTIAL | 365 | 1/1-12/31 |
| 1995 | \$2.77 | \$2,748 | 365 | 1/1-12/31 |
| 1996 | | CONFIDENTIAL | 365 | 1/1-12/31 |
| 1997-2000 | | NO LANDINGS | 365 | 1/1-12/31 |
| 2001 | | CONFIDENTIAL | 365 | 1/1-12/31 |
| 2002 | | NO LANDINGS | 365 | 1/1-12/31 |
| 2003 | | CONFIDENTIAL | 365 | 1/1-12/31 |
| 2004-2006 | | NO LANDINGS | 365 | 1/1-12/31 |

^aAverage price per pound.

Confidential = Less than three vessels or processors participated in the fishery.

Table 2-17.—King crab Registration Area Q commercial scarlet king crab fishery data, 1992 - 2006.

| Season | Number of | | Harvest ^{a,b} | Average | | Value | | Deadloss ^a |
|-------------------|-----------|-------------|------------------------|---------------------|-------------------|------------------------|--------------------|-----------------------|
| | Vessels | Pots Lifted | | Weight ^a | CPUE ^c | Ex-vessel ^d | Total ^e | |
| 1992-1994 | 0 | | NO LANDINGS | | | | | |
| 1995 | 4 | 24,551 | 26,684 | 2.4 | 1 | \$2.45 | \$65.38 | 465 |
| 1996 | 2 | | CONFIDENTIAL | | | | | |
| 1997- 1999 | 0 | | NO LANDINGS | | | | | |
| 2000 ^f | 1 | | CONFIDENTIAL | | | | | |
| 2001 ^f | 1 | | CONFIDENTIAL | | | | | |
| 2002 ^f | 0 | | NO LANDINGS | | | | | |
| 2003 ^f | 1 | | CONFIDENTIAL | | | | | |
| 2004 | 3 | | CONFIDENTIAL | | | | | |
| 2005 | 1 | | CONFIDENTIAL | | | | | |
| 2006 | 0 | | NO LANDINGS | | | | | |

^aIn pounds.

^bDeadloss included.

^cNumber of legal crabs per pot lift.

^dAverage price per pound.

^eThousands of dollars.

^fRestricted to incidental harvest during Bering Sea golden king and grooved Tanner crab fisheries.
Confidential = Less than three vessels or processors participated in fishery.

Table 2-18.—Bering Sea District commercial Tanner crab fishery harvest data, 1969 - 2006/07.

| Season | Number of | | | Number of Pots | | | Deadloss ^b | |
|---------|-----------|----------|--------------------|------------------------|------------|-----------|-----------------------|-------------------|
| | Vessels | Landings | Crabs ^a | Harvest ^{a,b} | Registered | Pulled | | CPUE ^c |
| 1969 | NA | 131 | 353,300 | 1,008,900 | NA | 29,800 | 12 | NA |
| 1970 | NA | 66 | 482,300 | 1,014,700 | NA | 16,400 | 29 | NA |
| 1971 | NA | 22 | 61,300 | 166,100 | NA | 7,300 | 8 | NA |
| 1972 | NA | 14 | 42,061 | 107,761 | NA | 4,260 | 10 | NA |
| 1973 | NA | 44 | 93,595 | 231,668 | NA | 15,730 | 6 | NA |
| 1974 | NA | 69 | 2,531,825 | 5,044,197 | NA | 22,014 | 115 | NA |
| 1974/75 | 28 | 80 | 2,773,770 | 7,028,378 | NA | 38,462 | 72 | NA |
| 1975/76 | 66 | 304 | 8,956,036 | 22,358,107 | NA | 141,206 | 63 | NA |
| 1976/77 | 83 | 541 | 20,251,508 | 51,455,221 | NA | 297,471 | 68 | NA |
| 1977/78 | 120 | 861 | 26,350,688 | 66,648,954 | NA | 516,350 | 51 | 218,099 |
| 1978/79 | 144 | 817 | 16,726,518 | 42,547,174 | NA | 402,697 | 42 | 76,000 |
| 1979/80 | 152 | 804 | 14,685,611 | 36,614,315 | 40,273 | 488,434 | 30 | 56,446 |
| 1981 | 165 | 761 | 11,845,958 | 29,630,492 | 42,910 | 559,626 | 21 | 101,594 |
| 1982 | 125 | 791 | 4,830,980 | 11,008,779 | 36,396 | 490,099 | 10 | 138,159 |
| 1983 | 108 | 448 | 2,286,756 | 5,273,881 | 15,255 | 282,006 | 8 | 60,029 |
| 1984 | 41 | 134 | 516,877 | 1,208,223 | 9,851 | 61,357 | 8 | 5,025 |
| 1985 | 44 | 166 | 1,272,501 | 3,036,935 | 15,325 | 94,532 | 12 | 14,096 |
| 1986 | | | | FISHERY CLOSED | | | | |
| 1987 | | | | FISHERY CLOSED | | | | |
| 1988 | 98 | 248 | 957,318 | 2,294,997 | 38,765 | 114,384 | 8 | 10,724 |
| 1989 | 109 | 359 | 2,894,480 | 6,982,865 | 43,607 | 183,692 | 16 | 34,664 |
| 1990 | 179 | 1,032 | 9,800,763 | 22,417,047 | 46,440 | 657,541 | 15 | 82,443 |
| 1990/91 | 255 | 1,756 | 16,608,625 | 40,081,555 | 75,356 | 883,391 | 19 | 210,769 |
| 1991/92 | 285 | 2,339 | 12,924,102 | 31,794,382 | 85,401 | 1,244,899 | 10 | 279,741 |

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Table 2-18.-Page 2 of 2.

| Season | Number of | | | Number of Pots | | | CPUUE ^c | Deadloss ^b |
|------------------------|-----------|----------|--------------------|------------------------|------------|-----------|--------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | Harvest ^{a,b} | Registered | Pulled | | |
| 1992/93 | 294 | 2,084 | 15,265,865 | 35,130,831 | 71,481 | 1,200,385 | 13 | 343,955 |
| 1993/94 | 296 | 862 | 7,235,898 | 16,892,320 | 116,039 | 576,464 | 13 | 259,389 |
| 1994 | 183 | 349 | 3,351,639 | 7,766,886 | 38,670 | 249,536 | 13 | 132,780 |
| 1995 | 196 | 256 | 1,877,303 | 4,233,061 | 40,827 | 247,853 | 8 | 44,508 |
| 1996 ^d | 196 | 347 | 734,296 | 1,806,077 | 68,602 | 149,275 | 5 | 14,608 |
| 1997 to 2004 | | | | FISHERY CLOSED | | | | |
| 2005/06 ^{e,f} | 43 | 77 | 368,292 | 791,315 | 545 | 29,693 | 12 | 14,563 |
| 2006/07 ^{d,e} | 80 | 122 | 829,242 | 1,900,183 | 4,140 | 49,192 | 17 | 27,449 |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dIncludes incidental harvest with Bristol Bay red king crab and directed Tanner crab fishery totals.

^eIncludes incidental harvest with Bering Sea snow crab and directed Tanner crab fishery totals.

^fFirst CR fishery.

NA = Not available.

Table 2-19.—Bering Sea District commercial Tanner crab fishery catch by subdistrict, 1974/75 - 2006/07.

| Season | Subdistrict ^a | Number of | | | | | Average | | | Deadloss ^c |
|---------|--------------------------|-----------|----------|--------------------|-------------|------------------------|---------------------|-------------------|---------|-----------------------|
| | | Vessels | Landings | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Weight ^c | CPUE ^d | | |
| 1974/75 | Southeastern | | 72 | 2,526,687 | 32,275 | 6,504,984 | 2.6 | 78 | 0 | |
| | Pribilofs | | 8 | 247,083 | 3,923 | 523,394 | 2.1 | 63 | 0 | |
| | TOTAL | 28 | 80 | 2,773,770 | 38,462 | 7,028,378 | 2.5 | 72 | 0 | |
| 1975/76 | Southeastern | | 230 | 6,682,232 | 106,445 | 16,643,194 | 2.5 | 63 | 0 | |
| | Pribilofs | | 74 | 2,273,804 | 34,761 | 5,714,913 | 2.5 | 65 | 0 | |
| | TOTAL | 66 | 304 | 8,956,036 | 141,206 | 22,358,107 | 2.5 | 63 | 0 | |
| 1976/77 | Southeastern | | 437 | 16,089,057 | 233,667 | 41,007,736 | 2.6 | 69 | 0 | |
| | Pribilofs | | 104 | 4,162,451 | 63,804 | 10,447,485 | 2.5 | 65 | 0 | |
| | TOTAL | 83 | 541 | 20,251,508 | 297,471 | 51,455,221 | 2.5 | 68 | 0 | |
| 1977/78 | Southeastern | | 706 | 21,055,527 | 408,437 | 53,278,012 | 2.5 | 52 | 0 | |
| | Pribilofs | | 155 | 5,210,170 | 107,913 | 13,152,843 | 2.5 | 48 | 0 | |
| | TOTAL | 120 | 861 | 26,350,688 | 516,350 | 66,648,954 | 2.5 | 51 | 218,099 | |
| 1978/79 | Southeastern | | 758 | 15,601,891 | 356,594 | 39,694,205 | 2.5 | 44 | 75,400 | |
| | Pribilofs | | 59 | 1,124,627 | 46,103 | 2,852,969 | 2.5 | 24 | 600 | |
| | TOTAL | 144 | 817 | 16,726,518 | 402,697 | 42,547,174 | 2.5 | 42 | 76,000 | |
| 1979/80 | Southeastern | | 789 | 14,329,889 | 476,410 | 35,724,003 | 2.5 | 30 | 56,446 | |
| | Pribilofs | | 15 | 355,722 | 12,024 | 890,312 | 2.5 | 30 | 0 | |
| | TOTAL | 152 | 804 | 14,685,611 | 488,434 | 36,614,315 | 2.5 | 30 | 56,446 | |

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Table 2-19.-Page 2 of 4.

| Season | Subdistrict ^a | Number of | | | | | Average | | | Deadloss ^e |
|--------|--------------------------|-----------|------------|--------------------|-------------|------------------------|---------------------|------------------|--|-----------------------|
| | | Vessels | Landings | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Weight ^c | CPU ^d | | |
| 1981 | Southeastern | 674 | 10,532,007 | 496,751 | 26,684,956 | 2.5 | 21 | 97,398 | | |
| | Pribilofs | 87 | 1,313,951 | 62,875 | 2,945,536 | 2.5 | 21 | 4,196 | | |
| | TOTAL | 165 | 11,845,958 | 559,626 | 29,630,492 | 2.5 | 21 | 101,594 | | |
| 1982 | Southeastern | 539 | 3,825,433 | 322,634 | 8,812,302 | 2.3 | 12 | 69,829 | | |
| | Pribilofs | 252 | 1,005,547 | 167,465 | 2,196,477 | 2.2 | 6 | 68,330 | | |
| | TOTAL | 125 | 4,830,980 | 490,099 | 11,008,779 | 2.3 | 10 | 138,159 | | |
| 1983 | Northern | 10 | 29,478 | 5,950 | 48,454 | 1.7 | 5 | 167 | | |
| | Southeastern | 287 | 1,984,673 | 192,538 | 4,633,354 | 2.3 | 10 | 52,879 | | |
| | Pribilofs | 151 | 272,505 | 83,528 | 592,073 | 2.2 | 3 | 6,983 | | |
| TOTAL | 108 | 2,286,756 | 282,006 | 5,273,881 | 2.3 | 8 | 60,029 | | | |
| 1984 | Southeastern | 91 | 470,181 | 44,546 | 1,099,142 | 2.3 | 11 | 4,688 | | |
| | Pribilofs | 43 | 46,759 | 16,811 | 109,081 | 2.3 | 3 | 337 | | |
| | TOTAL | 41 | 516,877 | 61,357 | 1,208,223 | 2.3 | 8 | 5,025 | | |
| 1985 | Southeastern | 38 | 1,266,567 | 85,926 | 3,023,193 | 2.4 | 13 | 14,096 | | |
| | Pribilofs | 15 | 5,934 | 8,606 | 13,742 | 2.3 | 1 | 0 | | |
| | TOTAL | 44 | 1,272,501 | 94,532 | 3,036,935 | 2.4 | 12 | 14,096 | | |
| 1986 | | | | | | | | FISHERY CLOSED | | |
| 1987 | | | | | | | | FISHERY CLOSED | | |

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Table 2-19.—Page 3 of 4.

| Season | Subdistrict ^a | Number of | | | | | | Average | | |
|---------|---------------------------|-----------|----------|--------------------|-------------|------------------------|---------------------|------------------|-----------------------|--|
| | | Vessels | Landings | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Weight ^c | CPU ^e | Deadloss ^c | |
| 1988 | Eastern | 98 | 248 | 957,318 | 114,384 | 2,294,997 | 2.5 | 8 | 10,724 | |
| | Western | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | TOTAL | 98 | 248 | 957,318 | 114,384 | 2,294,997 | 2.5 | 8 | 10,724 | |
| 1989 | Eastern | 109 | 359 | 2,894,480 | 183,692 | 6,982,865 | 2.4 | 16 | 34,664 | |
| | Western | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | TOTAL | 109 | 359 | 2,894,480 | 183,692 | 6,982,865 | 2.4 | 16 | 34,664 | |
| 1990 | Eastern | | 1,105 | 972,788 | 647,993 | 22,399,091 | 2.3 | 15 | 82,443 | |
| | Western | | 17 | 7,975 | 9,548 | 17,956 | 2.3 | 1 | 0 | |
| | TOTAL | 179 | 1,032 | 980,763 | 657,541 | 22,417,047 | 2.3 | 15 | 82,443 | |
| 1990/91 | Eastern | 255 | 1,756 | 16,608,625 | 883,391 | 40,081,555 | 2.4 | 19 | 210,769 | |
| | Western | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | TOTAL | 255 | 1,756 | 16,608,625 | 883,391 | 40,081,555 | 2.4 | 19 | 210,769 | |
| 1991/92 | Eastern | 285 | 2,339 | 12,924,102 | 1,224,899 | 31,794,382 | 2.5 | 10 | 279,741 | |
| 1992/93 | Eastern | 293 | 2,011 | 15,074,069 | 1,150,334 | 34,821,008 | 2.3 | 13 | 340,955 | |
| | Western | 70 | 96 | 191,796 | 50,051 | 309,823 | 1.6 | 4 | 3,000 | |
| | TOTAL | 294 | 2,084 | 15,265,865 | 1,200,385 | 35,130,831 | 2.3 | 13 | 343,955 | |
| 1993/94 | East of 168 ^{of} | 283 | 347 | 1,696,830 | 250,501 | 4,115,949 | 2.4 | 7 | 104,715 | |
| | 163° to 173 ^{of} | 261 | 515 | 5,539,068 | 325,963 | 12,776,371 | 2.3 | 17 | 154,674 | |
| | TOTAL | 296 | 862 | 7,235,898 | 576,464 | 16,892,320 | 2.3 | 13 | 259,389 | |

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Table 2-19.—Page 4 of 4.

| Season | Subdistrict ^a | Number of | | | | Average | | Deadloss ^c | |
|------------------------|---------------------------|-----------|----------|--------------------|-------------|------------------------|---------------------|-----------------------|-------------------|
| | | Vessels | Landings | Crabs ^b | Pots Lifted | Harvest ^{b,c} | Weight ^c | | CPUJ ^d |
| 1994 | 163° to 173° | 183 | 349 | 3,351,639 | 249,536 | 7,766,886 | 2.3 | 13 | 132,780 |
| 1995 | 163° to 173° | 196 | 256 | 1,877,303 | 247,853 | 4,233,061 | 2.3 | 8 | 44,508 |
| 1996 | east of 168° ^e | 192 | 195 | 393,257 | 75,753 | 994,776 | 2.5 | 5 | 8,464 |
| | 163° to 173° ^f | 135 | 152 | 341,039 | 73,522 | 811,301 | 2.4 | 5 | 6,144 |
| | TOTAL | 196 | 347 | 734,296 | 149,275 | 1,806,077 | 2.5 | 5 | 14,608 |
| 1997 to 2004 | | | | | | | | | |
| | | | | | | FISHERY CLOSED | | | |
| 2005/06 ^g | west of 166° | 43 | 77 | 368,292 | 29,693 | 791,315 | 2.2 | 12 | 14,563 |
| 2006/07 ^{g,h} | east of 166° | 37 | 58 | 529,766 | 26,351 | 1,266,286 | 2.4 | 20 | 8,416 |
| | west of 166° | 38 | 64 | 299,476 | 22,841 | 633,897 | 2.1 | 13 | 19,033 |
| | TOTAL | 53 | 122 | 829,242 | 49,192 | 1,900,183 | 2.3 | 17 | 27,449 |

^aPrior to 1988, the subdistricts were: Southeastern, Pribilof, and Northern (includes the Norton Sound and General Sections).

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eIncidental harvest in Bristol Bay red king crab fishery.

^fDirected Tanner crab fishery.

^gIncludes incidental harvest with Bering Sea snow crab and directed Tanner crab fishery totals.

^hIncludes incidental harvest with Bristol Bay red king crab and directed Tanner crab fishery totals.

Table 2-20.—Bering Sea District commercial Tanner crab fishery economic data, 1979/80 - 2006/07.

| Season | GHL/TAC ^a | Value | | Season Length | |
|----------------------|----------------------|------------------------|--------------------|---------------|-------------|
| | | Ex-vessel ^b | Total ^c | Days | Dates |
| 1979/80 | 28-36 | \$0.52 | \$19.0 | 189 | 11/01-05/11 |
| 1981 | 28-36 | \$0.58 | \$17.2 | 88 | 01/15-04/15 |
| 1982 | 12-16 | \$1.06 | \$11.5 | 118 | 02/15-06/15 |
| 1983 | 5.6 | \$1.20 | \$6.2 | 118 | 02/15-06/15 |
| 1984 | 7.1 | \$0.95 | \$1.1 | 118 | 02/15-06/15 |
| 1985 | 3 | \$1.40 | \$4.3 | 149 | 01/15-06/15 |
| 1986 | | FISHERY CLOSED | | | |
| 1987 | | FISHERY CLOSED | | | |
| 1988 | 5.6 | \$2.17 | \$4.8 | 93 | 01/15-04/20 |
| 1989 | 13.5 | \$2.90 | \$20.3 | 110 | 01/15-05/07 |
| 1990 ^d | 29.5 | \$1.85 | \$45.3 | 89 | 01/15-04/24 |
| 1990/91 | 42.8 | \$1.12 | \$44.5 | 126 | 11/20-03/25 |
| 1991/92 | 32.8 | \$1.50 | \$47.3 | 137 | 11/15-03/31 |
| 1992/93 | 39.2 | \$1.69 | \$58.8 | 137 | 11/15-03/31 |
| 1993 ^e | 10.7 | \$1.90 | \$7.6 | 10 | 11/01-11/10 |
| 1993/94 ^f | 9.1 | \$1.90 | \$24.0 | 42 | 11/20-01/01 |
| 1994 ^f | 7.5 | \$3.75 | \$28.5 | 20 | 11/01-11/21 |
| 1995 ^f | 5.5 | \$2.80 | \$11.7 | 15 | 11/01-11/16 |
| 1996 ^e | 2.2 | \$2.51 | \$2.5 | 4 | 11/01-11/05 |
| 1996 ^f | 6.2 | \$2.48 | \$2.0 | 12 | 11/15-11/27 |
| 1997 to 2004 | | FISHERY CLOSED | | | |
| 2005/06 | 1.5 | \$1.28 | \$0.9 | 168 | 10/15-3/31 |
| 2006/07 | 2.7 | \$1.29 | \$2.4 | 168 | 10/15-3/31 |

^aGuideline harvest level (total allowable catch from 2005/06 forward), millions of pounds.

^bAverage price per pound.

^cMillions of dollars.

^dWinter fishery.

^eEast of 168° West longitude (incidental to Bristol Bay red king crab).

^f163° -173° West longitude (directed fishery).

Table 2-21.—Bering Sea District commercial Tanner crab fishery harvest by statistical area, 2006/07 season.

| Statistical area | Number of | | | Harvest ^{b,c} | Average | | Deadloss ^c |
|---------------------|-----------------------|--------------------|---------------|------------------------|---------------------|-------------------|-----------------------|
| | Landings ^a | Crabs ^b | Pots Lifted | | Weight ^c | CPUE ^d | |
| Eastern Subdistrict | | | | | | | |
| 625600 | 8 | 361 | 1,760 | 850 | 2.4 | <1 | 90 |
| 625630 | 7 | 298 | 1,829 | 719 | 2.4 | <1 | 61 |
| 635504 | 4 | 1,356 | 99 | 3,129 | 2.3 | 14 | 11 |
| 635530 | 9 | 5,979 | 348 | 14,542 | 2.4 | 17 | 86 |
| 635600 | 7 | 261 | 1,181 | 592 | 2.3 | <1 | 24 |
| 635630 | 12 | 406 | 2,153 | 883 | 2.2 | <1 | 139 |
| 635700 | 5 | 9 | 866 | 22 | 2.4 | <1 | 2 |
| 645501 | 18 | 198,265 | 4,623 | 474,100 | 2.4 | 43 | 3,047 |
| 645530 | 12 | 37,175 | 1,301 | 89,770 | 2.4 | 29 | 809 |
| 645600 | 4 | 264 | 95 | 653 | 2.5 | 3 | 8 |
| 645630 | 12 | 418 | 4,475 | 913 | 2.2 | <1 | 211 |
| 645700 | 6 | 22 | 122 | 54 | 2.5 | <1 | 0 |
| 655500 | 21 | 227,430 | 5,449 | 546,529 | 2.4 | 42 | 3,031 |
| 655530 | 12 | 57,213 | 1,808 | 132,797 | 2.3 | 32 | 893 |
| Western Subdistrict | | | | | | | |
| 665500 | 6 | 4,462 | 235 | 10,044 | 2.3 | 19 | 31 |
| 665530 | 9 | 57,210 | 1,778 | 122,853 | 2.1 | 32 | 679 |
| 695631 | 25 | 208,278 | 5,599 | 437,956 | 2.1 | 37 | 16,406 |
| 705630 | 10 | 22,986 | 672 | 49,157 | 2.1 | 34 | 301 |
| 705701 | 8 | 2,885 | 656 | 6,097 | 2.1 | 4 | 22 |
| 715600 | 3 | 9 | 116 | 19 | 2.1 | <1 | 3 |
| 715630 | 13 | 375 | 1,849 | 764 | 2.0 | <1 | 227 |
| 715700 | 15 | 681 | 2,673 | 1,459 | 2.1 | <1 | 246 |
| 715730 | 3 | 9 | 100 | 19 | 2.1 | <1 | 12 |
| 725630 | 14 | 362 | 1,977 | 721 | 2.0 | <1 | 507 |
| 725700 | 23 | 286 | 5,311 | 597 | 2.1 | <1 | 406 |
| 725730 | 7 | 34 | 829 | 71 | 2.1 | <1 | 59 |
| 735700 | 4 | 9 | 312 | 15 | 1.7 | <1 | 15 |
| Other ^e | 25 | 2,199 | 976 | 4,856 | 2.2 | 2 | 125 |
| Total | 302 | 829,242 | 49,192 | 1,900,183 | 2.3 | 17 | 27,449 |

^aNumber of statistical area landings is greater than the total number of landings because a single vessel may fish in several statistical areas.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eCombination of 13 statistical areas where less than three vessels made landings.

Table 2-22.—Bering Sea District commercial Tanner crab fishery harvest composition by fishing season, 1972 - 2006/07.

| Season | Average | | % New |
|-------------------|---------------------|--------------------|-------|
| | Weight ^a | Width ^b | Shell |
| 1972 ^c | 2.6 | NA | NA |
| 1973 ^c | 2.5 | NA | NA |
| 1974 ^c | 2.0 | NA | NA |
| 1974/75 | 2.5 | NA | NA |
| 1975/76 | 2.5 | NA | NA |
| 1976/77 | 2.5 | NA | NA |
| 1977/78 | 2.5 | 152.8 | 88.0 |
| 1978/79 | 2.5 | 152.7 | 95.0 |
| 1979/80 | 2.5 | 151.4 | 90.0 |
| 1981 | 2.5 | 149.4 | 86.6 |
| 1982 | 2.3 | 148.8 | 85.4 |
| 1983 ^d | 2.3 | 148.8 | 70.5 |
| 1984 | 2.3 | 146.5 | 40.0 |
| 1985 | 2.4 | 150.0 | 65.0 |
| 1986 | FISHERY CLOSED | | |
| 1987 | FISHERY CLOSED | | |
| 1988 | 2.5 | 143.5 | 70.2 |
| 1989 | 2.4 | 149.4 | 80.8 |
| 1990 | 2.3 | 148.1 | 96.5 |
| 1990/91 | 2.4 | 149.7 | 95.3 |
| 1991/92 | 2.5 | 150.4 | 93.2 |
| 1992/93 | 2.3 | 148.0 | 90.5 |
| 1993/94 | 2.4 | 150.7 | 93.9 |
| 1994 | 2.3 | 150.0 | 92.5 |
| 1995 | 2.3 | 149.3 | 58.6 |
| 1996 | 2.5 | 152.1 | 46.6 |
| 1997 to 2004 | FISHERY CLOSED | | |
| 2005/06 | 2.2 | 144.5 | 92.1 |
| 2006/07 | 2.3 | 150.0 | 35.9 |

^aIn pounds.

^bCarapace width in millimeters.

^cIncidental to the king crab fishery.

^dPartial Bering Sea closure.

NA = Not available.

Table 2-23.—Bering Sea District commercial snow crab fishery harvest data, 1978/79 - 2006/07.

| Season | GHL/TAC ^a | Number of | | | | Harvest ^{b,c} | CPUE ^d | Deadloss ^e |
|----------------------|----------------------|----------------------|----------|--------------------|-------------|------------------------|-------------------|-----------------------|
| | | Vessels ^h | Landings | Crabs ^b | Pots Lifted | | | |
| 1978/79 | | 102 | 490 | 22,118,498 | 190,746 | 32,187,039 | 116 | 759,137 |
| 1979/80 | | 134 | 597 | 25,286,777 | 255,102 | 39,572,668 | 99 | 228,345 |
| 1981 | 39.5-91.0 | 153 | 867 | 34,415,322 | 435,742 | 52,750,034 | 79 | 2,269,979 |
| 1982 | 16.0-22.0 | 122 | 803 | 24,089,562 | 469,091 | 29,355,374 | 51 | 1,092,655 |
| 1983 ^e | 15.8 | 109 | 461 | 23,853,647 | 287,127 | 26,128,410 | 83 | 1,324,466 |
| 1984 ^e | 49.0 | 52 | 367 | 24,009,935 | 173,591 | 26,813,074 | 138 | 798,795 |
| 1985 ^e | 98.0 | 75 | 718 | 52,394,686 | 370,082 | 65,362,866 | 142 | 1,060,784 |
| 1986 ^e | 57.0 | 88 | 992 | 76,319,307 | 542,346 | 97,684,139 | 141 | 1,378,533 |
| 1987 ^e | 56.4 | 103 | 1,038 | 81,307,659 | 616,113 | 101,903,388 | 132 | 978,449 |
| 1988 ^e | 110.7 | 171 | 1,285 | 105,933,542 | 747,395 | 134,241,728 | 142 | 3,424,021 |
| 1989 ^e | 132.0 | 168 | 1,300 | 112,704,215 | 665,242 | 148,306,262 | 169 | 1,940,482 |
| 1990 ^e | 139.8 | 189 | 1,563 | 128,931,026 | 911,303 | 161,765,415 | 141 | 1,796,664 |
| 1991 ^e | 315.0 | 220 | 2,788 | 265,123,960 | 1,391,463 | 328,647,269 | 191 | 3,464,036 |
| 1992 | 333.0 | 250 | 2,763 | 227,376,582 | 1,281,796 | 315,302,034 | 177 | 2,325,852 |
| 1993 | 207.2 | 254 | 1,835 | 169,535,617 | 970,646 | 230,754,253 | 175 | 1,573,952 |
| 1994 | 105.8 | 272 | 1,293 | 114,810,186 | 716,524 | 149,792,718 | 160 | 1,799,763 |
| 1995 | 55.7 | 253 | 870 | 60,658,899 | 507,603 | 75,309,187 | 120 | 1,289,169 |
| 1996 | 50.7 | 234 | 771 | 52,892,320 | 520,671 | 65,696,173 | 102 | 1,333,015 |
| 1997 | 117.0 | 226 | 1,127 | 100,013,816 | 754,140 | 119,543,024 | 133 | 2,351,555 |
| 1998 ^f | 225.9 | 229 | 1,767 | 186,643,538 | 891,219 | 243,492,577 | 209 | 2,896,374 |
| 1999 ^f | 186.2 | 241 | 1,631 | 143,469,440 | 899,308 | 184,735,011 | 160 | 1,828,540 |
| 2000 ^f | 26.4 | 229 | 288 | 23,265,802 | 170,064 | 30,774,838 | 137 | 330,896 |
| 2001 ^f | 25.3 | 207 | 293 | 17,185,523 | 176,930 | 23,382,046 | 97 | 429,884 |
| 2002 ^f | 28.5 | 191 | 403 | 23,281,441 | 308,132 | 30,233,494 | 76 | 585,288 |
| 2003 ^{f,g} | 23.7 | 192 | 256 | 21,504,969 | 139,279 | 26,198,024 | 154 | 662,409 |
| 2004 ^f | 19.3 | 189 | 240 | 17,331,514 | 110,087 | 22,170,150 | 157 | 224,377 |
| 2005 ^f | 19.4 | 169 | 196 | 16,684,751 | 69,863 | 23,036,287 | 239 | 224,193 |
| 2005/06 ⁱ | 33.5 | 78 | 310 | 22,080,235 | 108,320 | 33,256,146 | 204 | 322,595 |
| 2006/07 ⁱ | 32.9 | 69 | 274 | 26,633,212 | 80,112 | 32,699,874 | 332 | 379,132 |

^aGuideline harvest level, millions of pounds. Total allowable catch from 2005/06 forward.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^ePartial district and subdistrict closures, see Table 2-26.

^fGeneral fishery only.

^gIncludes 181,457 pounds illegally taken in Russian waters.

^hVessel totals are vessels that registered but may not have actively participated in the fishery.

ⁱIFQ fishery only, no CDQ.

Table 2-24.—Bering Sea District commercial snow crab fishery season dates and area closures, 1977/78 - 2006/07.

| Season | Opened | Closed | Comments |
|---------|----------|----------|---|
| 1977/78 | 09/15/77 | 09/23/78 | Bering Sea District closure ^a |
| 1978/79 | 11/01/78 | 09/03/79 | Bering Sea District closure ^a |
| 1979/80 | 11/01/79 | 08/15/80 | Bering Sea District state closure |
| | | 09/03/80 | Bering Sea District federal closure |
| 1981 | 01/15/81 | 09/01/81 | Bering Sea District closure ^b |
| 1982 | 02/15/82 | 08/01/82 | Bering Sea District closure ^b |
| 1983 | 02/15/83 | 05/22/83 | Bering Sea District closure south of 57°30' N. lat. ^b |
| | | 08/01/83 | Bering Sea District closure north of 57°30' N. lat. ^b |
| 1984 | 02/15/84 | 08/01/84 | Bering Sea District closure south of 58° N. lat. ^b |
| | | 08/22/84 | Bering Sea District closure north of 58° N. lat. to allow an orderly start to king crab season ^b |
| | | 09/15/84 | Bering Sea District closure north of 58°N. lat. reopened after king season and Bering Sea District closure ^b |
| 1985 | 01/15/85 | 05/08/85 | Pribilof Subdistrict closure south of 58° N. lat. ^b |
| | | 08/01/85 | Bering Sea District closure south of 58°39' N. lat. ^b |
| | | 08/22/85 | Northern Subdistrict closure to allow an orderly start to king crab season ^b |
| | 10/09/85 | 01/15/86 | *Bering Sea District reopened, except east of 164° W. long. in Southeastern Subdistrict, *fishery was scheduled to close 12/31/85 but did not, it remained open until the start of the 1986 fishery |
| 1986 | 01/15/86 | 04/21/86 | Southeastern Subdistrict closure west of 164° W long. ^b |
| | | 06/01/86 | Pribilof Subdistrict closure ^b |
| | | 08/01/86 | Northern Subdistrict closure east of 175° W. long. ^b |
| | | 08/24/86 | Northern Subdistrict closure west of 175° W. long. ^b |
| 1987 | 01/15/87 | 04/12/87 | Southeastern Subdistrict west of 164° W. long., and Pribilof Subdistrict closure |
| | | 06/01/87 | Northern Subdistrict south of 60°30' N lat. and east of 178° W. long. closure |

-Continued-

Table 2-24.—Page 2 of 2.

| Season | Opened | Closed | Comments |
|---------|----------|----------|--|
| 1987 | 01/15/87 | 06/22/87 | Northern Subdistrict north of 60°30' N lat. and west of 178° W. long. closure |
| 1988 | 01/15/88 | 03/29/88 | Bering Sea District closure (Western Subdistrict to assist in an orderly closure) |
| | 05/15/88 | 06/30/88 | Western Subdistrict reopen and closure |
| 1989 | 01/15/89 | 03/26/89 | Eastern Subdistrict closure |
| | | 05/07/89 | Western Subdistrict closure |
| 1990 | 01/15/90 | 04/09/90 | Eastern Subdistrict east of 165° W. long. closure |
| | | 04/24/90 | Eastern Subdistrict west of 165° W. long. closure |
| | | 06/12/90 | Western Subdistrict closure |
| 1991 | 01/15/91 | 05/05/91 | Eastern Subdistrict closure |
| | | 06/23/91 | Western Subdistrict closure |
| 1992 | 01/15/92 | 04/22/92 | Bering Sea District closure |
| 1993 | 01/15/93 | 03/15/93 | Bering Sea District closure |
| 1994 | 01/15/94 | 03/01/94 | Bering Sea District closure |
| 1995 | 01/15/95 | 02/17/95 | Bering Sea District closure |
| 1996 | 01/15/96 | 02/29/96 | Bering Sea District closure |
| 1997 | 01/15/97 | 03/21/97 | Bering Sea District closure |
| 1998 | 01/15/98 | 03/20/98 | Bering Sea District closure |
| 1999 | 01/15/99 | 03/22/99 | Bering Sea District closure |
| 2000 | 04/01/00 | 04/08/00 | Bering Sea District closure |
| 2001 | 01/15/01 | 02/14/01 | Bering Sea District closure |
| 2002 | 01/15/02 | 02/08/02 | Bering Sea District closure |
| 2003 | 01/15/03 | 01/25/03 | Bering Sea District closure |
| 2004 | 01/15/04 | 01/23/04 | Bering Sea District closure |
| 2005 | 01/15/05 | 01/20/05 | Bering Sea District closure |
| 2005/06 | 10/15/05 | 05/15/06 | Eastern Subdistrict closure |
| | | 05/31/06 | Western Subdistrict closure |
| 2006/07 | 10/15/06 | 05/15/07 | Eastern Subdistrict closure |
| | | 05/31/07 | Western Subdistrict closure |

^aState managed domestic fishery.

^bConcurrent state and federal date.

Table 2-25.—Bering Sea District commercial snow crab harvest by season and subdistrict, 1977/78 - 2006/07.

| Season | Subdistrict | Number of | | | | Harvest ^{d,e} | Average | | Deadloss ^e |
|---------|--------------|------------------------|-----------------------|--------------------|-------------|------------------------|---------------------|--------------------|-----------------------|
| | | Vessels ^{a,b} | Landings ^c | Crabs ^d | Pots Lifted | | Weight ^e | CPU ^{e,f} | |
| 1977/78 | Southeastern | NA | 33 | 1,063,872 | 11,560 | 1,439,959 | 1.4 | 92 | NA |
| | Pribilof | NA | 5 | 203,674 | 1,687 | 276,165 | 1.4 | 121 | NA |
| | TOTAL | 15 | 38 | 1,267,546 | 13,247 | 1,716,124 | 1.4 | 96 | NA |
| 1978/79 | Southeastern | 101 | 476 | 21,279,794 | 184,491 | 31,102,832 | 1.5 | 115 | 659,137 |
| | Pribilof | 10 | 14 | 838,704 | 6,225 | 1,084,039 | 1.5 | 135 | 100,000 |
| | TOTAL | 102 | 490 | 22,118,498 | 190,746 | 32,187,039 | 1.5 | 116 | 759,137 |
| 1979/80 | Southeastern | 133 | 561 | 23,199,446 | 237,375 | 36,406,391 | 1.6 | 98 | 187,945 |
| | Pribilof | 19 | 36 | 2,087,331 | 17,727 | 3,166,777 | 1.5 | 118 | 40,400 |
| | TOTAL | 134 | 597 | 25,286,777 | 255,102 | 39,572,668 | 1.6 | 99 | 228,345 |
| 1981 | Southeastern | NA | 624 | 24,498,642 | 309,304 | 37,866,229 | 1.6 | 79 | 1,475,078 |
| | Pribilof | NA | 243 | 9,916,617 | 126,438 | 14,886,705 | 1.5 | 78 | 794,901 |
| | TOTAL | 153 | 867 | 34,415,322 | 435,742 | 52,750,034 | 1.5 | 79 | 2,269,979 |
| 1982 | Southeastern | NA | 468 | 10,207,174 | 257,193 | 13,079,583 | 1.3 | 40 | 422,979 |
| | Pribilof | NA | 335 | 13,882,388 | 211,898 | 16,276,421 | 1.2 | 66 | 669,676 |
| | TOTAL | 122 | 803 | 24,089,562 | 469,091 | 29,355,374 | 1.2 | 51 | 1,092,655 |
| 1983 | Southeastern | NA | 153 | 3,553,281 | 94,470 | 4,197,304 | 1.2 | 38 | 165,298 |
| | Pribilof | NA | 239 | 19,076,553 | 153,458 | 20,514,000 | 1.0 | 124 | 1,078,643 |
| | Northern | NA | 69 | 1,223,813 | 39,199 | 1,417,106 | 1.1 | 31 | 80,525 |
| TOTAL | 109 | 461 | 23,853,647 | 287,127 | 26,128,410 | 1.1 | 83 | 1,324,466 | |

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Table 2-25.—Page 2 of 5.

| Season | Subdistrict | Number of | | | | | Pots Lifted | Harvest ^{de} | Average | | Deadloss ^e |
|--------|--------------|------------------------|-----------------------|--------------------|---------------------|-------------------|-------------|-----------------------|-----------|--|-----------------------|
| | | Vessels ^{a,b} | Landings ^c | Crabs ^d | Weight ^e | CPUE ^f | | | | | |
| 1984 | Southeastern | NA | 76 | 3,534,370 | 33,091 | 3,990,621 | 1.1 | 107 | 54,678 | | |
| | Pribilof | NA | 230 | 17,909,096 | 112,078 | 19,727,493 | 1.1 | 160 | 708,706 | | |
| | Northern | NA | 61 | 2,566,469 | 28,422 | 3,094,960 | 1.2 | 90 | 35,411 | | |
| | TOTAL | 52 | 367 | 24,009,935 | 173,591 | 26,813,074 | 1.1 | 138 | 798,795 | | |
| 1985 | Southeastern | 55 | 301 | 21,963,882 | 158,819 | 27,373,232 | 1.4 | 138 | 461,001 | | |
| | Pribilof | 60 | 301 | 24,089,526 | 142,937 | 29,804,093 | 1.2 | 169 | 505,146 | | |
| | Northern | 24 | 116 | 6,849,838 | 70,289 | 8,821,550 | 1.3 | 97 | 98,037 | | |
| | TOTAL | 75 | 718 | 52,903,246 | 372,045 | 65,998,875 | 1.3 | 142 | 1,064,184 | | |
| 1986 | Southeastern | 47 | 112 | 8,491,694 | 63,889 | 10,957,578 | 1.3 | 133 | 44,755 | | |
| | Pribilof | 80 | 508 | 39,851,767 | 281,337 | 50,525,150 | 1.3 | 142 | 472,342 | | |
| | Northern | 67 | 372 | 28,155,662 | 198,518 | 36,501,811 | 1.3 | 142 | 861,436 | | |
| | TOTAL | 88 | 992 | 76,499,123 | 543,744 | 97,984,539 | 1.3 | 141 | 1,378,533 | | |
| 1987 | Southeastern | 28 | 64 | 4,116,778 | 24,619 | 5,106,473 | 1.2 | 167 | 24,619 | | |
| | Pribilof | 94 | 458 | 38,604,802 | 261,337 | 47,676,734 | 1.2 | 148 | 261,337 | | |
| | Northern | 99 | 516 | 38,586,079 | 330,157 | 49,120,181 | 1.2 | 117 | 330,157 | | |
| | TOTAL | 103 | 1,038 | 81,307,659 | 616,113 | 101,903,388 | 1.2 | 132 | 978,449 | | |
| 1988 | Eastern | 162 | 771 | 60,019,586 | 423,919 | 75,926,942 | 1.3 | 142 | 740,976 | | |
| | Western | 151 | 518 | 45,913,956 | 323,476 | 58,314,786 | 1.3 | 142 | 2,501,693 | | |
| | TOTAL | 171 | 1,285 | 105,933,542 | 747,395 | 134,241,728 | 1.3 | 142 | 3,424,021 | | |
| 1989 | Eastern | 164 | 872 | 77,717,813 | 393,251 | 103,163,307 | 1.3 | 198 | 1,137,971 | | |
| | Western | 127 | 470 | 34,986,402 | 271,991 | 45,142,955 | 1.3 | 129 | 802,511 | | |
| | TOTAL | 168 | 1,300 | 112,704,215 | 665,242 | 148,306,262 | 1.3 | 169 | 1,940,482 | | |

-Continued-

Table 2-25.--Page 3 of 5.

| Season | Subdistrict | Number of | | | | Pots Lifted | Harvest ^{de} | Average | | Deadloss ^e |
|--------|-------------|-----------------------|-----------------------|--------------------|---------------------|-------------|-----------------------|-------------------|-----------|-----------------------|
| | | Vessels ^{ab} | Landings ^c | Crabs ^d | Weight ^f | | | CPUE ^f | | |
| 1990 | Eastern | 177 | 956 | 76,285,217 | 511,949 | 94,775,962 | 1.2 | 149 | 1,010,755 | |
| | Western | 152 | 659 | 52,645,809 | 399,354 | 66,989,453 | 1.3 | 132 | 785,909 | |
| | TOTAL | 189 | 1,563 | 128,931,026 | 911,303 | 161,765,415 | 1.3 | 141 | 1,796,664 | |
| 1991 | Eastern | 218 | 2,013 | 190,139,612 | 912,631 | 240,090,666 | 1.3 | 208 | 1,593,021 | |
| | Western | 185 | 867 | 74,984,348 | 478,832 | 88,556,603 | 1.2 | 157 | 1,871,015 | |
| | TOTAL | 220 | 2,788 | 265,123,960 | 1,391,463 | 328,647,269 | 1.2 | 191 | 3,464,036 | |
| 1992 | Eastern | 248 | 2,696 | 217,376,231 | 1,228,280 | 302,364,005 | 1.4 | 177 | 2,269,467 | |
| | Western | 55 | 152 | 10,000,351 | 56,385 | 12,938,029 | 1.3 | 187 | 56,385 | |
| | TOTAL | 250 | 2,763 | 227,376,582 | 2,325,852 | 315,302,034 | 1.4 | 177 | 2,325,852 | |
| 1993 | Eastern | 251 | 1,383 | 110,756,768 | 675,936 | 151,324,024 | 1.4 | 164 | 1,108,520 | |
| | Western | 185 | 632 | 58,778,849 | 294,710 | 79,430,229 | 1.4 | 199 | 465,432 | |
| | TOTAL | 254 | 1,835 | 169,535,617 | 970,646 | 230,754,253 | 1.4 | 175 | 1,573,952 | |
| 1994 | Eastern | 219 | 820 | 56,012,433 | 375,928 | 72,008,424 | 1.3 | 149 | 901,674 | |
| | Western | 171 | 586 | 58,797,753 | 340,596 | 77,784,294 | 1.3 | 173 | 898,089 | |
| | TOTAL | 273 | 1,293 | 114,810,186 | 716,524 | 149,792,718 | 1.3 | 160 | 1,799,763 | |
| 1995 | Eastern | 217 | 628 | 32,677,836 | 314,711 | 39,793,496 | 1.2 | 104 | 659,051 | |
| | Western | 153 | 357 | 27,981,053 | 192,892 | 35,515,691 | 1.3 | 145 | 630,118 | |
| | TOTAL | 253 | 870 | 60,658,899 | 659,051 | 75,309,187 | 1.2 | 120 | 1,289,169 | |
| 1996 | Eastern | 161 | 465 | 23,663,995 | 252,159 | 28,232,574 | 1.2 | 94 | 555,326 | |
| | Western | 146 | 354 | 29,228,325 | 268,512 | 37,463,599 | 1.3 | 109 | 777,689 | |
| | TOTAL | 234 | 771 | 52,892,320 | 520,671 | 65,696,173 | 1.2 | 102 | 1,333,015 | |

-Continued-

Table 2-25.--Page 4 of 5.

| Season | Subdistrict | Number of | | | | Average | | Deadloss ^e | |
|-------------------|--------------------|------------------------|-----------------------|--------------------|-------------|------------------------|---------------------|-----------------------|-------------------|
| | | Vessels ^{a,b} | Landings ^c | Crabs ^d | Pots Lifted | Harvest ^{d,e} | Weight ^e | | CPUE ^f |
| 1997 | Eastern | 225 | 1,041 | 88,524,929 | 649,319 | 105,695,147 | 1.2 | 136 | 2,115,217 |
| | Western | 83 | 164 | 11,488,887 | 104,821 | 13,894,192 | 1.2 | 110 | 236,338 |
| | TOTAL | 226 | 1,127 | 100,013,816 | 754,140 | 119,543,024 | 1.2 | 133 | 2,351,555 |
| 1998 ^g | Eastern | 228 | 1,724 | 177,994,288 | 855,869 | 232,772,054 | 1.3 | 208 | 2,789,721 |
| | Western | 43 | 87 | 8,649,250 | 35,350 | 8,649,250 | 1.2 | 245 | 106,653 |
| | TOTAL | 229 | 1,767 | 186,643,538 | 891,219 | 186,643,538 | 1.3 | 209 | 2,896,374 |
| 1999 ^g | Eastern | 236 | 1,387 | 103,230,699 | 656,541 | 135,454,092 | 1.3 | 157 | 1,237,997 |
| | Western | 121 | 388 | 40,238,741 | 242,767 | 49,280,919 | 1.2 | 166 | 590,543 |
| | TOTAL | 241 | 1,631 | 143,469,440 | 899,308 | 184,735,011 | 1.3 | 160 | 1,828,540 |
| 2000 ^g | Eastern | 170 | 217 | 15,269,109 | 110,127 | 20,941,389 | 1.4 | 139 | 196,610 |
| | Western | 82 | 92 | 7,996,693 | 59,937 | 9,833,449 | 1.2 | 133 | 134,286 |
| | TOTAL | 229 | 288 | 23,265,802 | 170,064 | 30,774,838 | 1.3 | 137 | 330,896 |
| 2001 ^g | Eastern | 162 | 218 | 8,864,497 | 113,954 | 12,557,788 | 1.4 | 78 | 223,861 |
| | Western | 85 | 115 | 8,321,026 | 62,976 | 10,824,258 | 1.3 | 132 | 206,023 |
| | TOTAL | 207 | 293 | 17,185,523 | 176,930 | 23,382,046 | 1.4 | 97 | 429,884 |
| 2002 ^g | Eastern | 144 | 274 | 10,403,159 | 162,729 | 13,554,037 | 1.3 | 64 | 300,716 |
| | Western | 108 | 192 | 12,878,282 | 145,403 | 16,679,457 | 1.3 | 89 | 284,572 |
| | TOTAL ^h | 191 | 403 | 23,281,441 | 308,132 | 30,233,494 | 1.3 | 76 | 585,288 |

-Continued-

Table 2-25.—Page 5 of 5.

| Season | Subdistrict | Vessels ^{a,b} | Landings ^c | Number of | | Pots Lifted | Harvest ^{d,e} | Average | | Deadloss ^e |
|----------------------|--------------------|------------------------|-----------------------|--------------------|--------------------|-------------|------------------------|---------------------|-------------------|-----------------------|
| | | | | Crabs ^d | Crabs ^d | | | Weight ^f | CPUE ^f | |
| 2003 ^g | Eastern | 58 | 75 | 391,324 | 29,305 | 4,856,607 | 1.2 | 134 | 106,594 | |
| | Western | 159 | 216 | 17,573,645 | 109,974 | 21,341,417 | 1.2 | 160 | 555,815 | |
| | TOTAL ^h | 192 | 256 | 21,504,969 | 139,279 | 26,198,024 | 1.2 | 154 | 662,409 | |
| 2004 ^g | Eastern | 59 | 75 | 2,127,631 | 16,539 | 2,764,695 | 1.3 | 129 | 28,211 | |
| | Western | 170 | 209 | 15,203,883 | 93,548 | 19,405,455 | 1.3 | 163 | 196,166 | |
| | TOTAL | 189 | 240 | 17,331,514 | 110,087 | 22,170,150 | 1.3 | 157 | 224,377 | |
| 2005 ^g | Eastern | 61 | 84 | 5,505,532 | 18,822 | 7,798,629 | 1.4 | 293 | 54,539 | |
| | Western | 128 | 136 | 11,179,219 | 51,041 | 15,237,658 | 1.4 | 219 | 169,654 | |
| | TOTAL | 169 | 196 | 16,684,751 | 69,863 | 23,036,287 | 1.4 | 239 | 224,193 | |
| 2005/06 ⁱ | Eastern | 66 | 566 | 14,193,844 | 77,311 | 21,741,637 | 1.5 | 184 | 202,154 | |
| | Western | 50 | 263 | 7,886,391 | 31,009 | 11,514,505 | 1.5 | 254 | 120,440 | |
| | TOTAL | 78 | 829 | 22,080,235 | 108,320 | 33,256,142 | 1.5 | 204 | 322,594 | |
| 2006/07 ^j | Eastern | 65 | 488 | 23,262,299 | 69,884 | 28,398,217 | 1.2 | 333 | 325,374 | |
| | Western | 23 | 110 | 3,370,913 | 10,228 | 4,301,657 | 1.3 | 330 | 53,758 | |
| | TOTAL | 69 | 598 | 26,633,212 | 80,112 | 32,699,874 | 1.2 | 332 | 379,132 | |

^aVessels by subdistrict are vessels that actively participated in the fishery.

^bVessel totals are vessels that registered but may not have actively participated in the fishery.

^cNumber of subdistrict landings is greater than the total number of vessel landings because a single vessel may fish in several statistical areas.

^dDeadloss included.

^eIn pounds.

^fNumber of legal crabs per pot lift.

^gGeneral fishery only, no CDQ.

^hTotal harvest includes 30,919 pounds taken from an unidentified statistical area.

ⁱIncludes 181,457 pounds illegally taken in Russian waters.

^jIFQ fishery only, no CDQ.

NA = Not Available.

Table 2-26.—Bering Sea District commercial snow crab fishery harvest composition by fishing season, 1978/79 - 2006/07.

| Season | Average | | Percent new shell | Percent <102 mm cw landed |
|-------------------|---------------------|--------------------|-------------------|---------------------------|
| | Weight ^a | Width ^b | | |
| 1978/79 | 1.5 | 113.1 | 83.0 | NA |
| 1979/80 | 1.6 | 118.1 | 90.0 | NA |
| 1981 | 1.5 | 117.0 | 79.2 | NA |
| 1982 | 1.2 | 109.4 | 78.0 | NA |
| 1983 ^c | 1.1 | NA | NA | NA |
| 1984 ^c | 1.1 | 105.4 | 78.0 | NA |
| 1985 ^c | 1.3 | 108.0 | 80.0 | NA |
| 1986 ^c | 1.3 | 109.5 | 73.7 | NA |
| 1987 ^c | 1.2 | 108.9 | 84.0 | NA |
| 1988 ^c | 1.3 | 109.5 | 71.2 | NA |
| 1989 ^c | 1.3 | 111.2 | 85.2 | NA |
| 1990 ^c | 1.3 | 109.1 | 97.4 | NA |
| 1991 ^c | 1.2 | 110.2 | 95.1 | NA |
| 1992 | 1.4 | 111.7 | 97.6 | NA |
| 1993 | 1.4 | 111.6 | 92.5 | NA |
| 1994 | 1.3 | 110.4 | 93.1 | 11.3 |
| 1995 | 1.2 | 108.6 | 89.6 | 17.2 |
| 1996 | 1.2 | 107.5 | 75.8 | 19.7 |
| 1997 | 1.2 | 107.3 | 96.5 | 17.3 |
| 1998 | 1.3 | 111.1 | 97.0 | 7.3 |
| 1999 | 1.3 | 110.3 | 97.7 | 8.0 |
| 2000 | 1.3 | 111.3 | 95.2 | 6.5 |
| 2001 | 1.4 | 111.3 | 95.2 | 5.3 |
| 2002 | 1.3 | 110.4 | 69.0 | 12.2 |
| 2003 | 1.2 | 107.2 | 83.8 | 10.2 |
| 2004 | 1.3 | 110.4 | 86.0 | 10.2 |
| 2005 | 1.4 | 113.6 | 88.1 | 7.9 |
| 2005/06 | 1.5 | 116.6 | 81.4 | 1.8 |
| 2006/07 | 1.2 | 109.1 | 88.3 | 9.2 |

^aIn pounds.

^bCarapace width in millimeters.

^cPartial district and subdistrict closures, see Table 2-24.

NA = Not available.

Table 2-27.—Bering Sea District commercial snow crab fishery economic data 1979/80 - 2006/07.

| Season | Value | | Registered Pots ^c | Season Length ^d |
|-------------------|------------------------|--------------------|---------------------------------|-------------------------------|
| | Ex-vessel ^a | Total ^b | | |
| 1979/80 | \$0.21 | \$ 82.50 | 35,503 | 307 |
| 1981 | \$0.26 | \$ 13.10 | 39,789 | 229 |
| 1982 | \$0.73 | \$ 20.70 | 35,522 | 167 |
| 1983 ^e | \$0.35 | \$ 8.70 | 15,396 | 120 |
| 1984 ^e | \$0.30 | \$ 7.80 | 12,493 | 320 |
| 1985 ^e | \$0.30 | \$ 19.50 | 15,325 | 333 |
| 1986 ^e | \$0.60 | \$ 60.00 | 13,750 | 252 |
| 1987 ^e | \$0.75 | \$ 75.70 | 19,386 | 158 |
| 1988 ^e | \$0.77 | \$ 100.70 | 38,765 | 120 |
| 1989 ^e | \$0.75 | \$ 110.70 | 43,607 | 112 |
| 1990 ^e | \$0.64 | \$ 102.30 | 46,440 | 148 |
| 1991 ^e | \$0.50 | \$ 162.60 | 76,056 | 159 |
| 1992 | \$0.50 | \$ 156.50 | 77,858 | 97 |
| 1993 | \$0.75 | \$ 171.90 | 65,081 | 59 |
| 1994 | \$1.30 | \$ 192.40 | 54,837 | 45 |
| 1995 | \$2.43 | \$ 180.00 | 53,707 | 33 |
| 1996 | \$1.33 | \$ 85.60 | 50,169 | 45 |
| 1997 | \$0.79 | \$ 92.60 | 47,036 | 65 |
| 1998 | \$0.56 | \$ 134.65 | 47,909 | 64 |
| 1999 | \$0.88 | \$ 160.78 | 50,173 | 66 |
| 2000 | \$1.81 | \$ 55.09 | 43,407 | 7 |
| 2001 | \$1.53 | \$ 32.12 | 40,379 | 30 |
| 2002 | \$1.49 | \$ 44.20 | 37,807 | 24 |
| 2003 | \$1.83 | \$ 46.98 | 20,452 | 9 |
| 2004 | \$2.05 | \$ 44.99 | 14,444 | 8 |
| 2005 | \$1.80 | \$ 41.47 | 12,840 | 6 |
| 2005/06 | \$0.84 | \$ 27.66 | 13,734 | 229 |
| 2006/07 | \$1.40 | \$ 36.85 | 10,851 | 229 |

^aAverage price per pound.

^bMillions of dollars.

^cPrior to 1992 includes Tanner crab gear.

^dIn days.

^ePartial district and subdistrict closures, see Table 2-24.

Table 2-28.—Bering Sea commercial snow crab fishery harvest and effort by week, 2006/07 season.

| Week ending | Number of | | | Harvest ^{ab} | Pot pulls | CPUE ^c | Deadloss ^b |
|-------------|-----------|----------|--------------------|-----------------------|-----------|-------------------|-----------------------|
| | Vessels | Landings | Crabs ^a | | | | |
| 11-Nov | 3 | 6 | 383,915 | 481,947 | 1,789 | 215 | 13,846 |
| 18-Nov | 1 | | | CONFIDENTIAL | | | |
| 25-Nov | 3 | 3 | 203,590 | 291,396 | 1,027 | 198 | 0 |
| 2-Dec | 3 | 3 | 92,254 | 132,047 | 727 | 127 | 0 |
| 9-Dec | 2 | | | CONFIDENTIAL | | | |
| 16-Dec | 2 | | | CONFIDENTIAL | | | |
| 13-Jan | 11 | 11 | 1,776,521 | 2,271,192 | 4,535 | 392 | 53,914 |
| 20-Jan | 12 | 15 | 1,546,869 | 1,942,386 | 4,614 | 335 | 22,862 |
| 27-Jan | 12 | 14 | 1,900,714 | 2,356,721 | 6,127 | 310 | 29,461 |
| 3-Feb | 16 | 18 | 2,076,559 | 2,553,329 | 6,211 | 334 | 32,334 |
| 10-Feb | 19 | 21 | 2,714,179 | 3,310,734 | 7,645 | 355 | 39,679 |
| 17-Feb | 16 | 20 | 1,978,750 | 2,490,307 | 6,799 | 291 | 28,318 |
| 3-Mar | 11 | 12 | 1,273,731 | 1,552,558 | 4,781 | 266 | 22,361 |
| 10-Mar | 15 | 20 | 1,653,460 | 2,023,804 | 5,764 | 287 | 25,677 |
| 17-Mar | 8 | 11 | 816,062 | 1,022,806 | 2,459 | 332 | 17,672 |
| 24-Mar | 13 | 20 | 2,159,964 | 2,575,584 | 5,800 | 372 | 21,117 |
| 31-Mar | 17 | 23 | 2,205,806 | 2,623,110 | 6,352 | 347 | 16,367 |
| 7-Apr | 21 | 34 | 2,691,711 | 3,232,429 | 7,235 | 372 | 26,942 |
| 14-Apr | 11 | 14 | 1,367,895 | 1,638,269 | 3,041 | 450 | 16,402 |
| 21-Apr | 12 | 19 | 1,219,579 | 1,449,061 | 2,864 | 426 | 8,897 |
| 28-Apr | 1 | | | CONFIDENTIAL | | | |
| 5-May | 1 | | | CONFIDENTIAL | | | |
| 12-May | 1 | | | CONFIDENTIAL | | | |
| Total | 69 | 274 | 26,633,212 | 32,699,874 | 80,112 | 332 | 379,132 |

^aDeadloss included.

^bIn Pounds.

^cNumber of legal crabs per pot lift.

Table 2-29.—Bering Sea District commercial snow crab fishery catch by statistical area, 2006/07.

| Statistical Area | Number of | | | Harvest ^{b,c} | Average | | Deadloss ^c |
|--|-----------------------|--------------------|---------------|------------------------|---------------------|-------------------|-----------------------|
| | Landings ^a | Crabs ^b | Pots Lifted | | Weight ^c | CPUE ^d | |
| EASTERN SUBDISTRICT STATISTICAL AREAS | | | | | | | |
| 665500 | 3 | 551 | 200 | 871 | 1.6 | 3 | 29 |
| 665530 | 6 | 1,076 | 1,495 | 1,461 | 1.4 | 1 | 76 |
| 695631 | 15 | 5,888 | 3,697 | 7,424 | 1.3 | 2 | 205 |
| 705630 | 8 | 2,528 | 472 | 3,489 | 1.4 | 5 | 145 |
| 705701 | 12 | 276,355 | 849 | 350,787 | 1.3 | 326 | 2,605 |
| 715600 | 4 | 72,888 | 155 | 93,465 | 1.3 | 470 | 674 |
| 715630 | 77 | 4,967,129 | 13,943 | 6,170,068 | 1.2 | 356 | 60,000 |
| 715700 | 92 | 5,161,426 | 12,418 | 6,287,685 | 1.2 | 416 | 59,499 |
| 715730 | 14 | 265,302 | 739 | 327,990 | 1.2 | 359 | 6,608 |
| 725630 | 39 | 1,783,496 | 5,056 | 2,158,657 | 1.2 | 353 | 31,460 |
| 725700 | 130 | 7,913,835 | 22,421 | 9,540,186 | 1.2 | 353 | 111,911 |
| 725730 | 64 | 2,347,943 | 6,311 | 2,866,627 | 1.2 | 372 | 43,675 |
| Other ^e | 24 | 463,882 | 2,128 | 589,508 | 1.3 | 218 | 8,487 |
| Subtotal | 488 | 23,262,299 | 69,884 | 28,398,217 | 1.2 | 333 | 325,374 |
| WESTERN SUBDISTRICT STATISTICAL AREAS | | | | | | | |
| 735700 | 41 | 867,618 | 2,309 | 1,045,407 | 1.2 | 376 | 9,821 |
| 735730 | 35 | 953,522 | 2,583 | 1,149,638 | 1.2 | 369 | 12,595 |
| 735800 | 8 | 247,713 | 872 | 306,844 | 1.2 | 284 | 8,166 |
| 735830 | 5 | 100,441 | 440 | 134,709 | 1.3 | 228 | 2,301 |
| 745800 | 6 | 97,173 | 404 | 126,592 | 1.3 | 241 | 2,511 |
| 745830 | 12 | 1,098,804 | 3,578 | 1,530,635 | 1.4 | 307 | 18,319 |
| Other ^f | 3 | 5,642 | 42 | 7,833 | 1.4 | 134 | 46 |
| Subtotal | 110 | 3,370,913 | 10,228 | 4,301,657 | 1.3 | 330 | 53,758 |
| Total | 598 | 26,633,212 | 80,112 | 32,699,874 | 1.2 | 332 | 379,132 |

^aNumber of statistical area landings is greater than the total number of landings because a single vessel may fish in several statistical areas.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eIncludes eight statistical areas where less than three vessels made landings.

^fIncludes three statistical areas where less than three vessels made landings.

Table 2-30.—Bering Sea District commercial grooved Tanner crab fishery harvest data, 1992 - 2006.

| Year | Number of | | | Harvest ^{a,b} | Average | | Value | | Deadloss ^b |
|-----------|-----------|--------------------|-------------|------------------------|---------------------|-------------------|------------------------|--------------------|-----------------------|
| | Vessels | Crabs ^a | Pots Lifted | | Weight ^b | CPUE ^c | Ex-vessel ^d | Total ^e | |
| 1992 | | | | CONFIDENTIAL | | | | | |
| 1993 | 6 | 342,095 | 35,650 | 658,796 | 1.9 | 9 | \$0.92 | \$0.61 | 71,000 |
| 1994 | 4 | 165,365 | 13,739 | 322,444 | 2.0 | 11 | \$2.65 | \$0.85 | 30,585 |
| 1995 | 8 | 461,401 | 59,028 | 984,648 | 2.1 | 7 | \$2.09 | \$2.06 | 67,329 |
| 1996 | 3 | 46,338 | 10,802 | 95,795 | 2.1 | 4 | \$1.12 | \$0.11 | 11,120 |
| 1997-1999 | 0 | | | NO LANDINGS | | | | | |
| 2000 | 1 | | | CONFIDENTIAL | | | | | |
| 2001 | 1 | | | CONFIDENTIAL | | | | | |
| 2002 | 0 | | | NO LANDINGS | | | | | |
| 2003 | 1 | | | CONFIDENTIAL | | | | | |
| 2004 | 4 | | | CONFIDENTIAL | | | | | |
| 2005 | 1 | | | CONFIDENTIAL | | | | | |
| 2006 | 0 | | | NO LANDINGS | | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dAverage price per pound.

^eMillions of dollars.

Table 2-31.—Bering Sea District commercial triangle Tanner crab fishery harvest data, 1992 - 2006.

| Year | Number of | | | Harvest ^{a,b} | Average | | Value | | Deadloss ^b |
|-------------------|-----------|--------------------|-------------|------------------------|---------------------|-------------------|------------------------|--------------------|-----------------------|
| | Vessels | Crabs ^a | Pots Lifted | | Weight ^b | CPUE ^c | Ex-vessel ^d | Total ^e | |
| 1992-1994 | 0 | | | NO LANDINGS | | | | | |
| 1995 | 4 | 35,236 | 21,070 | 40,991 | 1.2 | 1 | \$1.45 | \$0.06 | 11,943 |
| 1996 | 1 | | | CONFIDENTIAL | | | | | |
| 1997-1999 | 0 | | | NO LANDINGS | | | | | |
| 2000 ^f | 1 | | | CONFIDENTIAL | | | | | |
| 2001 ^f | 1 | | | CONFIDENTIAL | | | | | |
| 2002 ^f | 0 | | | NO LANDINGS | | | | | |
| 2003 ^f | 1 | | | CONFIDENTIAL | | | | | |
| 2004 ^f | 4 | | | CONFIDENTIAL | | | | | |
| 2005 ^f | 0 | | | NO LANDINGS | | | | | |
| 2006 ^f | 0 | | | NO LANDINGS | | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dAverage price per pound.

^eMillions of dollars.

^fRestricted to incidental harvest during grooved Tanner crab fishery.

Table 2-32.—Bering Sea commercial hair crab fishery data, 1979 - 2006.

| Season | Number of | | Crabs ^a | Pots | | Average | | Deadloss ^b |
|----------------------------|-----------|----------|--------------------|------------------------|--------------|---------|-------------------|-----------------------|
| | Vessels | Landings | | Harvest ^{a,b} | Registered | Pulled | CPUE ^c | |
| 1979 | 11 | 16 | 2,457 | | 9,908 | <1 | 2.1 | 0 |
| 1980 | 9 | 17 | 25,417 | 5,213 | 14,506 | 2 | 2.1 | 0 |
| 1980/81 | 67 | 192 | 1,127,309 | 2,439,483 | 172,695 | 7 | 2.2 | 265,369 |
| 1981/82 | 48 | 159 | 466,560 | 932,584 | 117,518 | 4 | 2.0 | 29,749 |
| 1982/83 | 52 | 161 | 575,453 | 1,211,420 | 84,346 | 7 | 2.1 | 122,456 |
| 1983/84 | 19 | 48 | 200,670 | 406,538 | 20,414 | 10 | 2.0 | 28,062 |
| 1984 ^d | 7 | 26 | 197,209 | 396,630 | 22,392 | 9 | 2.0 | 19,436 |
| 1985 ^d | 3 | 9 | 34,410 | 66,042 | 3,905 | 9 | 2.0 | 593 |
| 1986 | 3 | 7 | 7,289 | 14,835 | 4,720 | 2 | 2.0 | 500 |
| 1987 ^e | 2 | | | | CONFIDENTIAL | | | |
| 1988-90 ^d | | | | | NO LANDINGS | | | |
| 1991 ^d | 7 | 42 | 441,533 | 377,708 | 44,444 | 10 | .9 | 0 |
| 1992 ^{d,e} | 9 | 20 | 203,758 | 240,767 | 38,808 | 5 | 1.2 | 11,495 |
| 1992 ^{d,f} | 10 | 47 | 1,127,948 | 1,198,590 | 125,943 | 9 | 1.1 | 65,674 |
| 1993 ^{d,e} | 4 | 5 | 2,347 | 3,038 | 9,345 | <1 | 1.3 | 0 |
| 1993/94 ^{d,f,g,h} | 19 | 129 | 1,936,795 | 2,331,686 | 585,913 | 3 | 1.2 | 124,596 |
| 1994 ^{d,f} | 10 | 55 | 897,070 | 1,199,246 | 287,954 | 3 | 1.3 | 49,275 |
| 1995 ^{d,f} | 21 | 81 | 1,485,097 | 2,059,988 | 441,494 | 3 | 1.4 | 73,882 |

-Continued-

Table 2-32.—Page 2 of 2

| Season | Number of | | Crabs ^a | Harvest ^{a,b} | Pots | | Average | | Deadloss |
|------------------------|-----------|----------|--------------------|------------------------|----------------|---------|-------------------|---------------------|----------|
| | Vessels | Landings | | | Registered | Pulled | CPUE ^c | Weight ^b | |
| 1996 ^d | 19 | 99 | 485,735 | 745,804 | 20,680 | 410,548 | 1 | 1.5 | 32,495 |
| 1997 ^d | 16 | 52 | 420,121 | 668,096 | 18,180 | 211,970 | 2 | 1.6 | 17,522 |
| 1998 ^d | 12 | 31 | 188,784 | 307,739 | 14,330 | 128,495 | 2 | 1.6 | 17,392 |
| 1999 ^d | 8 | 27 | 139,894 | 221,656 | 9,840 | 92,333 | 1 | 1.6 | 4,677 |
| 2000 ^d | 3 | 3 | 1,058 | 1,546 | 3,900 | 3,300 | <1 | 1.5 | 0 |
| 2001-2006 ^d | | | | | FISHERY CLOSED | | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs retained per pot pull.

^dPermit Fishery.

^eSpring Fishery.

^fFall Fishery.

^gFishery opened Nov. 1, 1993 and closed April 20, 1994.

^hIncludes seven vessels that landed hair crab incidental to Tanner crab.

Table 2-33.—Bering Sea commercial hair crab fishery economic performance data, 1979 - 2006.

| Season | GHL ^a | Value | | Season | |
|-----------|------------------|-----------------------|--------------------|--------|-------------|
| | | Exvessel ^b | Total ^c | Days | Dates |
| 1979 | | \$0.54 | \$0.03 | 257 | 04/19-12/31 |
| 1980 | | \$0.75 | \$0.04 | 244 | 01/01-08/30 |
| 1980/81 | | \$0.80 | \$1.7 | 242 | 11/01-06/30 |
| 1981/82 | | \$0.55 | \$0.5 | 288 | 11/01-08/15 |
| 1982/83 | | \$0.65 | \$0.7 | 297 | 10/08-08/01 |
| 1983/84 | | \$1.20 | \$0.5 | 335 | 08/01-06/30 |
| 1984 | | \$1.60 | \$0.6 | 184 | 07/01-12/31 |
| 1985 | | \$1.60 | \$0.1 | 365 | 01/01-12/31 |
| 1986 | | \$1.15 | \$0.2 | 365 | 01/01-12/31 |
| 1987 | | CONFIDENTIAL | | 365 | 01/01-12/31 |
| 1988-90 | | NO LANDINGS | | 365 | 01/01-12/31 |
| 1991 | | \$3.08 | \$1.2 | 365 | 01/01-12/31 |
| 1992 | | \$2.25 | \$0.5 | 32 | 01/01-06/04 |
| 1992 | | \$2.46 | \$2.8 | 156 | 10/01-11/01 |
| 1993 | | NA | NA | 45 | 04/01-05/15 |
| 1993/94 | 3.0 | \$2.42 | \$5.3 | 171 | 11/01-04/20 |
| 1994 | 1.1 | \$3.55 | \$4.0 | 41 | 11/01-12/12 |
| 1995 | 1.8 | \$2.87 | \$5.7 | 25 | 11/01-11/26 |
| 1996 | 0.9 | \$2.65 | \$1.9 | 31 | 11/01-12/02 |
| 1997 | 0.8 | \$2.97 | \$1.9 | 25 | 11/01-11/25 |
| 1998 | 0.4 | \$2.70 | \$0.8 | 16 | 10/08-10/23 |
| 1999 | 0.3 | \$3.20 | \$0.7 | 37 | 10/30-12/07 |
| 2000 | 0.3 | \$3.84 | \$0.005 | 7 | 10/30-11/05 |
| 2001-2006 | | FISHERY CLOSED | | | |

^aGuideline harvest level, millions of pounds.

^bPrice per pound.

^cIn millions of dollars.

NA = Not Available.

Table 2-34.—Bering Sea commercial octopus incidental harvest in groundfish fisheries, 1995 - 2006.

| Year | Number of | | Harvest ^b | |
|-------------------|-----------|-----------------------|----------------------|---------|
| | Vessels | Landings ^a | Total ^c | Landed |
| 1995 ^d | 30 | 76 | 17,730 | 11,967 |
| 1996 | 63 | 191 | 26,343 | 5,199 |
| 1997 | 44 | 92 | 12,202 | 6,997 |
| 1998 | 47 | 81 | 8,204 | 2,580 |
| 1999 | 22 | 56 | 6,994 | 409 |
| 2000 | 78 | 272 | 39,915 | 16,304 |
| 2001 | 62 | 158 | 49,641 | 8,425 |
| 2002 | 68 | 187 | 56,078 | 39,450 |
| 2003 | 80 | 236 | 122,423 | 94,663 |
| 2004 | 92 | 279 | 88,534 | 63,007 |
| 2005 | 80 | 271 | 156,381 | 143,798 |
| 2006 | 88 | 304 | 93,624 | 68,904 |

^aAll landings incidental to other fisheries.

^bHarvest data from state groundfish fish tickets (Neptune database), in pounds.

^cDiscards at sea included.

^dThe 1995 directed fishery data is confidential, and is not included in this table.

Table 2-35.—Bering Sea commercial snail catch data, 1992 - 2006.

| Year | Number of | | Number of Pots | | Harvest ^{a,b} | CPUE ^c | Pounds Per Pot ^d | Deadloss ^b |
|-----------|-----------|----------|----------------|---------|------------------------|-------------------|--------------------------------|-----------------------|
| | Vessels | Landings | Registered | Pulled | | | | |
| 1992 | | | | | CONFIDENTIAL | | | |
| 1993 | 4 | 10 | 13,800 | 44,686 | 312,876 | 25 | 7 | NA |
| 1994 | 4 | 42 | 14,850 | 279,349 | 2,027,328 | 21 | 7.3 | 62,571 |
| 1995 | 4 | 38 | 18,800 | 262,096 | 2,352,825 | 28 | 9 | 22,371 |
| 1996 | 5 | 67 | 31,300 | 741,326 | 3,572,992 | 16 | 4.8 | 62,494 |
| 1997 | 3 | 17 | 14,500 | 191,893 | 932,048 | 16 | 4.9 | 77,131 |
| 1998-2006 | | | | | NO LANDINGS | | | |

^aDeadloss included.

^bIn pounds.

^cNumber of snails per pot pull.

^dWhole weight.

NA = Not available.

Table 2-36.—Bering Sea commercial snail fishery economic performance data, 1992 - 2006.

| Year | Harvest ^a | Number of | | Value | |
|-----------|----------------------|-----------|--------------|-----------------------|-------------|
| | | Vessels | Landings | Exvessel ^b | Total |
| 1992 | | | CONFIDENTIAL | | |
| 1993 | 312,876 | 4 | 10 | \$0.40 | \$125,150 |
| 1994 | 1,964,757 | 4 | 42 | \$0.34 | \$668,017 |
| 1995 | 2,330,454 | 4 | 38 | \$0.30 | \$699,136 |
| 1996 | 3,510,498 | 5 | 67 | \$0.30 | \$1,053,149 |
| 1997 | 854,917 | 3 | 17 | \$0.36 | \$307,770 |
| 1998-2006 | | | NO LANDINGS | | |

^aIn pounds.

^bPrice per pound.

Table 2-37.—North Peninsula District commercial Dungeness crab fishery data, 1992 - 2006.

| Year | Number of | | Harvest ^{a,b} | Pots Pulled | Value | | Average | | Deadloss ^b |
|------|-----------|--------------------|------------------------|----------------|-----------------------|--------------------|---------------------|-------------------|-----------------------|
| | Vessels | Crabs ^a | | | Exvessel ^c | Total ^d | Weight ^b | CPUE ^e | |
| 1992 | 0 | | | | | | | | |
| 1993 | 2 | | | | | | | | |
| 1994 | 2 | | | | | | | | |
| 1995 | 6 | 63,732 | 134,407 | 34,499 | \$1.32 | \$0.18 | 2.1 | 4 | 367 |
| 1996 | 1 | | | | | | | | |
| 1997 | 2 | | | | | | | | |
| 1998 | 1 | | | | | | | | |
| 1999 | 0 | | | | | | | | |
| 2000 | 1 | | | | | | | | |
| 2001 | 0 | | | | | | | | |
| 2002 | 3 | 11,173 | 21,871 | 2,431 | \$1.78 | \$0.04 | 2.0 | 5 | 236 |
| 2003 | 0 | | | | | | | | |
| 2004 | 1 | | | | | | | | |
| 2005 | 0 | | | | | | | | |
| 2006 | 0 | | | | | | | | |

^aDeadloss included.

^bIn pounds.

^cPrice per pound.

^dMillions of dollars.

^eNumber of legal crabs per pot pull.

Table 2-38.—Pot Limits for Bering Sea and Aleutian Islands king and Tanner crab Fisheries, 2006/07.

| Fishery | Vessel Length | Pot Limit |
|---|---------------|--------------------------------|
| Bering Sea District snow crab | - | 450 |
| Bering Sea District Tanner crab | - | 450 |
| St. Matthew Island Section blue king crab | - | 250 |
| St. Matthew Island Section golden king crab | = 125' | 60 |
| | > 125' | 75 |
| Pribilof District red/blue king crab | - | 250 |
| Pribilof District golden king crab | = 125' | 40 |
| | > 125' | 50 |
| Bristol Bay red king crab | - | 450 |
| Eastern Aleutian Tanner crab | - | Total fishery pot limit 300 |
| Petrel Bank red king crab | - | 250 |

Table 2-39.—Number of Bering Sea buoy tags printed and issued by fishery, 2006/07.

| Fishery | Number of Tags Ordered ^a | Tag Sets Issued | | Total Sets | Tags Issued | | Tags Replaced | Total Tags |
|----------------------------------|-------------------------------------|---------------------|---------------------|------------|---------------------|---------------------|---------------|---------------|
| | | ? 125' ^b | > 125' ^b | | ? 125' ^b | > 125' ^b | | |
| Bristol Bay red king crab | Surplus Tags | 55 | 27 | 82 | 8,665 | 7,100 | 0 | 15,765 |
| Bering Sea snow crab | Surplus Tags | 40 | 28 | 68 | 5,940 | 6,420 | 0 | 12,360 |
| Bering Sea Tanner crab | Surplus Tags | 21 | 7 | 28 | 2,751 | 850 | 0 | 3,601 |
| Eastern Aleutian District Tanner | Surplus Tags | 10 | | 10 | 200 | | 2 | 202 |
| Total | | 188 | 62 | 188 | 17,556 | 14,370 | 2 | 31,928 |

^aTags ordered in sets of 200, then separated for each fishery pot limit.

^bOverall vessel length.

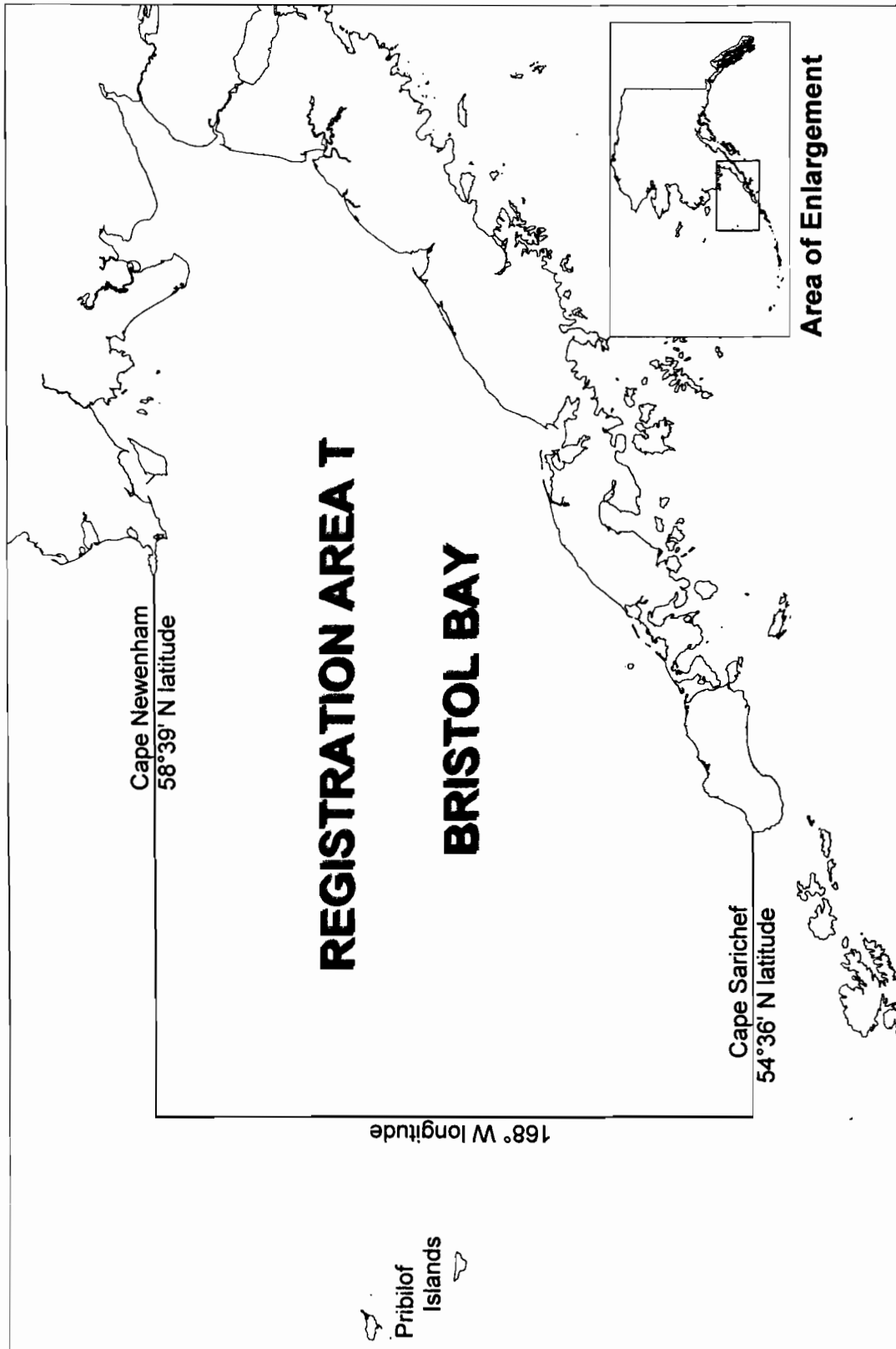


Figure 2-1.—King crab Registration Area T (Bristol Bay).

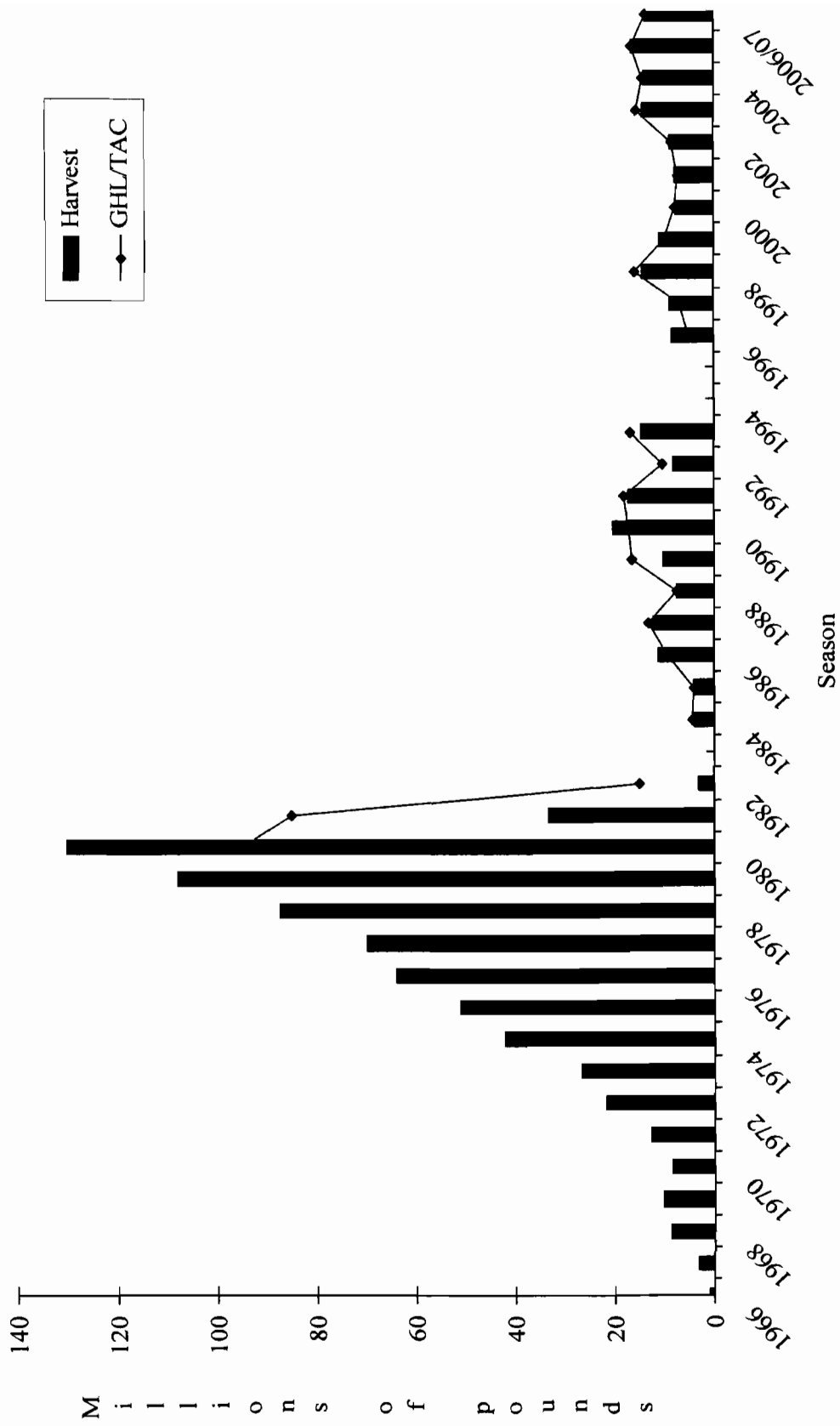


Figure 2-2.-Bristol Bay commercial red king crab fishery harvest and GHL/TAC, 1966 - 2006/07.

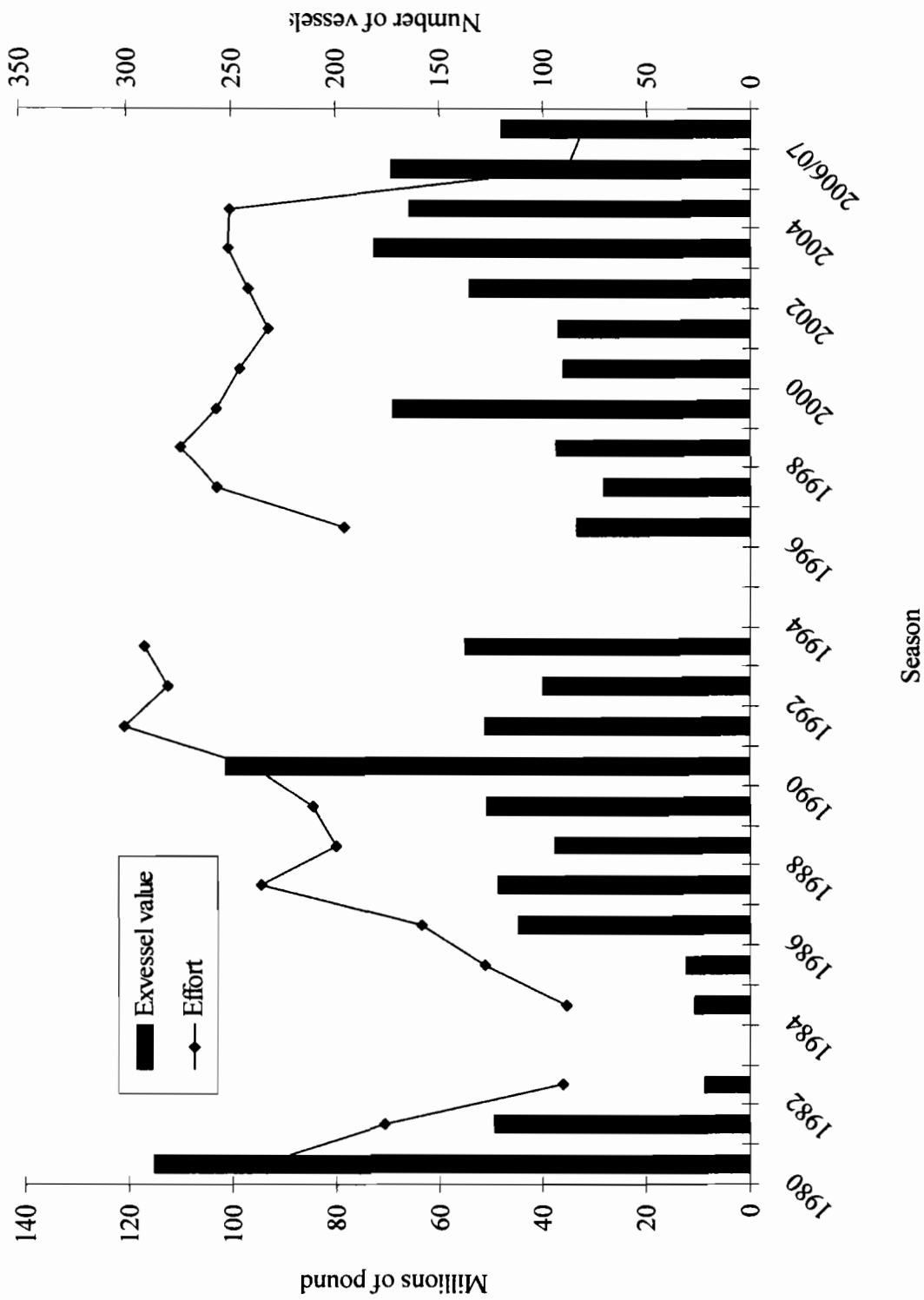


Figure 2-3.—Bristol Bay commercial red king crab fishery effort and exvessel value, 1980 - 2006/07.

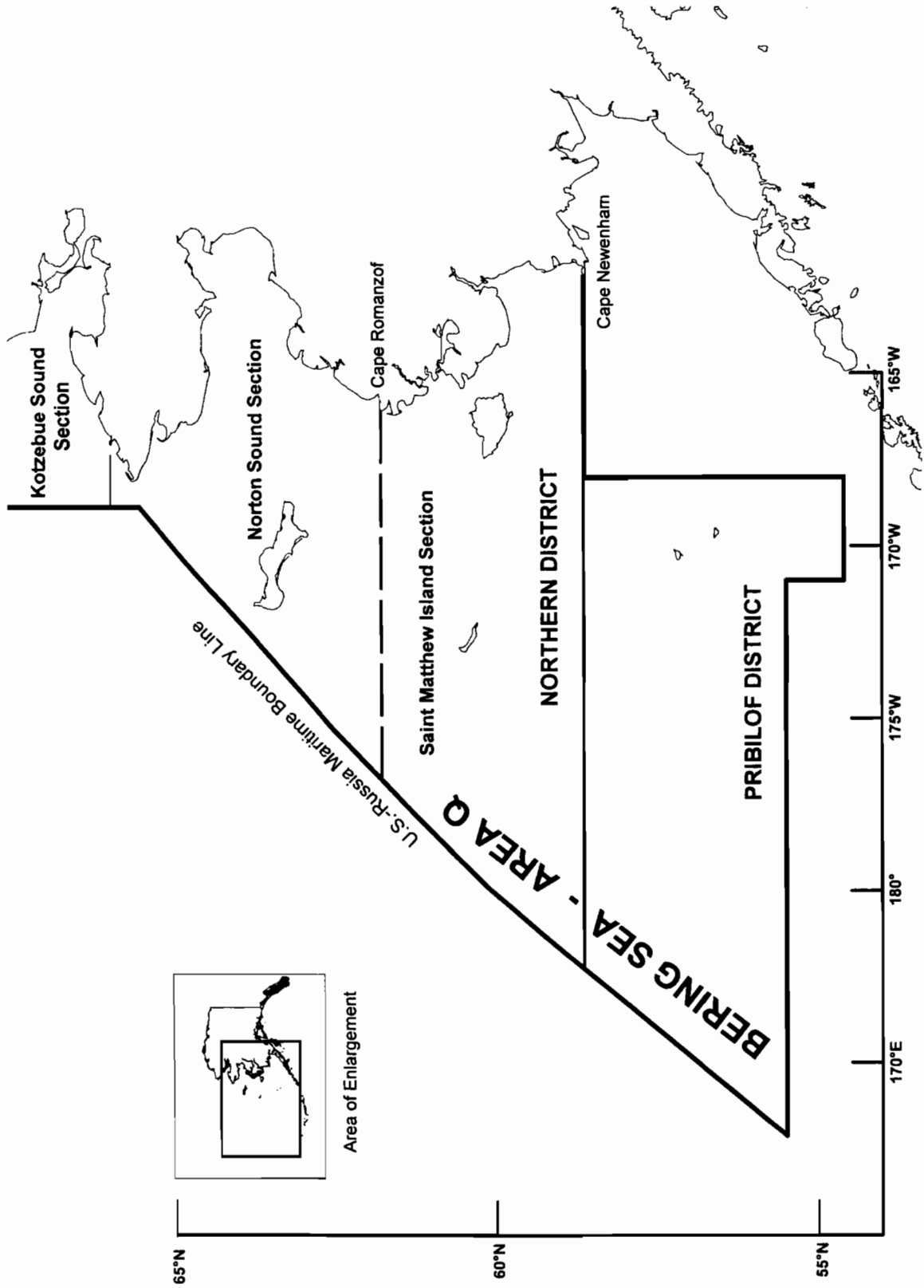


Figure 2-4.--King crab Registration Area Q (Bering Sea).

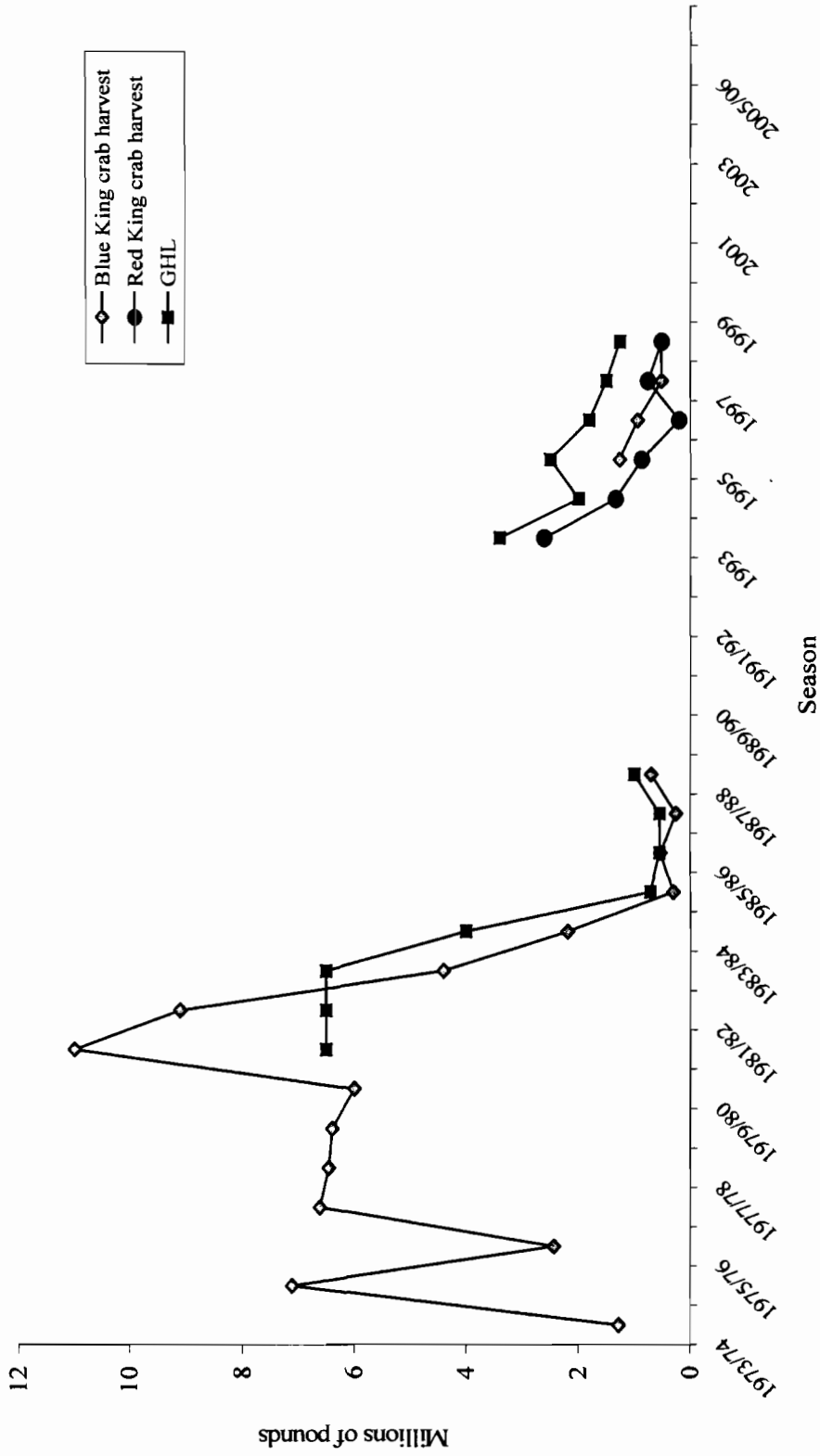


Figure 2-5.—Pribilof District red and blue king crab harvest and GHL 1973 - 2006/07. GHL for red and blue king crab is combined from 1995 onward.

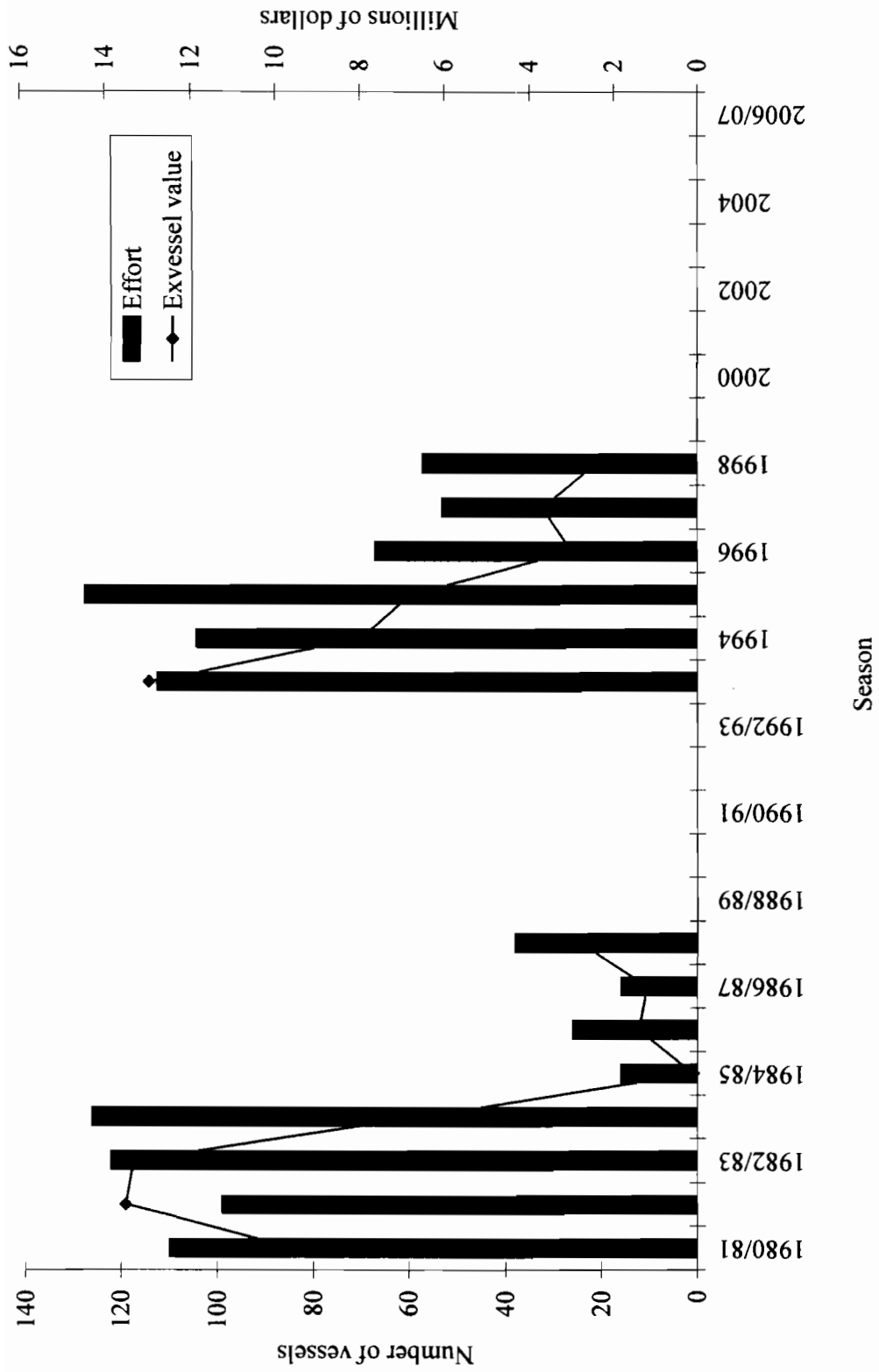


Figure 2-6.—Pribilof District commercial red and blue king crab fishery effort and exvessel value, 1980 - 2006/07.

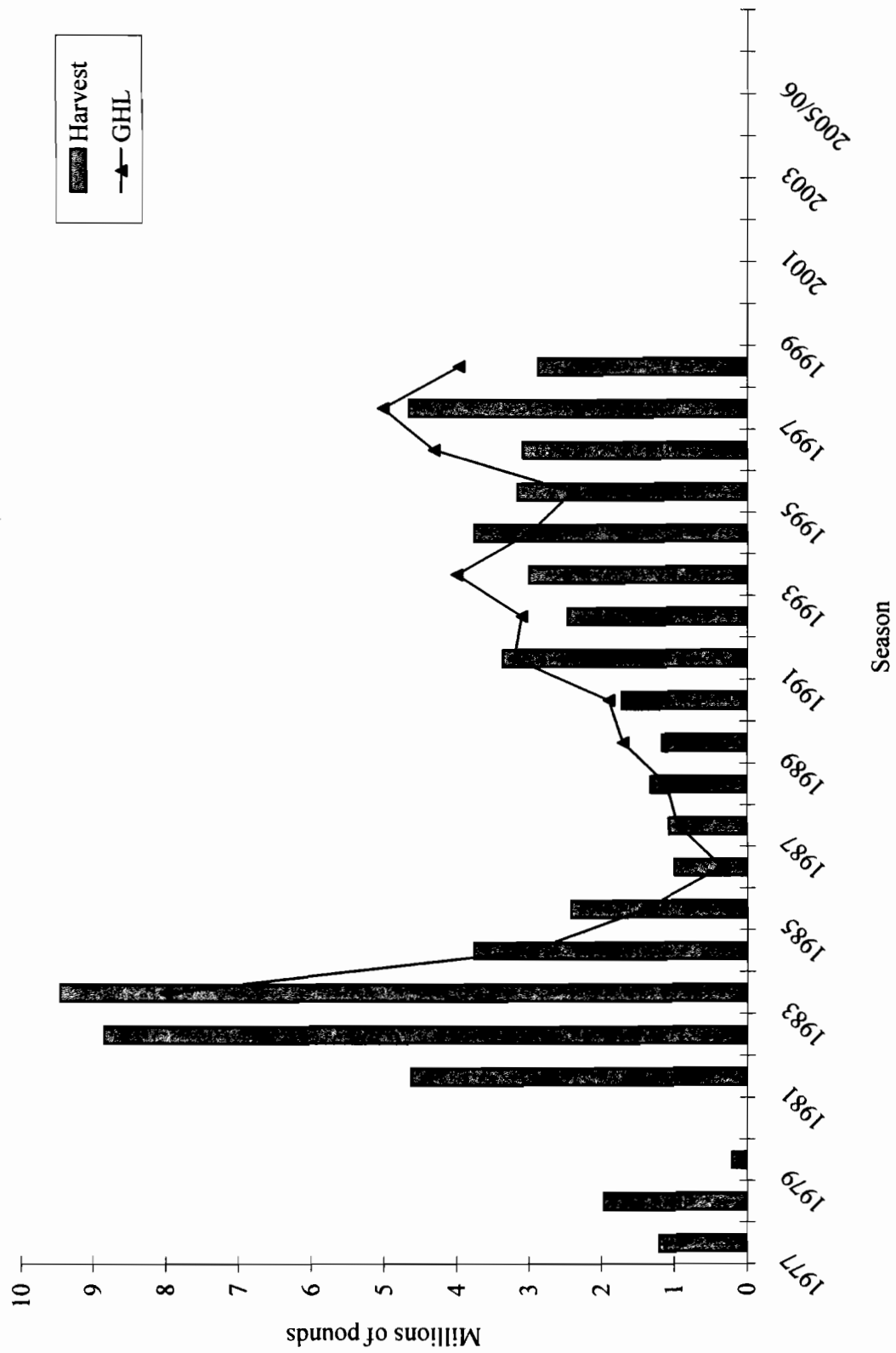


Figure 2-7.—Saint Matthew Island Section commercial blue king crab fishery harvest and GHL, 1977 - 2006/07.

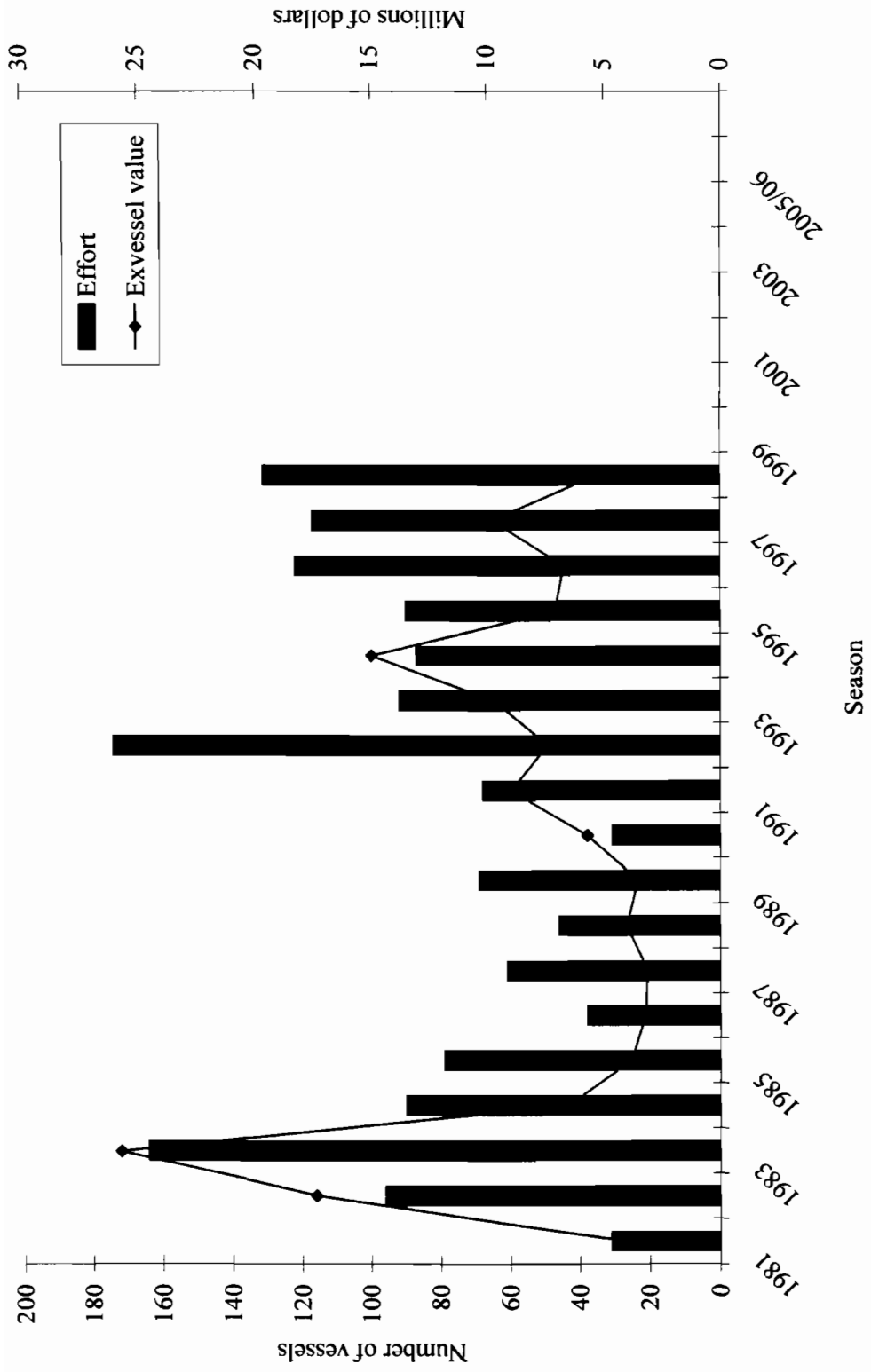


Figure 2-8.—Saint Matthew Island Section commercial blue king crab fishery effort and exvessel value, 1981 - 2006/07.

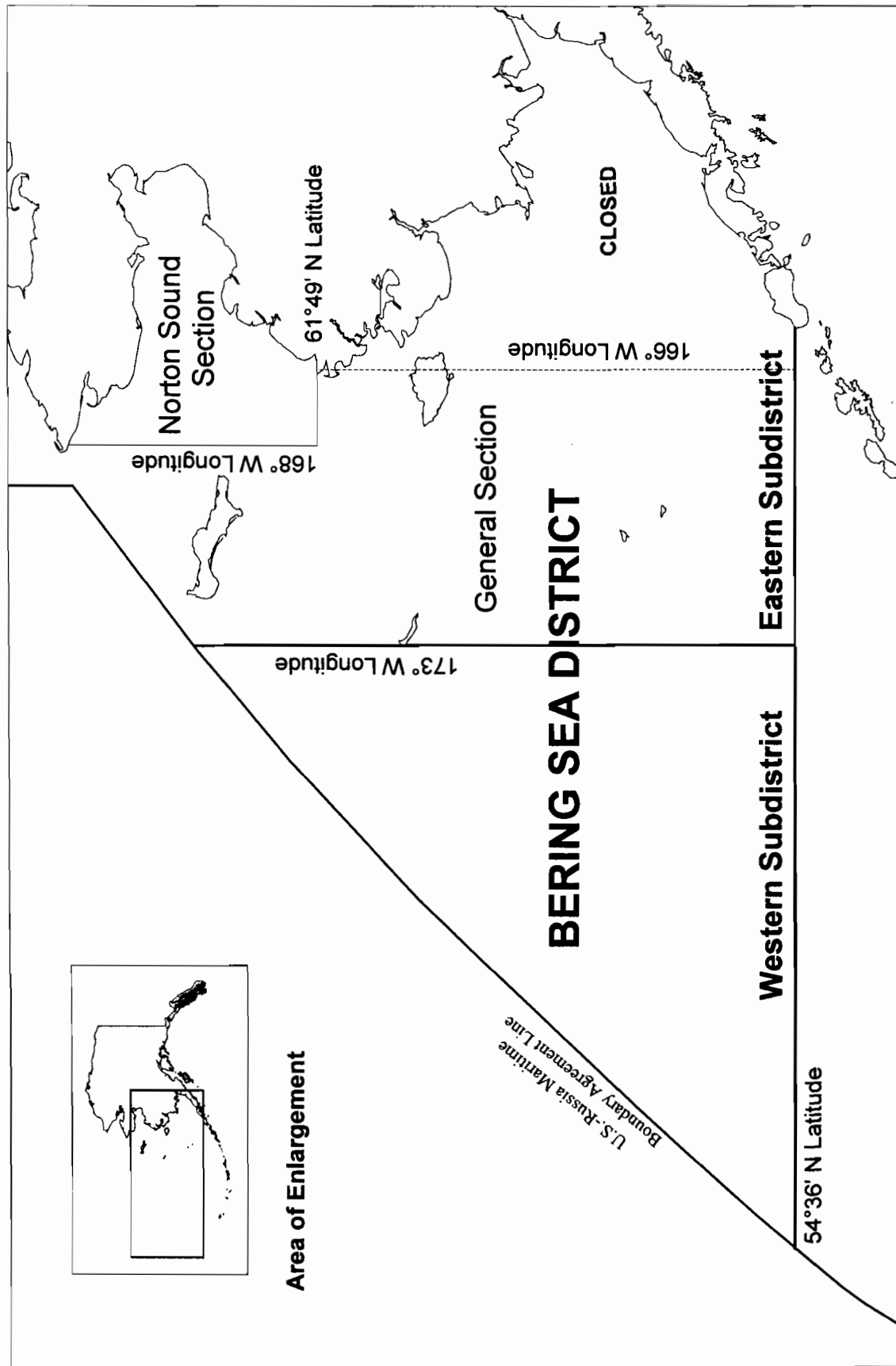


Figure 2-9.—Bering Sea District of Tanner crab Registration Area J including subdistricts and sections.

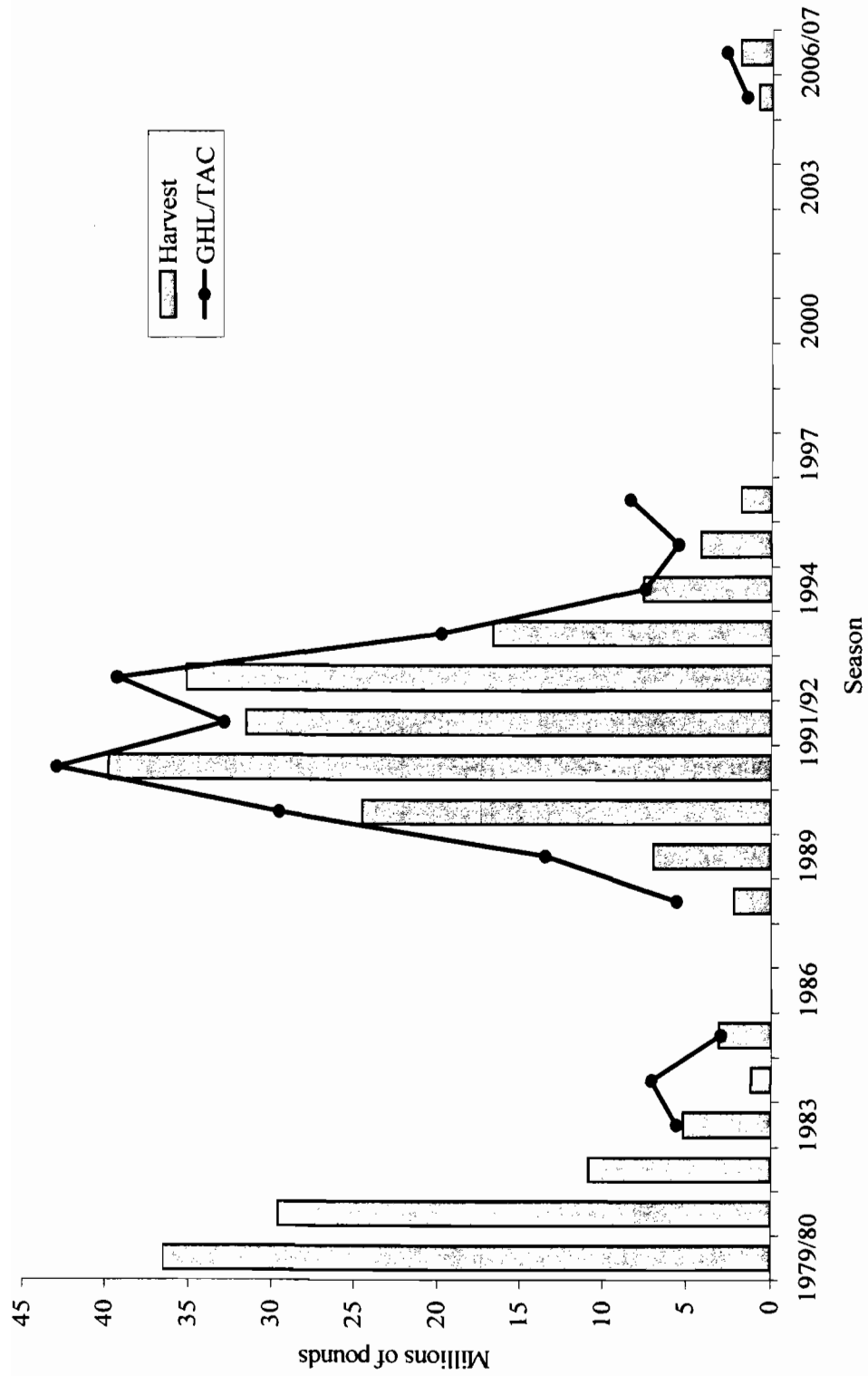


Figure 2-10.—Bering Sea District commercial Tanner crab harvest and GHL/TAC, 1979 - 2006/07.

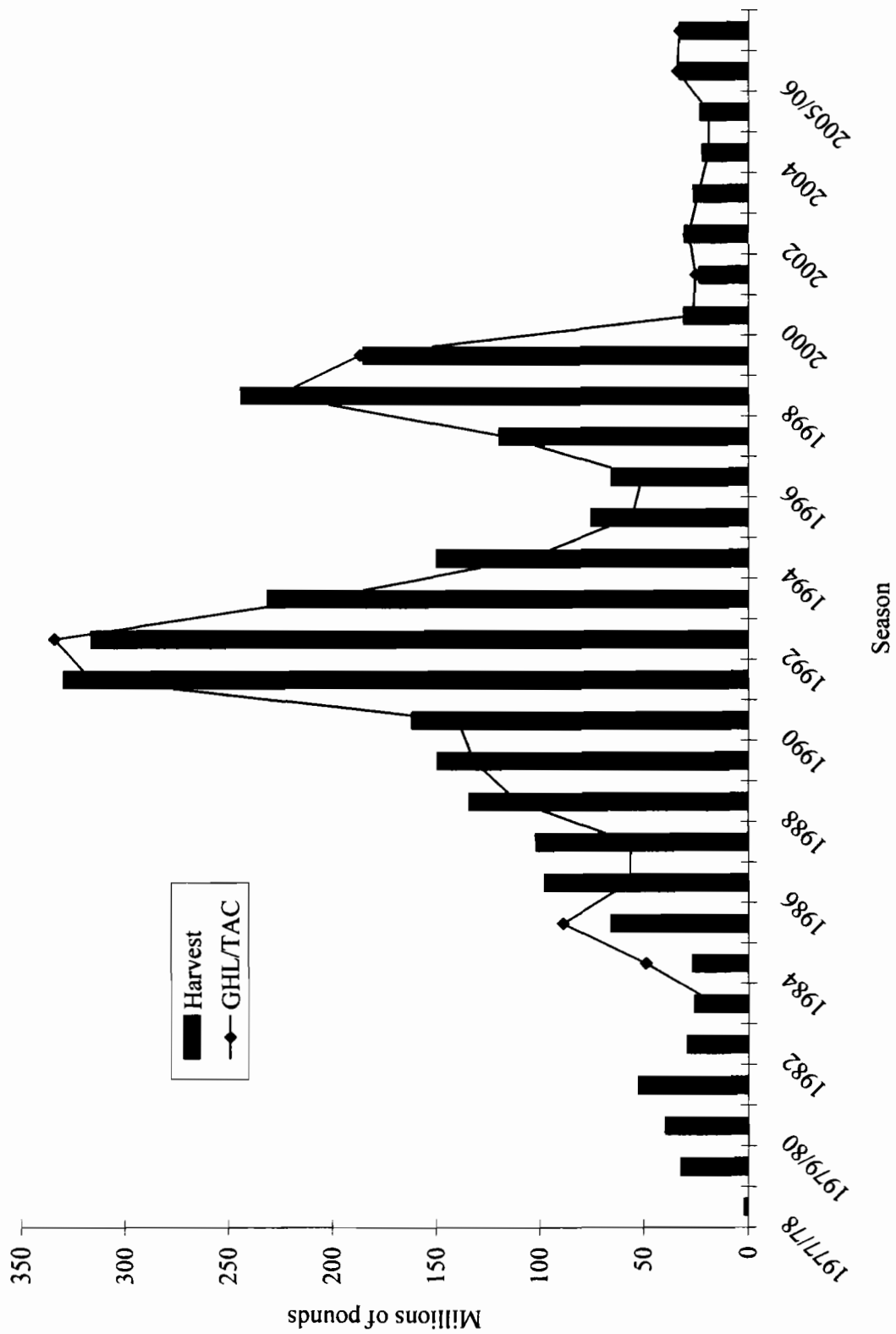


Figure 2-11.—Bering Sea District commercial snow crab fishery harvest and GHL/TAC, 1977 - 2006/07

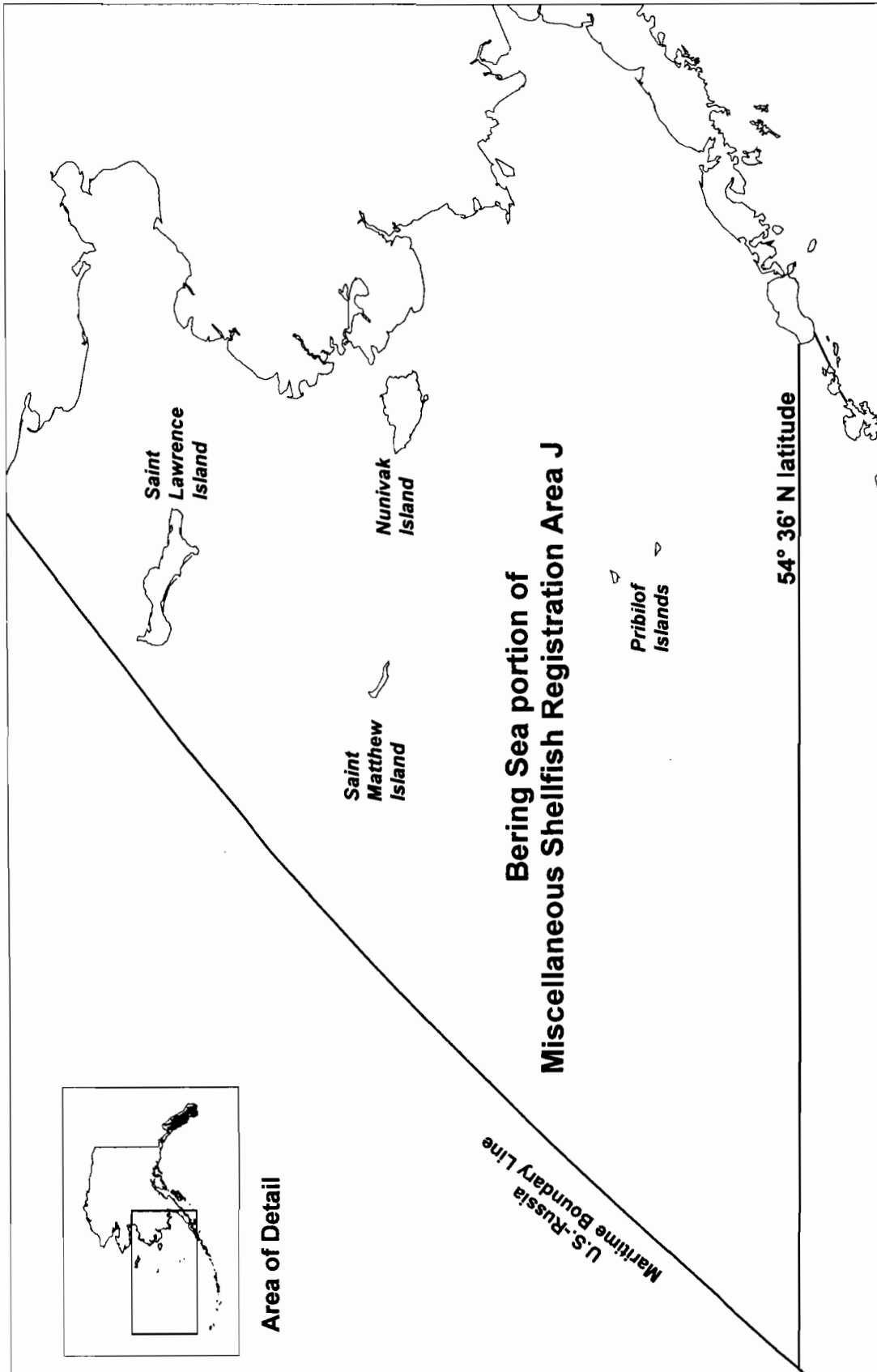


Figure 2-12. Bering Sea portion of miscellaneous shellfish Registration Area J.

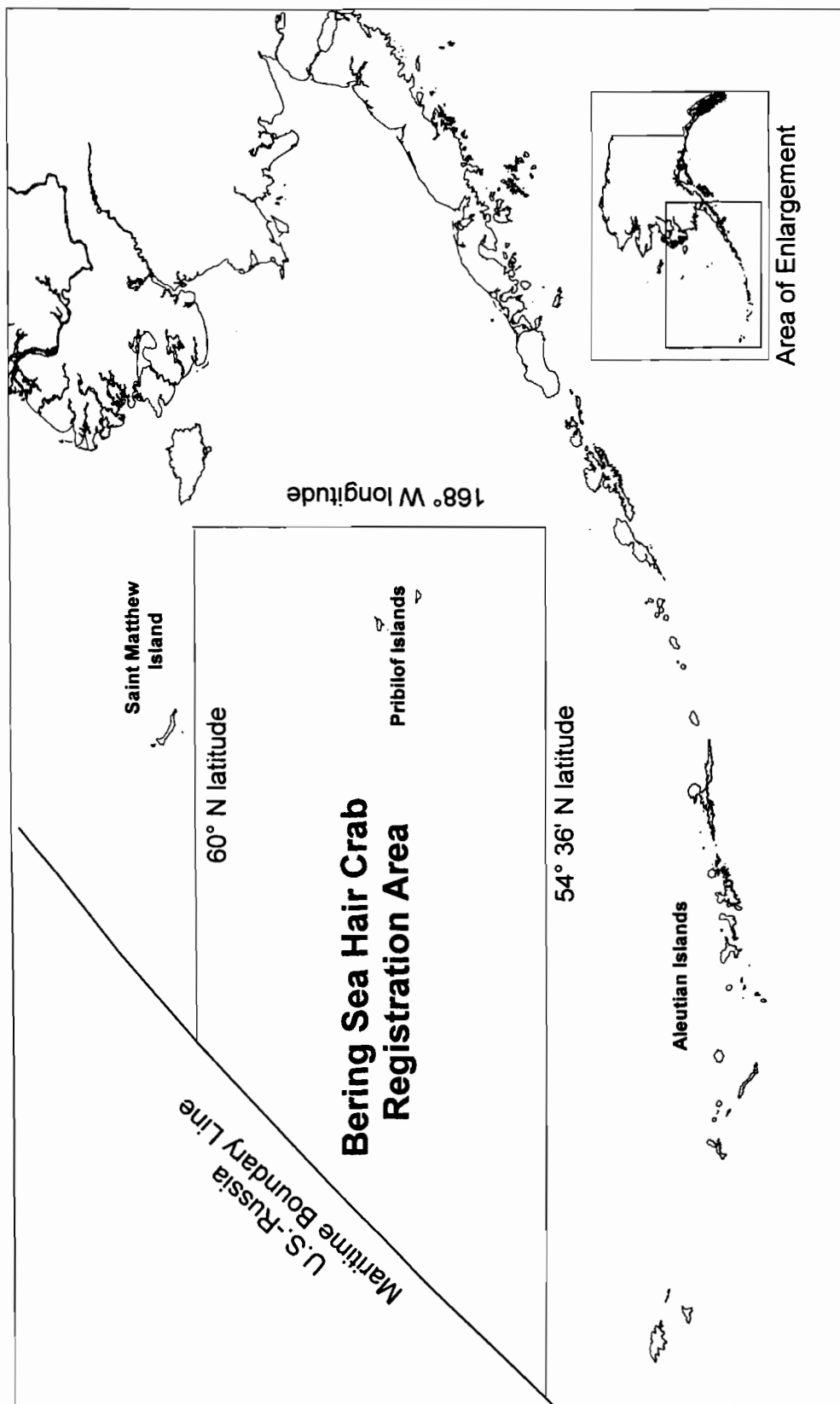


Figure 2-13.—Bering Sea hair crab fishing area of miscellaneous shellfish Registration Area J.

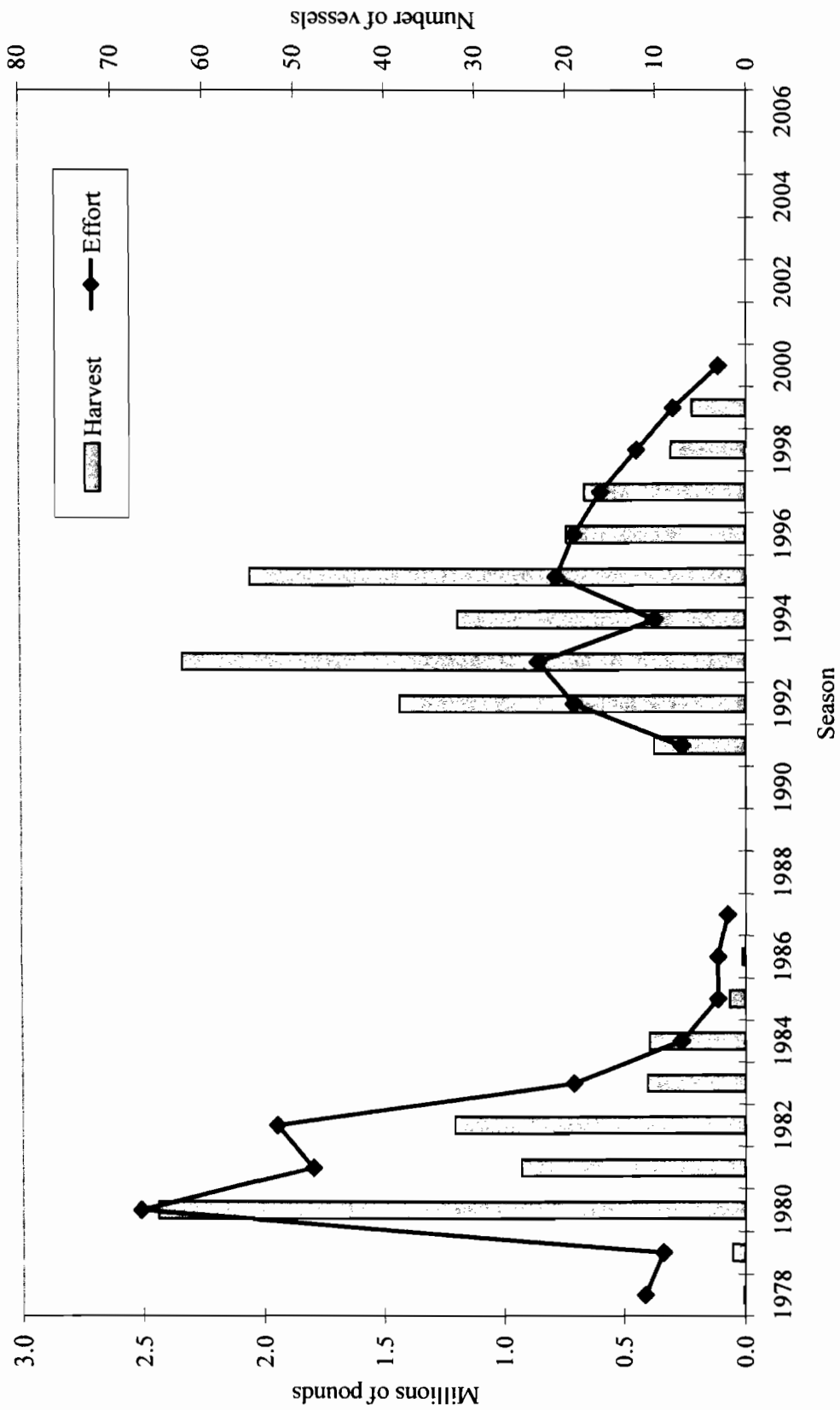


Figure 2-14.—Bering Sea commercial hair crab fishery harvest and effort, 1978 - 2006.

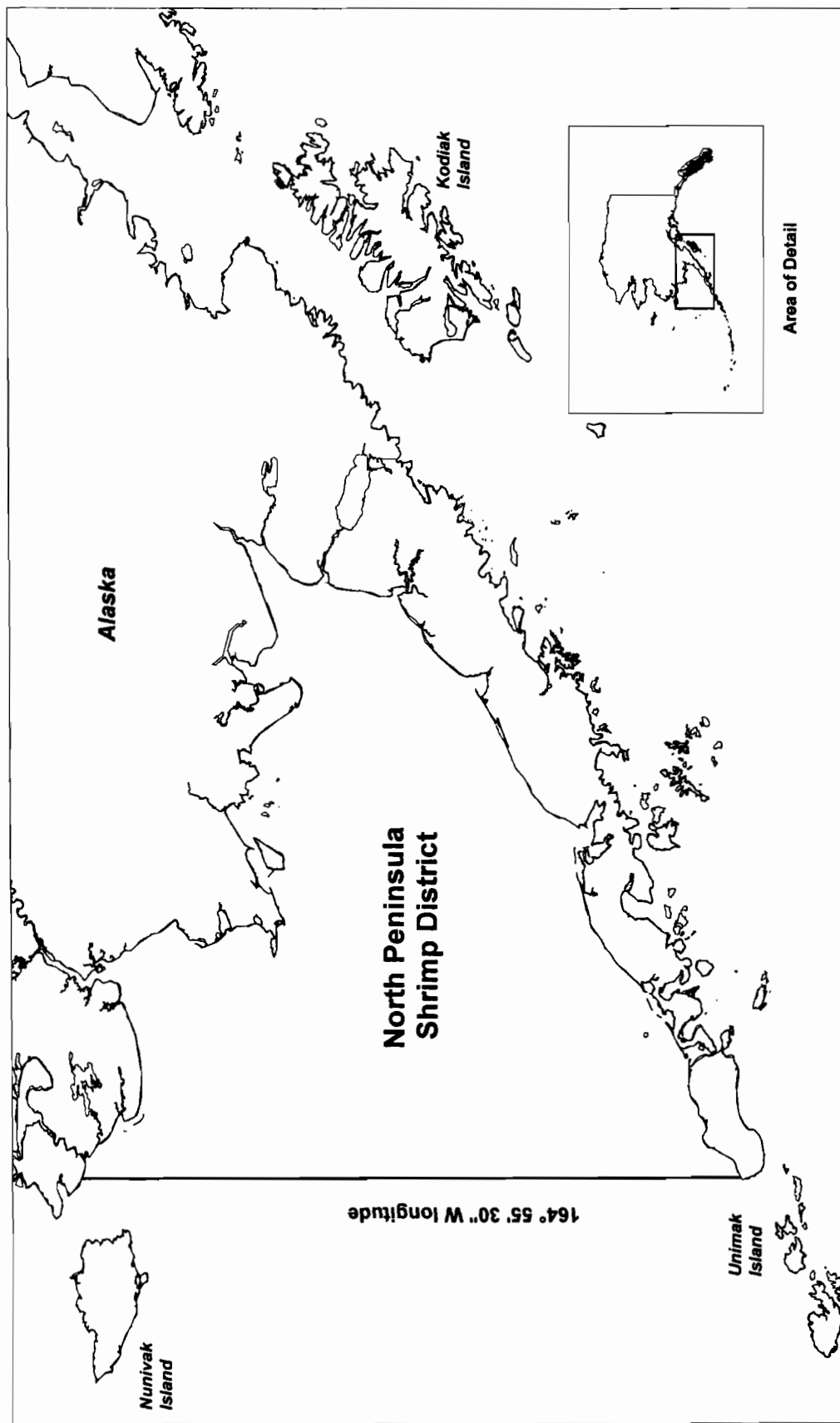


Figure 2-15.—North Peninsula District of shrimp Registration Area J.

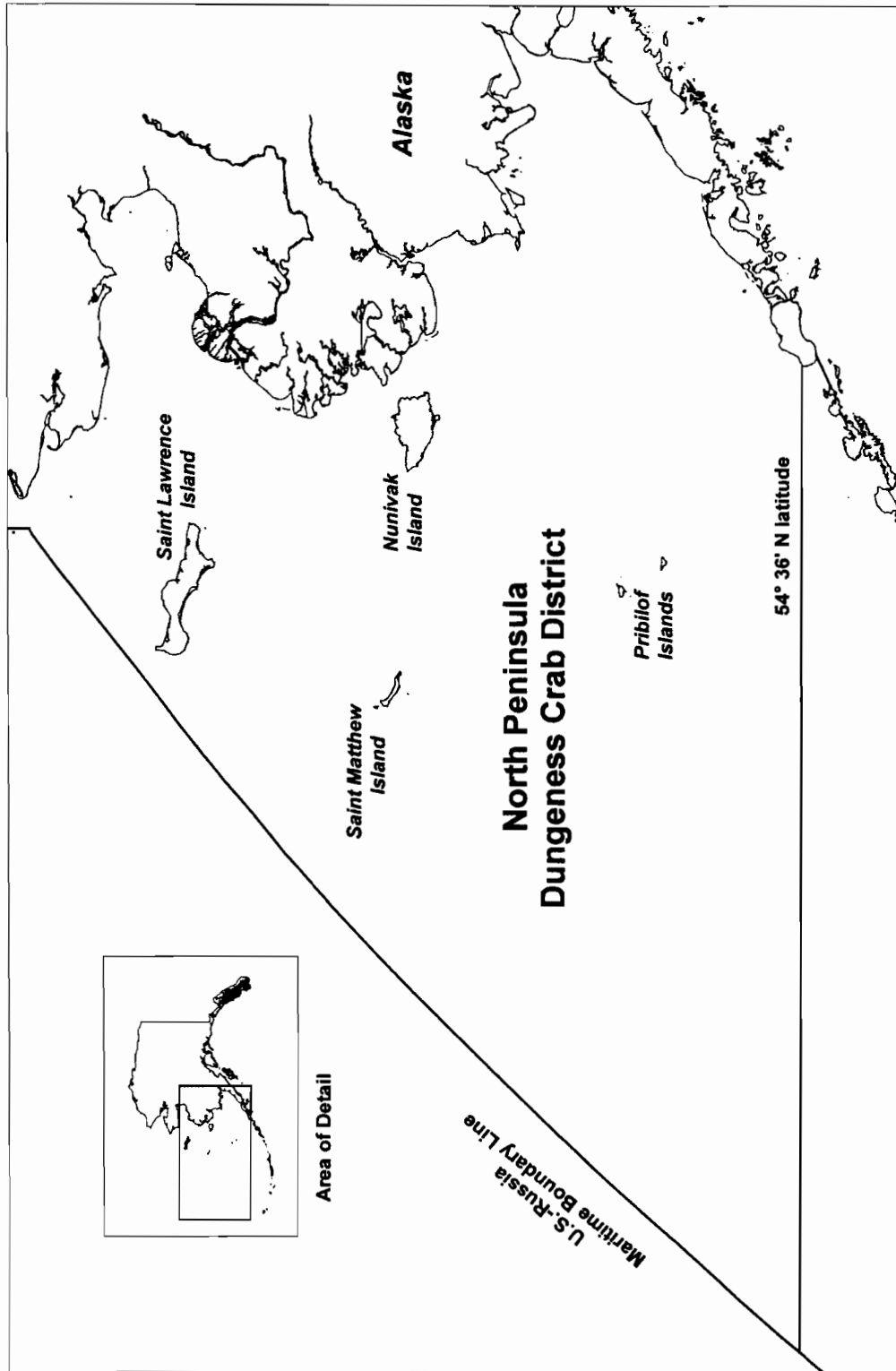


Figure 2-16.—North Peninsula District of Dungeness crab Registration Area J.

**ANNUAL MANAGEMENT REPORT FOR THE COMMUNITY
DEVELOPMENT QUOTA AND ADAK COMMUNITY
ALLOCATION CRAB FISHERIES IN THE BERING SEA AND
ALEUTAIN ISLANDS, 2006/07**

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BERING SEA/ALEUTIAN ISLANDS COMMUNITY DEVELOPMENT QUOTA CRAB FISHERIES

DESCRIPTION OF AREA

The Bering Sea Community Development Quota (CDQ) crab fisheries occur within waters of the Territorial Sea (0-3 nautical miles) and Exclusive Economic Zone (3-200 nautical miles from shore) north of Cape Sarichef (54° 36' N lat.), south of Cape Prince of Wales (65° 49' N lat.), and east of the U.S.-Russia Maritime Boundary Line, including the waters of Bristol Bay. For those CDQ fisheries managed by the Alaska Department of Fish and Game (ADF&G) Westward Region, Cape Romanzof (61° 49' N lat.) is the northern boundary (Figure 3-1).

The Aleutian Islands (Area O) has as its eastern boundary the longitude of Scotch Cap Light (164°44' W long.), its northern boundary a line from Cape Sarichef (54°36' N lat.) to 171° W long., north to 55° 30' N lat., and as its western boundary the U.S.-Russia Maritime Boundary Agreement Line. Area O encompasses both the waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles) (Figure 3-2).

CDQ PROGRAM BACKGROUND

The North Pacific Fishery Management Council (NPFMC) established the CDQ Program in 1992 for walleye pollock and was later expanded to sablefish and Pacific halibut. In 1995 the NPFMC included certain Bering Sea king and Tanner crab stocks in the CDQ Program. The Alaska Board of Fisheries (BOF) adopted regulations for the Bering Sea/Aleutian Islands king and Tanner crab CDQ fisheries in 1997, which were implemented in 1998. With the advent of Crab Rationalization, the BOF adopted regulations in 2005 to implement changes to the CDQ management program, including the addition of Aleutian Islands red *Paralithodes camtschaticus* (west of 179° W longitude) and golden king crab *Lithodes aequispinus* which were not previously included in the CDQ program. The Alaska Department of Fish and Game manages the crab CDQ fisheries.

Sixty-five Bering Sea coastal communities participate in the CDQ Program. These communities are aligned into six CDQ organizations, collectively referred to as CDQ groups. The groups are Aleutian Pribilof Island Community Development Association (APICDA), Bristol Bay Economic Development Corporation (BBEDC), Central Bering Sea Fishermen's Association (CBSFA), Coastal Villages Regional Fund (CVRF), Norton Sound Economic Development Corporation (NSEDC), and Yukon Delta Fisheries Development Association (YDFDA).

The CDQ groups are non-profit entities, which may have for-profit subsidiaries. Each group submits comprehensive plans to the Alaska Department of Commerce, Community and Economic Development (ADCCED) on the intended use of the CDQ funds, which vary widely between groups. Most plans include fishing-related investments, scholarships, training, employment services, and other projects which are intended to benefit the communities and regions the CDQ groups represent. Some groups are buying equity in fishing vessels which will harvest crab in both CDQ and Individual Fishing Quota (IFQ) fisheries.

The CDQ groups receive allocations for the following Aleutian Islands and Bering Sea crab fisheries: Norton Sound red king crab, Bristol Bay red king crab, Pribilof red and blue king *Paralithodes platypus* crab, St. Matthew blue king crab, Bering Sea snow *Chionoecetes opilio* crab, Bering Sea Tanner *Chionoecetes bairdi* crab, Aleutian Islands golden king crab (east of

174° W longitude), and Aleutian Islands red king crab (west of 179° W longitude). To be eligible as a CDQ crab fishery, the crab stock must have an established Total Allowable Catch (TAC) and be managed under the Fishery Management Plan (FMP) for Bering Sea/Aleutian Islands (BSAI) king and Tanner crabs. The CDQ allocation percentage as specified in the BSAI crab FMP is based on the total actual harvest each year. The annual CDQ allocations for crab were phased in over a three-year period (3.5% of the total allowable fishery harvest for 1998, 5.0% for 1999, and reaching a maximum of 7.5% for 2000 and subsequent years), however with the implementation of Crab Rationalization the percentage of the TAC allocated to CDQ groups increased to 10% of the total allowable catch beginning in the 2005/06 season. The individual CDQ group allocation varies in each fishery (Table 3-1). This report addresses all CDQ crab fisheries except the Norton Sound CDQ red king crab fishery, which is managed by ADF&G's Arctic-Yukon-Kuskokwim (AYK) region.

FISHERY HISTORY

The CDQ groups are required to submit inseason fishery harvesting plans to the department prior to each CDQ crab fishery. Plans include names of participating vessels and operators, vessel information regarding safety and communications, intended delivery location, method of attaining but not exceeding the group allocation, and if a cooperative effort with other CDQ groups, the method for apportioning the allocation.

Prior to Crab Rationalization all CDQ crab fishing seasons were subsequent to the general fisheries season, and all CDQ vessels participated in the prior general fishery. Before vessels were allowed to register for the CDQ fishery, ADF&G generated an accurate estimate of the general fishery harvest. Fishers were required to obtain CDQ buoy tags for all gear fished, and if required, carry an onboard observer. All gear had to be tagged with CDQ buoy tags before being deployed in the fishery.

Under Crab Rationalization, implemented in August of 2005, CDQ and IFQ crab may be, and often is, harvested concurrently. The CDQ allocation for each rationalized crab stock is set at 10% of the TAC for each fishery. Fishers generally use the same gear to harvest IFQ and CDQ crab however are limited to a single species compliment of pots.

Each of the six CDQ groups participates in at least one CDQ fishery every year. Some groups either do not have allocations for some fisheries (Table 3-1), choose not to participate or transfer their allocations to other groups. Although all CDQ groups have received allocations for the Bering Sea snow crab CDQ fishery, in 2005 only five groups participated because one group transferred its allocation to another group. All six groups participated in the snow crab fishery in all other years. From 1998 to 2000 only five groups received allocations and participated in the Bristol Bay red king crab fishery. However, in 2001 the allocations were reconfigured to include all six CDQ groups and all have participated since that time. Only five groups received allocations for the St. Matthew Island Section CDQ blue king crab fishery and one group has the sole allocation for the Pribilof red and blue king CDQ fishery. In 1998, the only year CDQ fisheries occurred on the St. Matthew and Pribilof king crab stocks, all groups with allocations participated in each fishery. All six groups have had allocations for Bering Sea Tanner crab; however no CDQ Tanner crab fishery occurred until 2005/06 due to low stock abundance. During the 2005/06 season all groups participated in the Bering Sea Tanner crab fishery.

Regulations pertaining to the CDQ fisheries prior to Crab Rationalization authorized a CDQ harvest prior to the general fishery; however, the department did not allow a CDQ harvest before

the general fishery in 1998. A full understanding of the impact of these new fisheries and adequate staff to handle the increased management was needed before allowing CDQ fisheries to occur prior to the general fisheries. The intent was to allow CDQ groups to harvest part of their allocation before the general fishery during the second and subsequent years of the program. This would have allowed CDQ groups to harvest part of their 1999 allocation of snow crab in the fall of 1998. The National Marine Fisheries Service (NMFS) determined that the federal CDQ regulatory language did not allow for a harvest of the allocation outside of the calendar year to which it was assigned. The intent of NMFS was not to impede ADF&G management of the CDQ crab fisheries. The federal CDQ regulations were revised, but not in time for any harvest of the 1999 allocation of snow crab to occur in the fall of 1998. The BOF agreed to address an agenda change request at the March 1999 meeting to consider a proposal to prohibit any CDQ harvest prior to the general fishery. Representatives of processors and non-CDQ fishers contended that CDQ crabs on the market prior to the general fishery would be detrimental to the value of the general fishery. The BOF directed the CDQ, non-CDQ and processor representatives to develop a plan for managing the CDQ fisheries preseason, and adopted the compromise into regulation. The new regulation allowed a CDQ king or Tanner crab fishery prior to the general fishery only when the GHLL was 50 million pounds or more, and a maximum of 30% of the CDQ allocation may be harvested preseason.

In 1999, the department changed permitting procedures after several CDQ groups exceeded their allocation in the snow crab fishery for two consecutive years. Permits for CDQ fisheries were previously issued only to vessels fishing for the groups. These permits were issued before the actual harvest limit for the CDQ fishery was established, and therefore did not reference the CDQ group's harvest allocation. Permits were henceforth issued to each CDQ group, initially stating the group allocation percentage and followed by an addendum with the actual allocation in pounds after the final general fishery harvest was known.

Observer coverage requirements have fluctuated over the history of the CDQ crab fisheries. During the first year of CDQ crab fishing operations, onboard observers were required during all fishing operations. In 1999, observer coverage was reduced in the CDQ snow crab fishery from one observer per vessel to one per CDQ group. In the Bristol Bay CDQ red king crab fishery, coverage remained at one observer per vessel. Observer coverage in the 2000 CDQ snow crab fishery was increased from one observer per group to two per group. In the 2001 CDQ Bristol Bay red king crab fishery observer coverage requirements were reduced to one per group. With the implementation of Crab Rationalization in August 2005 there was no longer a temporal difference in fishing for IFQ and CDQ crab. Almost all CDQ crab is harvested concurrently with IFQ fishing. As a result CDQ fisheries no longer have separate observer coverage requirements. Observer coverage for CDQ vessels has been incorporated in the overall fleet coverage. Observers collect biological data and document the fishing practices of the IFQ and CDQ fleet.

2006/07 CDQ FISHERIES

Bering Sea CDQ Snow Crab Fishery

The 2006/07 Bering Sea CDQ snow crab fishery opened concurrently with the IFQ fishery on October 15, 2006. The allocation of 3,656,600 pounds (Table 3-2) was based on 10% of the overall TAC. All of the CDQ groups participated in the fishery. Permits were issued to each CDQ group before fishing began. The permit stated the group's percent allocation, which is determined by a percentage set forth for each CDQ group by the ADCED. The permit listed the

vessel(s) requested by the group and authorized by ADF&G to participate in the fishery, and stated that those vessels must comply with requirements such as dates of operation, pot limits, buoy tags, and observer coverage. Vessel registration could begin as soon as the group permits were issued.

Although the fishery opened in October, the first delivery was not until December 16 and the last delivery was on April 14. Twelve vessels made 33 landings with a total harvest of 3,655,775 pounds and a fishery value of approximately 5.4 million dollars (Table 3-2 and 3-3). The value of the Bering Sea snow crab fishery to the CDQ groups is estimated to be 40-60% of the exvessel fishery value. None of the groups went over their allocation.

The average weight was 1.2 pounds (Table 3-3), the same as the IFQ fishery. The average CPUE was 321 (Table 3-2), slightly lower than the average CPUE of 332 from the IFQ fishery. Five groups used two vessels each to harvest their allocation, and the remaining group used three. One vessel fished for two groups.

Prior to Crab Rationalization, two observers were required if two or more vessels participated for the group. However, with rationalization, observer coverage is set based on the overall number of vessels pre-season registered to participate in the IFQ and CDQ crab fisheries; for Bering Sea snow crab, thirty percent of the vessels have observer coverage for one hundred percent of the time. Based on this level of coverage, four of the twelve vessels that harvested CDQ snow crab carried observers, accounting for 39% of the CDQ harvest. During the fishery observers collected biological data, provided inseason harvest rates to the department, and documented fishing practices of the fleet.

Saint Matthew Island Section CDQ Blue King Crab Fishery

No CDQ harvest of Saint Matthew Island Section blue king crab occurred in 2006/07 due to closure of the commercial fishery.

Pribilof District CDQ Red And Blue King Crab Fishery

No CDQ harvest of Pribilof District red or blue king crab occurred in 2006/07 due to closure of the commercial fishery.

Bristol Bay CDQ Red King Crab Fishery

The 2006/07 Bristol Bay CDQ red king crab fishery allocation based on 10% of the overall TAC, was 1,552,700 pounds (Table 3-2). All six CDQ groups participated in this fishery. The fishery opened concurrently with the IFQ Bristol Bay red king crab fishery on October 15. Permits were issued to each CDQ group before fishing began. The permit stated the group's allocation, which is determined by a percentage set forth for each CDQ group by the ADCED. The permit listed the vessel(s) requested by the group and authorized by ADF&G to participate in the fishery, and stated that those vessels must comply with requirements such as dates of operation, pot limits, buoy tags, and observer coverage. Vessel registration could begin as soon as the group permits were issued.

Deliveries began October 22, and the final delivery was made November 28, although the season officially closed on January 15. Thirteen vessels made 26 landings for an overall harvest of 1,552,133 pounds (Table 3-2) and a fishery value of approximately 4.8 million dollars (Table 3-3). The value of the Bristol Bay red king crab fishery to the CDQ groups is estimated to be 50-75% of the exvessel fishery value. None of the groups went over their allocation.

The average CPUE was 32 (Table 3-2), just under the CPUE of 34 for the general fishery, and almost twice the 2005/06 Bristol Bay red king crab CDQ fishery CPUE of 18. Average weight of crabs in the CDQ fishery was 6.4 pounds (Table 3-3), the same average weight for the general fishery. Two of the groups used two vessels to harvest their allocation, three groups used three vessels, and the remaining group used one vessel. One vessel fished for two different groups.

Prior to 2001, all CDQ vessels for this fishery were required to carry onboard observers. During the 2001 to 2004 seasons, only one observer was required per CDQ group. However, with the implementation of Crab Rationalization in 2005, observer coverage is based on the overall number of vessels pre-season registered to participate in the IFQ and CDQ crab fisheries; for Bristol Bay red king crab, twenty percent of the vessels have observer coverage for one hundred percent of the time. Based on this level of coverage, four of the thirteen vessels that harvested CDQ crab were observed, accounting for 28% of the CDQ harvest. During the fishery observers collected biological data, provided inseason harvest rates to the department, and documented fishing practices of the fleet.

Bering Sea CDQ Tanner Crab Fishery

The 2006/07 Bering Sea CDQ Tanner crab season opened October 15, 2006 with TAC available both east and west of 166° W long. and CDQ groups received Tanner crab allocations in both areas. The 2006/07 season was the first time the eastern portion of the Bering Sea Tanner crab fishery opened since the establishment of the CDQ fishery in 1998, and only the second season for the western portion. The CDQ fishery allocation was 10 percent of the total 2006/07 Tanner crab TAC, with separate TACs east and west of 166° W long. The CDQ fishery allocation east of 166° W long. was 187,500 pounds and west of 166° W long. was 109,400 pounds (Table 3-4).

Six CDQ groups were eligible to participate in the CDQ fishery. One group transferred their entire eastern and western allocations to another group. One group registered a vessel for the eastern portion of the fishery but did not harvest crab. Permits were issued to each CDQ group before fishing began. The permit stated the group's allocation, which is determined by a percentage set forth for each CDQ group by the ADCED. The permit listed the vessel(s) requested by the group and authorized by ADF&G to participate in the fishery, and stated that those vessels must comply with requirements such as dates of operation, pot limits, buoy tags, and observer coverage. Vessel registration could begin as soon as the group permits were issued.

Deliveries began on November 10 and the final delivery was made on March 26, five days before the closure of the season. Four CDQ vessels fishing east of 166° W long. made five landings for a harvest of 135,457 pounds (Table 3-4), or seventy-two percent of the eastern fishery CDQ allocation. West of 166° W long. eight CDQ vessels made ten landings and harvested 86,949 pounds (Table 3-4) which accounted for seventy-nine percent of the western fishery CDQ allocation. Only one CDQ group harvested their entire allocation for the eastern and western portions of the fishery.

The average weight of the Tanner crab during the CDQ fishery was 2.3 pounds (Table 3-5), the same as the average for the IFQ fishery. The CPUE was 22 (Table 3-4) which was slightly higher than the IFQ fishery CPUE of 18. The CDQ fishery value was approximately \$350,000 (Table 3-5). The value of the Bering Sea Tanner crab fishery to the CDQ groups is estimated to be 20-30% of the exvessel fishery value.

Three of the nine vessels that harvested CDQ crab had observer coverage resulting in 49% of the CDQ harvest being covered. During the fishery, observers collected biological data, provided inseason harvest rates to the department, and documented fishing practices of the fleet.

Eastern Aleutian Islands CDQ Golden King Crab Fishery

The 2006/07 Aleutian Islands (east of 174° W long.) CDQ golden king crab fishery allocation was based on 10% of the overall TAC. The TAC was divided between the six CDQ groups with a total allocation of 300,000 pounds.

The 2006/07 eastern Aleutian Islands CDQ golden king crab fishery opened concurrently with the Aleutian Islands golden king crab IFQ fishery on August 15. All CDQ groups were allocated a harvest, but only three fished. The remaining three groups transferred their quotas to other CDQ groups. Each vessel fishing for Aleutian Islands golden king crab was required to carry an observer for 50% of the harvest in each of three trimesters regardless if they were fishing CDQ or IFQ. All information regarding Aleutian Islands golden king crab for the 2006/07 fishery is confidential due to a limited number of participating processors.

Western Aleutian Islands CDQ Red King Crab Fishery

No CDQ harvest of Western Aleutian Islands king crab occurred in 2006/07 due to closure of the commercial fishery.

WESTERN ALEUTIAN ISLANDS ADAK COMMUNITY ALLOCATION

DESCRIPTION OF AREA

The fishing area for the Adak Community Allocation (ACA) in the western Aleutian Islands has as its eastern boundary the longitude of 174° W, its northern boundary 55° 30' N lat., and as its western boundary the U.S. Russia Maritime Boundary Agreement Line. The western Aleutian Islands encompass both the waters of the Territorial Sea (0-3 nautical miles) and waters of the Exclusive Economic Zone (3-200 nautical miles) (Figure 3-2).

ACA PROGRAM BACKGROUND

In 2005 the Alaska Board of Fisheries adopted regulation for an ACA Western Aleutian Islands golden king crab *Lithodes aequispinus* fishery. The program was established to benefit the community of Adak, who created a group called the Adak Community Development Corporation (ACDC). ACDC is a non-profit entity that represents the community of Adak and has a board of directors elected by the residents of Adak. The group must submit a comprehensive plan on the intended use of the ACA funds derived from harvesting the ACA golden king crab, which is meant to be used for fisheries related purposes and other projects which are intended to benefit the community of Adak.

Each year the allocation is set at 10% of the Total Allowable Catch (TAC) of western Aleutian Islands (west of 174° W long.) golden king crab. The fishery opened for the first time in August of 2005 with an allocation of 270,000 pounds. The Alaska Department of Fish and Game directly manages the ACA crab allocation, however it is not a CDQ fishery as Adak is not a CDQ community.

2006/07 WESTERN ALEUTIAN ISLANDS ACA GOLDEN KING CRAB FISHERY

The 2006/07 western Aleutian Islands ACA golden king crab fishery opened concurrently with the Aleutian Islands golden king crab IFQ fishery on August 15. ACDC was issued 10% of the western portion (west of 174° W) of the Aleutian Islands golden king crab TAC for an allocation of 270,000 pounds (Table 3-6). A permit was issued to ACDC before fishing began. The permit stated the group's allocation, the vessel(s) requested by the group and authorized by ADF&G to participate in the fishery, and stated that those vessels must comply with requirements such as dates of operation and observer coverage. Vessel registration could begin as soon as the group permit was issued.

Two vessels registered to fish. All vessels fishing for Aleutian Islands golden king crab were required to carry an observer for 50% of the harvest in each of three trimesters regardless if they were fishing ACA or IFQ. All information regarding Aleutian Islands golden king crab for the 2006/07 fishery is confidential due to a limited number of participating processors and vessels.

TABLES AND FIGURES

Table 3-1.—The 2003-2006/07 Community Development Quota (CDQ) Program percent allocation by fishery to each CDQ group.

| Fishery | Percent allocation by Group ^a | | | | | |
|---|--|-------|-------|------|-------|-------|
| | APICDA | BBEDC | CBSFA | CVRF | NSEDC | YDFDA |
| Bristol Bay Red King Crab | 17 | 19 | 10 | 18 | 18 | 18 |
| Pribilof Red & Blue King Crab | 0 | 0 | 100 | 0 | 0 | 0 |
| St. Mathew Blue King Crab | 50 | 12 | 0 | 12 | 14 | 12 |
| Norton Sound Red King Crab | 0 | 0 | 0 | 0 | 50 | 50 |
| Bering Sea Tanner Crab | 10 | 19 | 19 | 17 | 18 | 17 |
| Bering Sea Snow Crab | 8 | 20 | 20 | 17 | 18 | 17 |
| Aleutian Islands Red King Crab ^b (west of 179° W long.) | 8 | 18 | 21 | 18 | 21 | 14 |
| Eastern Aleutian Islands Golden King Crab ^b (east of 174° W long.) | 8 | 18 | 21 | 18 | 21 | 14 |

^a APICDA (Aleutian Pribilof Island Community Development Association).

BBEDC (Bristol Bay Economic Development Corporation).

CBSFA (Central Bering Sea Fishermen's Association).

CVRF (Coastal Villages Region Fund).

NSEDC (Norton Sound Economic Development Corporation).

YDFDA (Yukon Delta Fisheries Development Association).

^b Aleutian Islands Red King Crab west of 179° W long. and Eastern Aleutian Islands Golden King Crab east of 174° W long. were not part of the CDQ program until the initiation of Crab Rationalization in the 2005/06 season.

Table 3-2—The 1998-2006/07 Community Development Quota (CDQ) Program crab fisheries statistics.

| Season | % of overall GHL/TAC ^a allocated to CDQ | Allocation ^b | Number of | | | Harvest ^{b,c} | Deadloss ^b | CPUE ^d |
|---|---|-------------------------|-----------|----------|--------------------|------------------------|-----------------------|-------------------|
| | | | Vessels | Landings | Crabs ^e | | | |
| Bristol Bay Red King Crab | | | | | | | | |
| 1998 | 3.5% | 525,115 | | | Confidential | | | 23 |
| 1999 | 5.0% | 580,641 | | | Confidential | | | 29 |
| 2000 | 7.5% | 610,265 | | | Confidential | | | 20 |
| 2001 | 7.5% | 617,623 | | | Confidential | | | 29 |
| 2002 | 7.5% | 714,239 | | | Confidential | | | 30 |
| 2003 | 7.5% | 1,167,040 | 13 | 20 | 174,907 | 1,166,662 | 2,197 | 31 |
| 2004 | 7.5% | 1,135,326 | 12 | 21 | 166,829 | 1,133,013 | 2,549 | 31 |
| 2005/06 | 10% | 1,832,900 | 13 | 32 | 271,718 | 1,830,877 | 8,781 | 18 |
| 2006/07 | 10% | 1,552,700 | 13 | 26 | 242,520 | 1,552,133 | 18,907 | 32 |
| Pribilof Red King Crab | | | | | | | | |
| 1998 | 3.5% | 35,958 ^e | | | Confidential | | | 6 |
| 1999-2006/07 | | | | | Fishery Closed | | | |
| Pribilof Blue King Crab | | | | | | | | |
| 1998 | 3.5% | 35,958 ^e | | | Confidential | | | 6 |
| 1999-2006/07 | | | | | Fishery Closed | | | |
| St. Matthew Blue King Crab | | | | | | | | |
| 1998 | 3.5% | 99,512 | | | Confidential | | | 10 |
| 1999-2006/07 | | | | | Fishery Closed | | | |
| Bering Sea Snow Crab | | | | | | | | |
| 1998 | 3.5% | 8,886,634 | 20 | 86 | 6,975,242 | 8,846,977 | 134,898 | 176 |
| 1999 | 5.0% | 9,674,326 | 23 | 104 | 7,747,876 | 9,670,084 | 92,871 | 167 |
| 2000 | 7.5% | 2,518,760 | | | Confidential | | | 144 |
| 2001 | 7.5% | 1,878,070 | | | Confidential | | | 98 |
| 2002 | 7.5% | 2,458,565 | 11 | 33 | 1,873,443 | 2,399,289 | 73,130 | 100 |
| 2003 | 7.5% | 2,120,637 | 10 | 29 | 1,747,935 | 2,118,899 | 18,378 | 120 |
| 2004 | 7.5% | 1,782,081 | 10 | 25 | 1,338,077 | 1,772,222 | 24,199 | 98 |
| 2005 | 7.5% | 1,856,337 | 9 | 23 | 1,300,994 | 1,855,841 | 11,286 | 389 |
| 2005/06 | 10% | 3,718,400 | 15 | 40 | 2,470,956 | 3,717,744 | 34,605 | 203 |
| 2006/07 | 10% | 3,656,600 | 12 | 33 | 3,046,479 | 3,655,775 | 34,611 | 321 |
| Eastern Aleutian Islands Golden King Crab (east of 174° W longitude) | | | | | | | | |
| 2005/06 | 10% | 300,000 | | | Confidential | | | 23 |
| 2006/07 | 10% | 300,000 | | | Confidential | | | 27 |
| Western Aleutian Islands Red King Crab (west of 179° W longitude) | | | | | | | | |
| 2005/06-2006/07 | | | | | Fishery Closed | | | |

^a Guideline Harvest Level (GHL) 1998 - 2005, Total Allowable Catch (TAC) 2005/06-2006/07.

^b In pounds.

^c Deadloss included.

^d Number of legal crabs per pot pull.

^e Fishery was executed with an overall quota for both Pribilof red and blue king crab, harvest was tracked by species.

Table 3-3.—The 1998-2006/07 crab Community Development Quota (CDQ) Program economic overview.

| Season | Harvest ^{ab} | Exvessel Value ^c | Fishery Value | Average Weight ^a | Pots Registered | Pots Lifted |
|---|-----------------------|-----------------------------|----------------|-----------------------------|-----------------|-------------|
| Bristol Bay Red King Crab | | | | | | |
| 1998-2002 | | | Confidential | | | |
| 2003 | 1,164,465 | \$ 4.67 | \$ 5,438,052 | 6.7 | 2,470 | 5,704 |
| 2004 | 1,130,464 | \$ 3.97 | \$ 4,487,942 | 6.8 | 2,258 | 5,359 |
| 2005/06 | 1,822,096 | \$ 3.12 | \$ 5,684,940 | 6.7 | 2,095 | 15,376 |
| 2006/07 | 1,533,226 | \$ 3.16 | \$ 4,844,994 | 6.4 | 3,032 | 7,415 |
| Pribilof Red King Crab | | | | | | |
| 1998 | | | Confidential | | | |
| 1999-2006/07 | | | Fishery Closed | | | |
| Pribilof Blue King Crab | | | | | | |
| 1998 | | | Confidential | | | |
| 1999-2006/07 | | | Fishery Closed | | | |
| St. Matthew Blue King Crab | | | | | | |
| 1998 | | | Confidential | | | |
| 1999-2006/07 | | | Fishery Closed | | | |
| Bering Sea Snow Crab | | | | | | |
| 1998 | 8,712,079 | \$ 0.54 | \$ 4,704,523 | 1.3 | 4,016 | 39,575 |
| 1999 | 9,577,213 | \$ 0.85 | \$ 8,140,631 | 1.2 | 5,250 | 46,490 |
| 2000-2001 | | | Confidential | | | |
| 2002 | 2,326,159 | \$ 1.33 | \$ 3,093,791 | 1.3 | 2,100 | 18,786 |
| 2003 | 2,100,521 | \$ 1.80 | \$ 3,780,938 | 1.2 | 1,670 | 14,583 |
| 2004 | 1,748,023 | \$ 1.99 | \$ 3,478,566 | 1.3 | 1,428 | 13,622 |
| 2005 | 1,844,555 | \$ 1.75 | \$ 3,227,971 | 1.4 | 1,065 | 3,345 |
| 2005/06 | 3,683,139 | \$ 0.87 | \$ 3,204,331 | 1.5 | 2,729 | 12,185 |
| 2006/07 | 3,621,164 | \$ 1.50 | \$ 5,431,746 | 1.2 | 2,730 | 9,307 |
| Eastern Aleutian Islands Golden King Crab (East of 174° W longitude) | | | | | | |
| 2005/06-2006/07 | | | Confidential | | | |
| Western Aleutian Islands Red King Crab (West of 179° W longitude) | | | | | | |
| 2005/06-2006/07 | | | Fishery Closed | | | |

^a In pounds.

^b Deadloss not included.

^c Average price per pound.

Table 3-4.—The 1998-2006/07 Bering Sea Tanner crab Community Development Quota (CDQ) crab fisheries statistics.

| Season | Locale | % of overall GHL/TAC ^a | Allocation ^b | Number of | | | Harvest ^{b,c} | Deadloss ^b | CPUE ^d |
|-----------|--------------|--------------------------------------|-------------------------|----------------|----------|--------------------|------------------------|-----------------------|-------------------|
| | | | | Vessels | Landings | Crabs ^c | | | |
| 1998-2004 | | | | | | | | | |
| 2005/06 | West of 166° | 10% | 162,000 | 6 | 10 | 75,686 | 161,572 | 611 | 37 |
| | East of 166° | | | | | | | | |
| | TOTAL | 10% | 162,000 | 6 | 10 | 75,686 | 161,572 | 611 | 37 |
| 2006/07 | West of 166° | 10% | 109,400 | 8 | 10 | 41,404 | 86,949 | 663 | 20 |
| | East of 166° | 10% | 187,500 | 4 | 5 | 56,440 | 135,457 | 840 | 34 |
| | TOTAL | 10% | 296,900 | 9 ^e | 15 | 97,844 | 222,406 | 1,503 | 22 |

^a Guideline Harvest Level (GHL) 1998 - 2005, Total Allowable Catch (TAC) 2005/06-2006/07.

^b In pounds.

^c Deadloss included.

^d Number of legal crabs per pot pull.

^e Some vessels fished both east and west.

Table 3-5.—The 1998-2006/07 Bering Sea Tanner crab Community Development Quota (CDQ) crab economic overview.

| Season | Locale | Harvest ^{ab} | Exvessel Value ^c | Fishery Value | Average Weight ^a | Pots Lifted |
|-----------|--------------|-----------------------|--------------------------------|------------------|--------------------------------|----------------|
| 1998-2004 | | | | | | |
| 2005/06 | West of 166° | 160,961 | \$ 1.25 | \$ 201,201 | 2.1 | 2,024 |
| | East of 166° | | | | | |
| | TOTAL | 160,961 | \$ 1.25 | \$ 201,201 | 2.1 | 2,024 |
| 2006/07 | West of 166° | 86,286 | \$ 1.61 | \$ 138,920 | 2.1 | 2,691 |
| | East of 166° | 134,617 | \$ 1.57 | \$ 211,349 | 2.4 | 1,631 |
| | TOTAL | 220,903 | \$ 1.59 | \$ 350,269 | 2.3 | 4,322 |

^a In pounds.

^b Deadloss not included.

^c Average price per pound.

Table 3-6.—The 2005/06-2006/07 Aleutian Islands golden king crab Adak Community Allocation (ACA) Program fishery statistics.

| Season | % of overall TAC ^a allocated to ACA | Allocation ^b | Number of | | | Harvest | Deadloss |
|---------|--|-------------------------|-----------|----------|--------------|---------|----------|
| | | | Vessels | Landings | Crabs | | |
| 2005/06 | 10% | 270,000 | 1 | | Confidential | | |
| 2006/07 | 10% | 270,000 | 2 | | Confidential | | |

^a Total Allowable Catch (TAC).

^b In pounds.

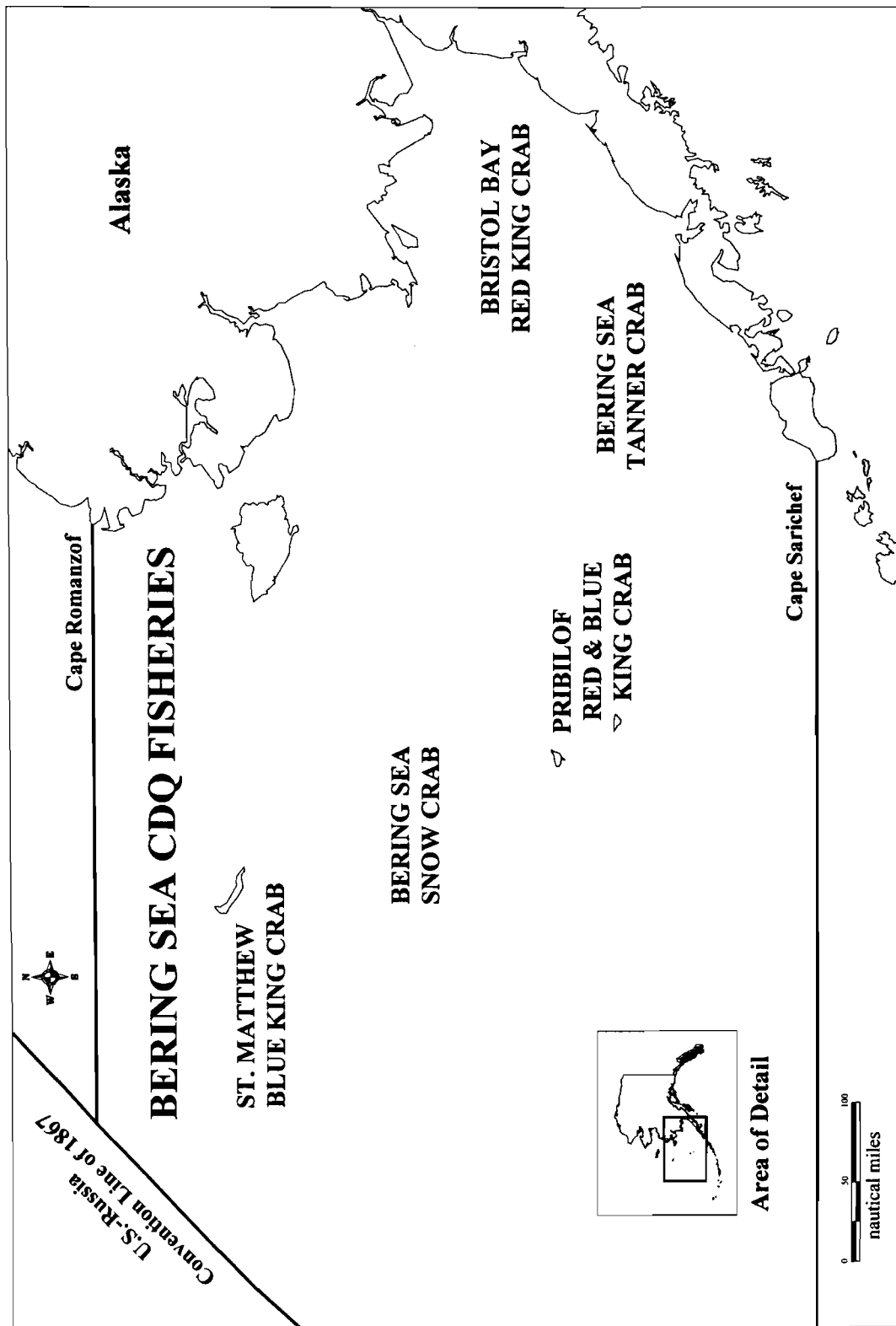


Figure 3-1.—Bering Sea Community Development Quota Program crab fisheries managed by the Westward Region.

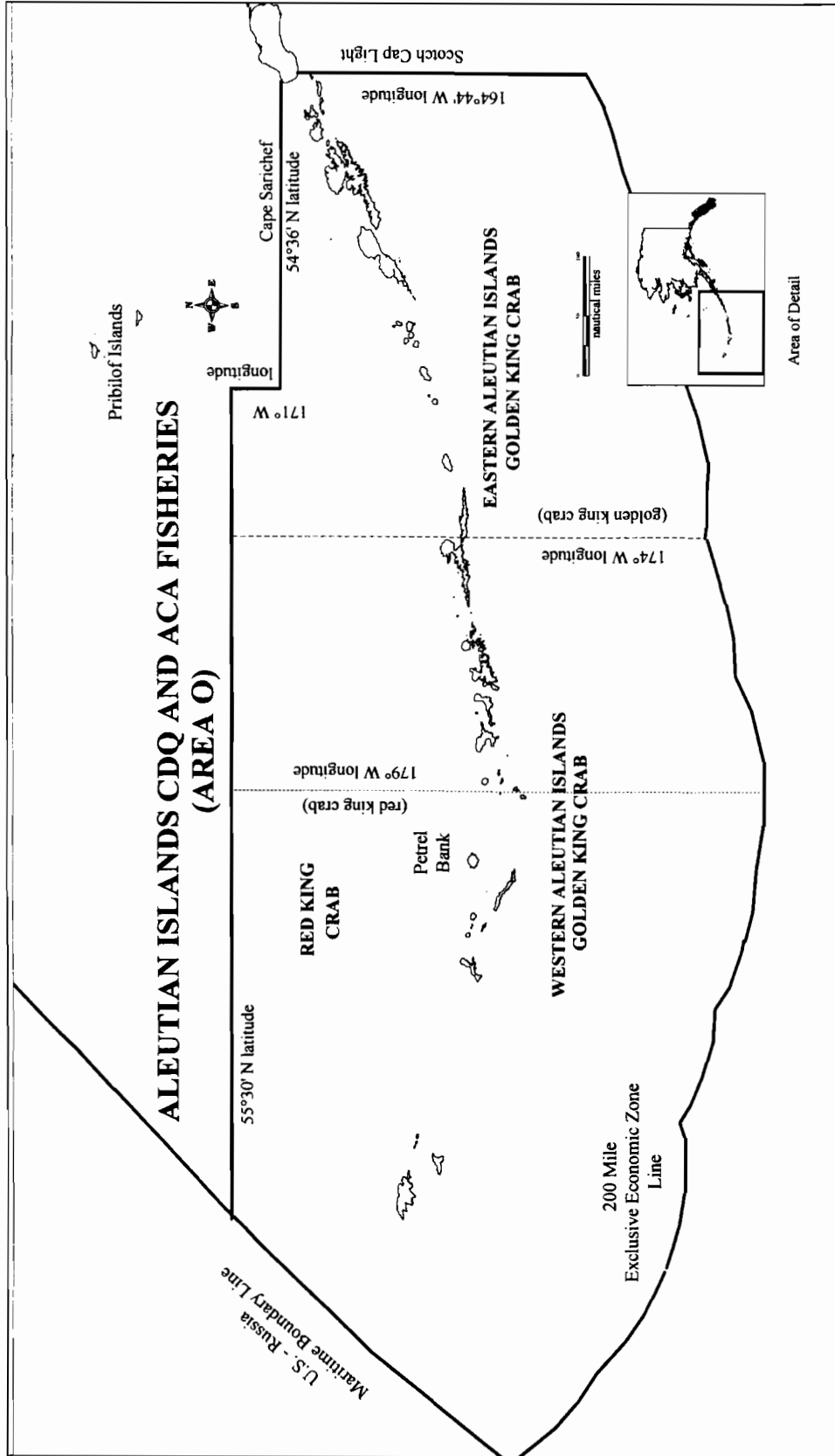


Figure 3-2.—Aleutian Islands Community Development Quota Program and Adak Community Allocation crab fisheries managed by the Westward Region.

**ANNUAL REPORT OF THE ONBOARD OBSERVER
PROGRAM FOR THE WESTWARD REGION CRAB
FISHERIES, 2006/2007**

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INTRODUCTION

Onboard-observer data collection and fishery monitoring is an integral component of fisheries management. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1996 states in Findings (8) “The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States” (U.S. Department of Commerce 1996).

The State of Alaska Shellfish Onboard Observer Program has evolved to help meet the MSFCMA National Standards. The State of Alaska (SOA) commercial shellfish fishing regulation 5 AAC 39.645. SHELLFISH ONBOARD OBSERVER PROGRAM, states that onboard observers afford the only practical mechanism of gathering essential biological and management data in particular fisheries, and provide the only effective means to enforce regulations that protect the shellfish resource.

This report summarizes crab observer deployment activities during the 2006/07 crab fisheries prosecuted in the Bering Sea and Aleutian Islands (BSAI).

HISTORY OF THE SHELLFISH ONBOARD OBSERVER PROGRAM

The Alaska Board of Fisheries (BOF) adopted regulations in 1988 requiring observers on all vessels that process king *Paralithodes* and *Lithodes* crabs, and Tanner *Chionoecetes bairdi* crabs within waters under the jurisdiction of the state. The observer requirement was prompted by catch information collected by Alaska Department of Fish and Game (ADF&G), which suggested illegal processing of undersize and female crabs by catcher-processors (C/Ps) in the BSAI fisheries. The primary goals of the Shellfish Onboard Observer Program were to monitor compliance of sex and size regulations of retained crabs, and collect data for inseason management of BSAI crab fisheries.

The first crab observer deployments occurred in September 1988 during the Bristol Bay red king *P. camtschaticus* crab fishery. In 1990, the BOF broadened observer coverage to include vessels processing snow *C. opilio* crabs. This change was considered necessary based on reports of undersize Tanner crabs being processed and labeled as snow crabs. The BOF also defined observer qualification standards, and observer duties and responsibilities. In the fall of 1991, the BOF adopted observer certification and decertification standards.

In 1993, ADF&G required vessels to carry observers as a condition of the permit for fishing hair *Erimacrus isenbeckii* crabs in the Bering Sea. Regulations implemented in 1994 allow the department to require, as a condition of the commissioner’s permit, 100% observer coverage on vessels targeting grooved Tanner *C. tanneri* crabs, triangle Tanner *C. angulatus* crabs, scarlet king *Lithodes couesi* crabs, and cherry *Paralomis multispinus* crabs. Management and research of these fisheries rely almost completely on crab fisheries observers to collect biological data on retained and discarded portions of the crab harvest to determine the impacts of fishing activities on crab populations. Beginning in 1995, observers were required on all vessels fishing for Aleutian Islands red king crab and golden king crab *L. aequispinus*.

An amendment to the MSFCMA in 1996 provided for the development and implementation of a Community Development Quota (CDQ) program for specific crab fisheries in the Bering Sea.

The CDQ fishery was incorporated into the existing state-managed shellfish fisheries in 1998, when six CDQ groups were designated for participation in the Bering Sea crab fisheries.

Within 10 years of the inception of the observer program, the number of C/Ps participating in various BSAI crab fisheries had decreased significantly, reducing the total number of deployed observers. Consequently, observer data no longer provided a representative sample of the fleet's activities in those fisheries, and restricted the department's ability to adequately monitor fleet wide harvest and bycatch information. In 1999, the BOF granted ADF&G full authority and responsibility for deploying observers on any vessel participating in BSAI crab fisheries. The BOF also established a 15-member Crab Observer Oversight Task Force (COOTF) comprised of crab industry representatives to provide recommendations for the observer program to ADF&G. In addition to the pay-as-you-go funding mechanism where vessels secure and pay for observer coverage, the BOF endorsed funding for additional observer deployments through ADF&G cost-recovery fishing under State of Alaska test-fishery authority (Boyle and Schwenzfeier 2000). The test-fishery funded portion of the program began July 1, 2000.

With a marked increase in observer participation on catcher-only vessels (C/Vs), observer training and logistic efforts could not meet industry demands. In an effort to address observer shortages, the BOF in 2002 relaxed conflict of interest standards by increasing any one crab observer's time on any one vessel during 12 consecutive months from 90 days to 120 days in fisheries greater than 75 days in length. Additionally, as an effort to retain observers because of the shorter pre-rationalized crab fishing seasons, crab observer trainee permits are allowed to be extended to 365 days for crab observers at the department's discretion so that a trainee observer may gain additional experience, if needed, to obtain full certification.

The State of Alaska rationalization regulations for the Bering Sea and Aleutian Islands crab fisheries were passed by the BOF during their March 2005 meeting. Changes to the crab observer program regulations due to crab rationalization resulted in decreased C/V observer coverage in the Aleutian Islands golden king crab fishery and increased observer coverage on C/Vs for the Bristol Bay red king crab, St. Matthew Island blue king crab, Pribilof Islands blue and red king crab, and Bering Sea Tanner and snow crab fisheries. There were no changes made to observer coverage levels in the non-quota BSAI fisheries. Observer coverage, for all BSAI quota fisheries are addressed in the shellfish fishery regulation, 5 AAC 39.645. Quota fisheries that require observer coverage are the Adak Community Allocation (ACA), CDQ, and Individual Fishing Quota (IFQ) fisheries. The ACA fishery was created by the North Pacific Fishery Management Council (NPFMC) with the rationalization of the BSAI crab fisheries.

Observer coverage is implemented in two ways for C/Vs in the BSAI crab quota fisheries. For the Aleutian Islands golden king crab fishery, a percentage of the total harvest weight of each C/V is observed. Catcher vessel observer coverage in the Bristol Bay and Bering Sea crab quota fisheries may be met by either requiring that a percentage of the harvest on each vessel be observed, or the department may select a certain percentage of the registered vessels to carry observers for 100% of their fishing time. Observer requirements for all processing vessels in all BSAI crab fisheries remains at 100% coverage for all fishing activities.

Until rationalization of the crab fisheries, CDQ observer coverage was based on a fixed number of vessels per group in each CDQ fishery. After crab rationalization in 2005, observer coverage for all quota fisheries is managed under one system since all quota fisheries may be harvested concurrently during identical season dates. Crab fisheries currently included in the CDQ program

are Aleutian Islands golden king crab east of 174° West Longitude, Bristol Bay red king crab, Norton Sound red king crab, St. Matthew blue king *P. platypus* crab, Pribilof red and blue king crab, and Bering Sea Tanner and snow crab.

SHELLFISH OBSERVER PROGRAM REGULATIONS AND GUIDELINES

Shellfish Observer Program regulations were originally adopted at the 1988 BOF meeting. During the ongoing development of the state's shellfish observer program, the BOF and state legislature, through public processes have adopted and placed observer program related regulations and statutes into law. The current statutes and regulations that define the responsibilities of each group (ADF&G, observer companies, observers, and vessels) that the observer program involves can be found in the Alaska Statutes Title 16, AS 16.05.050 POWERS AND DUTIES OF THE COMMISSIONER, AS 16.05.055 ON-BOARD OBSERVER PROGRAM, AS 16.05.251 REGULATIONS OF THE BOARD OF FISHERIES, Alaska Administrative Code, 5 AAC 39.141 ONBOARD OBSERVER PROGRAM, 5 AAC 39.142 CONFLICT OF INTEREST STANDARDS FOR ONBOARD OBSERVERS AND INDEPENDENT CONTRACTING AGENTS, 5 AAC 39.143 ONBOARD OBSERVER CERTIFICATION AND DECERTIFICATION, 5 AAC 39.144 ONBOARD OBSERVER INDEPENDENT CONTRACTING AGENT CERTIFICATION AND DECERTIFICATION, 5 AAC 39.146 ONBOARD OBSERVER BRIEFING AND DEBRIEFING, 5 AAC 39.645 SHELLFISH ONBOARD OBSERVER PROGRAM, and 5 AAC 39.646 SHELLFISH ONBOARD OBSERVER TRAINEE PROGRAM QUALIFICATIONS AND REQUIREMENTS.

ALASKA DEPARTMENT OF FISH AND GAME RESPONSIBILITIES

ADF&G is responsible for establishing policies and procedures for certification and decertification of contracting agents and observers. To promote data consistency and reliability, ADF&G developed observer training standards, and sampling methodology and protocols. Department personnel continue to develop the program with a progressive outlook towards data integrity and meeting the management need for fisheries information.

INDEPENDENT CONTRACTING AGENT RESPONSIBILITIES

Independent contracting agent observer providers also referred to as observer companies or observer contractors are required by regulation to hire, train, deploy, and logistically support their observers with food, accommodations, sampling equipment and transportation. Observer companies secure contracts for observer services directly with vessel owners or the department, depending on the funding source for observer coverage. In 2006, five independent contracting agents were authorized to provide onboard observers: Alaskan Observers Inc. (AOI), Marine Resources Assessment Group Americas (MRAG), Northwest Observers (NWO), Saltwater Incorporated (SWI) and TechSea International (TSI).

OBSERVER RESPONSIBILITIES

Observer qualifications include a minimum of a Bachelor's degree in the science of biology or any branch of biology, or a valid National Marine Fisheries Service (NMFS) observer certification, or other fisheries related experience or education approved by the department. Crab observer candidates are required to undergo ADF&G-approved training and must demonstrate 90% proficiency on the ADF&G crab observer examination. As part of their instruction, crab observers must also participate in a practical training exercise administered by the observer

program staff. As representatives of ADF&G, observers are required to adhere to a detailed set of professional standards outlined in regulation. Prior to 1991, observer companies trained the department's crab observers. Currently the University of Alaska Anchorage North Pacific Fisheries Observer Training Center (OTC) located in Anchorage trains all BSAI crab, statewide scallop, and a large percentage of the North Pacific and BSAI groundfish observers. The OTC is supported with federal funds.

VESSEL OWNER AND OPERATOR RESPONSIBILITIES

By regulation the cost of observers is either borne by the individual vessel or funded by the department. When required, vessel owners and operators procure observers through a qualified observer contractor. Each vessel must provide their observer with food and accommodations equal to that of the vessel's crew. Each vessel must also dedicate a safe work area, necessary totes to hold the entire contents of each sample pot, and allow the observer opportunity and time to adequately sample the catch according to specific ADF&G data collection requirements. Accurate fishing effort, location, and harvest data are to be provided to the observer as well as access to communication equipment for the purpose of communicating with ADF&G.

The MSFCMA and ADF&G commercial shellfish fishing regulations require that each vessel carrying an observer meets United States Coast Guard (USCG) commercial fishing vessel safety standards and possesses a current Commercial Fishing Vessel Safety Examination (CFVSE) decal. Whenever possible before a fishery, USCG personnel will board and examine safety equipment on vessels that carry observers. Even though a vessel may possess a current CFVSE decal, the safety equipment may not meet the USCG requirements at the time an observer boards the vessel if equipment currency dates have expired since the CFVSE was last conducted on the vessel.

SHELLFISH OBSERVER DUTIES

Crab observers conduct species composition sampling of retained catch and bycatch, and record data on retained catch, fishing effort, and location. Reports on vessel and observer activity are coded and periodically sent via single-side band radio, facsimile, e-mail, or telephone to ADF&G.

Observers may be assigned projects such as collecting shellfish, finfish, and other marine specimens, gathering tissue specimens for genetic stock identification, egg clutches for fecundity studies, and morphometric data of crabs. Observers also facilitate the tag-recovery studies of crabs and document specific seabird and mammal observations.

Crab observers regularly monitor fishing operations for regulatory compliance. The Division of Alaska Wildlife Troopers (AWT) assist OTC and ADF&G staff with instruction of observers for evidence collection, documentation, and proper chain-of-custody procedures. In the event that a potential violation is encountered, the troopers will interview the observer and may request a written statement. Observers are required to confirm that the vessel is displaying a current CFVSE decal and that safety equipment on the vessel is current and in usable condition. This inspection is conducted when the observer first boards the vessel.

CRAB CATCHER-PROCESSOR VESSEL

Daily duties that are specific to C/P vessels require each observer to 1) interview the vessel operator for confidential catch and effort information, 2) collect biological data on the entire

contents of a specified number of randomly selected pots for species composition sampling, 3) conduct size frequency sampling of up to 100 randomly selected retained crabs for the purpose of determining carapace size and shell condition distribution, 4) daily obtain an average weight from a specified number of retained crabs, 5) obtain size, sex, and species data for a legal tally of up to 600 retained crabs conducted throughout the day.

CRAB FLOATING-PROCESSOR VESSEL

Floating processor observer sampling duties are conducted on each vessel delivering to the processor. Daily duties specific to floating processor (F/P) vessels require each observer to 1) interview the delivering vessel's captain for confidential catch and effort information, 2) determine average weight of retained crabs, 3) conduct size frequency sampling of 100 retained crabs for carapace size and shell condition distribution, 4) obtain size, sex, and species data for a legal tally of 600 retained crabs during the offload.

CRAB CATCHER-ONLY VESSEL

Observer duties specific to C/Vs include 1) interviewing the vessel operator daily for confidential catch and effort information, 2) during each fishing day collect biological data on the entire contents of a specified number of pots for species composition sampling, 3) during delivery, determine the average weight of retained crabs, 4) during delivery, collect a size frequency sample of up to 100 retained crabs for the purpose of determining carapace size and shell condition distribution, 5) during delivery, monitor size, sex, and species data for a legal tally of 600 retained crabs.

2006/2007 OBSERVER PROGRAM ACTIVITY

OBSERVER PROGRAM TEST FISHERY

The department reports annually to the BOF appointed COOTF with a review of test fishery funded expenditures in various BSAI fisheries. The COOTF is advisory to the BOF, interacts with and is also advisory to the department with regard to test fishery expenditures and observer coverage levels in specific fisheries. During the March 2005 BOF meeting, observer coverage levels for all quota fisheries were established in the State's commercial shellfish fishing regulations (Table 4-1).

The Shellfish Observer Program has utilized test-fishery funding for a portion of the costs of BSAI crab observer coverage since 1999. The test fishery authority was originally capped at \$650,000 and structured as a revolving fund which, if not used in one fiscal year may be available in the following fiscal year.

The ADF&G observer program test fishery budget allocation cap was increased to \$875,000 for Fiscal Year (FY) 2006 from \$650,000 in FY05 to aid in funding the increased catcher-vessels' observer coverage costs as a result of crab rationalization. A percentage of randomly selected catcher vessels in specific fisheries are required to carry observers during 100% of their fishing in those fisheries, and observers are provided and funded through a State of Alaska professional service contract agreement with a state certified observer company.

The program's test fishery harvested 188,495 pounds of Bristol Bay red king crab in October 2006 and generated \$400,000 in revenue (Tables 4-2 and 4-3). The test fishery harvest and sale

of crab was contracted to the highest bidder responding to the department's publicly solicited Invitation to Bid (ITB).

OBSERVER DEPLOYMENTS BY FISHERY

2006/07 ALEUTIAN ISLANDS GOLDEN KING CRAB FISHERY OBSERVER ACTIVITY

The 2006/07 Aleutian Islands golden king crab season opened to fishing on August 15, 2006 with a Total Allowable Catch (TAC) of 5.7 million pounds. Seven vessels participated in the fishery, including six C/Vs and one C/P.

Observer coverage requirements implemented with the crab fisheries rationalization of 2005 for all C/Vs harvesting under IFQ, CDQ, and ACA permits is mandatory for 50% of each vessel's total golden king crab harvest in the eastern and western management areas, in each of three trimesters (August 15 to November 15, November 16 to February 15, and February 16 to May 15).

Observer coverage remained at 100% for all C/Ps and F/Ps and observers were secured and paid for directly by the participating vessels.

On C/Vs fishing east of 174° West longitude observers were assigned a species composition sampling goal of four measurement and 10 count pots per fishing day. In the western management area, observers on C/Vs were assigned a species composition sampling goal of six measurement and four count pots per fishing day.

Observers on the C/P were assigned a species composition sampling goal of four measurement and 5 count pots per fishing day in the eastern management area and five measurement pots and no count pots per fishing day in the western management area.

Observers in both management areas reported harvest information every Monday by e-mail, fax, phone, or radio. Observers deployed in the eastern management area reported all tagged golden king crab recovered, and those participating in the western management area were required to measure and document red king crab bycatch from all pots lifted.

The entire fleet lifted a total of 53,065 pots. Catcher vessels delivered 4,134,440 pounds of golden king crab (Table 4-4). The one C/P made 24 deliveries and harvest information for the vessel is confidential.

Observers sampled 2,286 pots in the eastern and western management areas for 4.3% sample rate of all pots lifted. Observers on C/Vs sampled 1,793 of the pots lifted and completed 30 legal tallies and 25 size frequency samples. Observers on the C/P sampled 493 pots and completed 110 legal tallies and 109 size frequency samples (Table 4-5).

All catcher vessels maintained a 50% or greater observer coverage level for each management area and trimester. Overall the fleet maintained adequate observer coverage levels throughout the season (Figure 4-1).

The total number of observer deployments has decreased by half from years previous to 2005/06 due to lower observer coverage requirements and a reduction in fleet size from 22 vessels in 2004/05 to nine and seven vessels in 2005/06 and 2006/07 respectively. Likewise, the average observer deployment length was decreased to approximately 44 days in 2005/06 and 2006/07 compared to 55 days in 2004/05 when 100% observer coverage was required on all C/Vs.

2006/07 BRISTOL BAY RED KING CRAB FISHERY OBSERVER ACTIVITY

The 2006/07 Bristol Bay red king crab season opened to fishing on October 15, 2006. Eighty four vessels participated in the fishery, including 80 catcher-only vessels, three catcher-processors, and one floating processor. Twenty percent or nineteen of the 2006/07 Bristol Bay red king crab preseason registered C/Vs were randomly selected to carry observers for 100% of their fishing activity. Catcher-vessel deployments were paid for with test fishery and federal fee funds. One hundred percent observer coverage was mandatory for the C/Ps and the F/P, and observers were secured and paid for directly by the vessels.

Observers on C/Ps and C/Vs were assigned a daily species composition sampling goal of five and 10 measurement pots, respectively. All observers reported harvest information tri-weekly.

The 2006/07 Bristol Bay red king crab season closed to all fishing activity on January 15, 2007. Nineteen of the 80 catcher vessels that registered for Bristol Bay red king crab carried observers accounting for 24% of the fleet with observers onboard.

The fleet lifted a total of 71,740 pots for the fishery, made 213 deliveries and landed 15,444,177 pounds of crab from a TAC of 15,527,000 pounds (Table 4-6). All observed vessels lifted 22,783 pots and landed 4,661,579 pounds of crab (Table 4-6 and 4-7).

Observers sampled a total of 1,214 pots, accounting for 5.3% of pots lifted on observed vessels. Catcher vessel observers sampled 1,074 (5.7%) of 18,972 pots lifted on observed C/Vs and conducted 44 size frequency samples and 39 legal tallies. Observers on C/Ps sampled 140 (3.7%) of the pots lifted on C/Ps and conducted 38 size frequency samples and 38 legal tallies. Observers on all vessels sampled 1.7% of all pots lifted by the fleet (Table 4-7).

Observers were deployed for a total of 633 days averaging 25 days per deployment, compared to an average of 13 days in 2003, 12 days in 2004, and 32 days in 2005/06.

With the exception of the fishing effort during the second week in November (statistical week 45) and the last week in November (statistical week 48), observer coverage levels were maintained at 27% of the harvest or better during each week of fishing activity (Figure 4-2).

2006/07 BERING SEA TANNER CRAB FISHERY OBSERVER ACTIVITY

The 2006/07 Bering Sea Tanner crab season opened to fishing both east and west of 166° West longitude on October 15, 2006 with a TAC of 1.875 million pounds for the east and 1.094 million pounds for the west. Out of 83 catcher vessels that pre-season registered, 55 catcher vessels and 3 catcher-processors harvested Tanner crab.

During the 2005/06-2006/07 Bering Sea *C. bairdi* Tanner crab fisheries ADF&G selected 100 percent observer coverage on 30 to 100 percent of the catcher vessels that engaged in directed harvest of Tanner crab. The ADF&G covers the cost of observer coverage for catcher vessels selected to carry an observer in this fishery.

The department's selection of catcher vessels for observer coverage in the Bristol Bay red king crab and Bering Sea snow crab fisheries relies on the preseason registration process completed by 5:00 p.m. September 24 of each year. Participation and harvest that may occur during the Bering Sea *C. bairdi* Tanner crab fishery between October 15 and March 31 cannot be predicted using the same preseason vessel registration process as that used for the Bristol Bay red king crab and Bering Sea snow crab fisheries because those vessels that are preseason registered for

the rationalized Tanner crab fishery include vessels that wish to retain Tanner crab incidental to harvest in other crab fisheries, vessels that wish to engage in directed harvest of Tanner crab, and vessels that want the option to both directly and incidentally harvest Tanner crab. Additionally, the preseason registration process is not an indicator of a vessel's intended harvest of quota east or west of 166° West longitude in the Bering Sea District. As a result, the department has difficulty determining how to place observers on vessels for adequate data collection for temporal and spatial characterization of the fishery when reviewing the Bering Sea Tanner crab pre-season registrations.

Fishing effort in the Tanner fishery is unpredictable throughout the season, and largely dependent on the industry's business decisions. Recent effort levels in the fishery have been low with a portion of the TAC left unharvested.

Table 4-8 shows that even though the ADF&G policy has been to place observers on up to 100 percent of the catcher vessels that engaged in directed harvest of Bering Sea Tanner crab during the 2005/06 and 2006/07 fisheries, the percentage of Tanner crab catcher vessels that carried observers was between 34 and 46 percent of those that delivered Tanner crab harvested either in a directed fishery or incidentally.

Because the Tanner crab season dates coincide with a portion of the Bristol Bay red king crab and Bering Sea snow crab fishery seasons, vessels could harvest Tanner crab as incidental catch during those fisheries, if properly registered. Observed Tanner harvest statistics in this report reflect a combination of vessels that engaged in directed fishing of Tanner crab, vessels that harvested Tanner crab incidental to red king crab fishing, and vessels that harvested Tanner crab incidental to snow crab fishing.

Observers on C/Vs were assigned a species composition sampling goal of three measurement pots and three count pots per fishing day, and observers on C/Ps were assigned two measurement and two count pots per fishing day for species composition sampling. All observers reported harvest and effort information to the department on a weekly basis.

The 2006/07 Bering Sea Tanner crab season closed to all fishing activity on March 31, 2007. Twenty of the 55 catcher vessels that delivered Tanner crab carried observers, accounting for 36% of the vessels with observers onboard.

The fleet lifted a total of 53,514 pots for the entire Tanner fishery, made 136 deliveries and landed 2,122,589 pounds of crab from a TAC of 2,969,000 pounds. The observed catcher vessel trips lifted 20,446 pots and landed 991,156 pounds of crab. Observed vessels landed 46.7% of the total pounds harvested (Table 4-9).

On all vessels that harvested Tanner crabs less than 1% of the pots lifted by the fleet overall were sampled (Table 4-10).

With the exception of the last three weeks of fishing effort at least 20% of the Tanner crab harvest was observed during each week. No Tanner fishing occurred December 17 through January 6, 2006 (statistical weeks 51, 52, 53, and 1). The final week's harvest during statistical week 13 was not substantial enough to register in the graph (Figure 4-3).

2006/07 BERING SEA SNOW CRAB FISHERY OBSERVER ACTIVITY

The 2006/07 Bering Sea snow crab season opened to fishing on October 15, 2006 with a TAC of 36.56 million pounds. Seventy-three vessels participated in the fishery, including 67 C/Vs, four C/Ps, and two F/Ps.

In accordance with new observer coverage regulations implemented in 2005 for the rationalized fisheries, 30% or 24 C/Vs were randomly selected from the 2006/07 Bering Sea snow crab preseason registrants to carry observers for 100% of their fishing activity, and costs were covered using test fishery funds and federal fee funds. One hundred percent observer coverage was mandatory for C/Ps and F/Ps and observers were secured and paid for by the vessels.

Observers on C/Vs were assigned a species composition sampling goal of one measurement and five count pots per fishing day, and observers on C/Ps were assigned one measurement and three count pots per fishing day for species composition sampling. All observers reported harvest and effort information weekly to the department.

The fleet lifted a total of 89,419 pots for the entire fishery, made 307 deliveries and landed 36,355,649 pounds of crab. Observed vessels landed 15,037,238 pounds of crab and 41% of the total pounds harvested, compared to 20%, 26%, and 41% in 2004, 2005, and 2005/06 respectively (Table 4-11).

Observed vessels lifted 39,009 pots and observers sampled a total of 1,118 pots over the course of 43 deployments. Catcher vessel observers sampled 870 (3.1%) of 28,201 pots lifted on observed C/Vs and conducted 80 size frequency samples and 70 legal tallies. Observers on C/Ps sampled 248 (2.3%) of 10,808 pots lifted on C/Ps and conducted 49 size frequency samples and 56 legal tallies. The F/P observers sampled and conducted delivery interviews on unobserved vessels, including 181 legal tallies and 157 size frequency samples (Table 4-12). Twenty four of the 67 catcher vessels that delivered snow crab carried observers, accounting for 36% of the fleet with observers onboard.

With the exception of the first week of harvest in November (statistical week 45) and the last two weeks of fishing effort in April (statistical weeks 17 and 18), observer coverage of 27% of the harvest or greater was maintained each week (Figure 4-4).

The average observer deployment length was 59 days, compared to 23 days in 2003 and 2004, and 18 days in 2005 and 39 days in 2005/06.

OBSERVER DATA USE AND ANALYSIS

The MSFCMA mandates collection of reliable data for fisheries conservation and management. Although ADF&G continues to collect retained catch data shore-side, it relies on data collected on the fishing grounds by at-sea observers who are in a unique position to collect specific data. The crab observer database has accumulated enough data to become an important source of information for fisheries management and research. Some of the applications of this data are discussed in Schwenzfeier et al., (2000). The observer program database staff summarizes the biological data collected by crab observers annually. The most recent summary and analysis of BSAI crab observer-collected data is available in Barnard and Burt (2006).

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TABLES AND FIGURES

Table 4-1.—Observer coverage levels in the 2006/07 fishery seasons for the Bering Sea and Aleutian Islands rationalized, IFQ, CDQ, ACA, and permit crab fisheries.

| Fishery | Preseason Registration Deadline ^a | Catcher Vessels | | At-Sea Processors | |
|---------------------------------------|--|-------------------|----------------------------------|-------------------|---------------------------|
| | | Observer Coverage | Observer Subsidized ^b | Observer Coverage | Observer Costs Subsidized |
| St. Matthew blue king crab | none | 100% | no | 100% | no |
| Pribilof red and blue king crab | none | 100% | no | 100% | no |
| Bristol Bay red king crab | 24-Sep | 20% ^c | yes | 100% | no |
| Bering Sea Tanner crab | 24-Sep | 30% ^c | yes | 100% | no |
| Bering Sea snow crab | 24-Sep | 30% ^c | yes | 100% | no |
| St. Matthew golden king crab | none | 100% | no | 100% | no |
| Pribilof golden king crab | none | 100% | no | 100% | no |
| Bering Sea hair crab | none | 100% | no | 100% | no |
| BSAI grooved and triangle Tanner crab | none | 100% | no | 100% | no |
| Aleutain Islands golden king crab | none | 50% ^d | no | 100% | no |
| Aleutian Islands red king crab | none | 100% | no | 100% | no |

^a When the pre-season vessel registration deadline occurs on a weekend or holiday, the deadline is extended to the next business day.

^b Observer coverage is funded with test fishery revenue and federal grant.

^c For Bristol Bay red king crab and Bering Sea Tanner and snow crab the coverage is the percentage of randomly selected vessels pre-season registered in each fishery where observer deployment costs are paid for with test fishery and federal grant.

^d For Aleutian Islands golden king crab the coverage is set at a percentage of the harvest on each vessel during each of three trimesters.

Table 4-2.— Shellfish onboard observer program test-fishery harvest statistics, 1999–2006.

| Year | Number of | | Harvest ^{a,b} | Number of | | Average | | Deadloss ^a |
|-------------------|-----------|--------|--------------------------|-------------|-------------------|---------------------|-------|-----------------------|
| | Landings | Crabs | | Pots Pulled | CPUE ^c | Weight ^a | | |
| 1999 ^d | 2 | 16,930 | 106,179 | 541 | 31.0 | 6.3 | 245 | |
| 2000 | | | No cost-recovery fishing | | | | | |
| 2001 ^d | 2 | 13,065 | 90,151 | 463 | 28.2 | 6.9 | 103 | |
| 2002 ^d | 1 | 10,837 | 71,661 | 198 | 54.7 | 6.6 | 134 | |
| 2003 | | | No cost-recovery fishing | | | | | |
| 2004 ^d | 2 | 17,145 | 116,583 | 650 | 26.4 | 6.8 | 62 | |
| 2005 ^e | 2 | 18,610 | 128,412 | 1130 | 16.5 | 6.9 | 247 | |
| 2006 ^e | 2 | 29,720 | 188,495 | 837 | 34.9 | 6.3 | 2,448 | |

^aIn pounds.

^bDeadloss included.

^cNumber of legal crabs per pot lift.

^dCost-recovery fishing occurred after the Bristol Bay red king crab general fishery.

^eContracted vessel harvested IFQ crab in conjunction with test-fishery crab.

Table 4-3.—Economic performance of the shellfish onboard observer program test-fishery harvest, 1999–2006.

| Year | Harvest ^a | Exvessel Value | | Charter Dates | Total Charter Days | Vessel Charter Cost |
|------|----------------------|------------------------|------------------------------|---------------------------|--------------------|-----------------------------|
| | | Test-fish ^b | General Fishery ^b | | | |
| 1999 | 105,934 | \$6.32 | \$6.26 | 10/25-11/10 | 17 | \$40,800 |
| 2000 | | | No cost-recovery fishing | | | |
| 2001 | 90,048 | \$5.12 | \$4.81 | 10/23-11/08 | 17 | \$46,925 |
| 2002 | 71,527 | \$6.41 | \$6.14 | 10/17-10/27 | 10 | \$32,900 |
| 2003 | | | No cost-recovery fishing | | | |
| 2004 | 116,512 | \$5.13 | \$4.71 | 10/21-11/01 | 14 | \$49,900 |
| 2005 | 128,165 | \$5.07 | \$4.22 | 11/12 - 12/4 ^c | 23 ^c | \$69,900 |
| 2006 | 186,047 | \$2.15 ^d | \$3.45 | 9/22 - 10/11 | 14 | no expenditure ^d |

^aIn pounds, deadloss not included.

^bPrice per pound.

^cHarvest of both test-fishery crab and vessel's IFQ crab.

^dThere were no vessel charter expenditures for the department since the successful bidder was responsible for all crab harvest costs, resulting in the department receiving a lower price per pound than in previous years.

Table 4-4—Aleutian Islands golden king crab fishing effort by vessel type, 2003/04 - 2006/07.

| Year | Vessel Type | Number of | | | Deliveries | Pounds Delivered ^a | Observed Pounds Delivered ^a | % Observed Pounds Delivered |
|----------------------|-------------|-----------|-----------|------------|--------------|-------------------------------|--|-----------------------------|
| | | Vessels | Pot Lifts | Deliveries | | | | |
| 2003/04 | C/V | 20 | 106,011 | 74 | 5,023,178 | 5,023,178 | 100.0 | |
| | C/P | 1 | 19,108 | 22 | confidential | confidential | 100.0 | |
| | TOTAL | 21 | 125,119 | 96 | confidential | confidential | 100.0 | |
| 2004/05 | C/V | 21 | 75,814 | 64 | 4,807,747 | 4,807,747 | 100.0 | |
| | C/P | 1 | 15,880 | 19 | confidential | confidential | 100.0 | |
| | TOTAL | 22 | 91,694 | 83 | confidential | confidential | 100.0 | |
| 2005/06 ^b | C/V | 7 | 41,553 | 60 | 4,396,691 | 3,075,037 | 69.9 | |
| | C/P | 1 | 13,132 | 22 | confidential | confidential | 100.0 | |
| | TOTAL | 8 | 54,685 | 82 | confidential | confidential | confidential | |
| 2006/07 ^b | C/V | 6 | 43,087 | 51 | 4,134,440 | 2,855,126 | 69.1 | |
| | C/P | 1 | 9,978 | 24 | confidential | confidential | 100.0 | |
| | TOTAL | 7 | 53,065 | 75 | confidential | confidential | confidential | |

^aIncludes deadloss.

^bData includes IFQ, CDQ, and ACA. 2005/06 is the first year of crab rationalization and the first year CDQ and ACA quotas were assigned to this fishery.

Table 4-5.—Aleutian Islands golden king crab observer sampling efforts for bycatch and retained catch by vessel type, 1996/97 - 2006/07.

| Year | Vessel Type | Number of ^a | | % Obs Coverage | Observer Deployments | Observer Months | Number of | | Pot Lifts Pot Lifts on | | % Pot Lifts Sampled by Vessel Type | % Pot Lifts Sampled on Obs Vessel by Type | Number of | |
|---------|-------------|------------------------|-------------|----------------|----------------------|-----------------|-------------------|----------------------------------|-------------------------|-------------------------|------------------------------------|---|----------------------------|-----|
| | | Total vessels | Obs Vessels | | | | Pot Lifts Sampled | Pot Lifts on all Vessels by Type | all Obs Vessels by Type | Size Freq. ^b | | | Legal Tallies ^c | |
| 1996/97 | C/V | 15 | 15 | 100.0 | 44 | 73.6 | 11,255 | 101,423 | 101,423 | 11.1 | 11.1 | 11.1 | 90 | 111 |
| | C/P | 3 | 3 | 100.0 | 11 | 16.0 | 975 | 18,326 | 18,326 | 5.3 | 5.3 | 5.3 | 239 | 257 |
| | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| 1997/98 | FLEET | 18 | 18 | 100.0 | 55 | 88.6 | 12,230 | 119,749 | 119,749 | 10.2 | 10.2 | 10.2 | 329 | 368 |
| | C/V | 11 | 11 | 100.0 | 41 | 62.0 | 7,481 | 161,761 | 161,761 | 4.6 | 4.6 | 4.6 | 83 | 94 |
| | C/P | 4 | 4 | 100.0 | 12 | 18.8 | 1,105 | 26,152 | 26,152 | 4.2 | 4.2 | 4.2 | 267 | 259 |
| 1998/99 | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| | FLEET | 15 | 15 | 100.0 | 53 | 80.8 | 8,586 | 187,913 | 187,913 | 4.6 | 4.6 | 4.6 | 350 | 353 |
| | C/V | 13 | 13 | 100.0 | 17 | 29.0 | 4,273 | 99,928 | 99,928 | 4.3 | 4.3 | 4.3 | 43 | 47 |
| 1999/00 | C/P | 3 | 3 | 100.0 | 7 | 13.0 | 694 | 25,501 | 25,501 | 2.7 | 2.7 | 2.7 | 230 | 233 |
| | F/P | 1 | 1 | 100.0 | 1 | 1.0 | NA | NA | NA | NA | NA | NA | 4 | 4 |
| | FLEET | 17 | 17 | 100.0 | 25 | 43.0 | 4,967 | 125,429 | 125,429 | 4.0 | 4.0 | 4.0 | 277 | 284 |
| 2000/01 | C/V | 15 | 15 | 100.0 | 49 | 69.0 | 7,610 | 168,109 | 168,109 | 4.5 | 4.5 | 4.5 | 97 | 121 |
| | C/P | 1 | 1 | 100.0 | 5 | 11.2 | 820 | 18,060 | 18,060 | 4.5 | 4.5 | 4.5 | 228 | 230 |
| | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| 2001/02 | FLEET | 16 | 16 | 100.0 | 54 | 80.2 | 8,430 | 186,169 | 186,169 | 4.5 | 4.5 | 4.5 | 325 | 351 |
| | C/V | 16 | 16 | 100.0 | 47 | 63.5 | 9,023 | 149,319 | 149,319 | 6.0 | 6.0 | 6.0 | 102 | 106 |
| | C/P | 1 | 1 | 100.0 | 5 | 9.2 | 711 | 23,471 | 23,471 | 3.0 | 3.0 | 3.0 | 183 | 174 |
| 2001/02 | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| | FLEET | 17 | 17 | 100.0 | 52 | 72.7 | 9,734 | 172,790 | 172,790 | 5.6 | 5.6 | 5.6 | 285 | 280 |
| | C/V | 20 | 20 | 100.0 | 44 | 58.7 | 8,382 | 145,154 | 145,154 | 5.7 | 5.7 | 5.7 | 100 | 102 |
| 2001/02 | C/P | 1 | 1 | 100.0 | 4 | 7.7 | 700 | 22,997 | 22,997 | 3.0 | 3.0 | 3.0 | 146 | 147 |
| | F/P | 1 | 1 | 100.0 | 1 | 0.1 | NA | NA | NA | NA | NA | NA | 1 | 1 |
| | FLEET | 21 | 21 | 100.0 | 49 | 66.5 | 9,082 | 168,151 | 168,151 | 5.4 | 5.4 | 5.4 | 247 | 250 |

- Continued -

Table 4-5.-Page 2 of 2.

| Year | Vessel Type | Number of ^a | | | Number of | | | Pot Lifts on | | % Pot Lifts | | Number of | |
|----------------------|-------------|------------------------|-------------|-------------------|-----------------------|-----------------|-------------------|----------------------------------|--------------------------------------|------------------------------------|---|-------------------------|----------------------------|
| | | Total vessels | Obs Vessels | % Obs Coverage | Observer Deploy-ments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type | Pot Lifts on all Obs Vessels by Type | % Pot Lifts Sampled by Vessel Type | % Pot Lifts Sampled on Obs Vessel by Type | Size Freq. ^b | Legal Tallies ^c |
| 2002/03 | C/V | 21 | 21 | 100.0 | 31 | 44.3 | 5,835 | 106,675 | 106,675 | 5.5 | 5.5 | 81 | 81 |
| | C/P | 1 | 1 | 100.0 | 2 | 7.0 | 660 | 24,345 | 24,345 | 2.7 | 2.7 | 144 | 146 |
| | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA |
| 2003/04 | FLEET | 22 | 22 | 100.0 | 33 | 51.3 | 6,494 | 131,021 | 131,021 | 5.0 | 5.0 | 225 | 227 |
| | C/V | 20 | 20 | 100.0 | 28 | 40.5 | 6,744 | 106,011 | 106,011 | 6.4 | 6.4 | 73 | 73 |
| | C/P | 1 | 1 | 100.0 | 3 | 6.1 | 550 | 19,108 | 19,108 | 2.9 | 2.9 | 115 | 115 |
| 2004/05 | F/P | 0 | 0 | NA | 0 | 0.0 | NA | NA | NA | NA | NA | NA | NA |
| | FLEET | 21 | 21 | 100.0 | 31 | 46.6 | 7,294 | 125,119 | 125,119 | 5.8 | 5.8 | 188 | 188 |
| | C/V | 21 | 21 | 100.0 | 25 | 45.8 | 4,408 | 75,814 | 75,814 | 5.8 | 5.8 | 61 | 63 |
| 2005/06 ^d | C/P | 1 | 1 | 100.0 | 2 | 4.9 | 417 | 15,880 | 15,880 | 2.6 | 2.6 | 100 | 100 |
| | F/P | 0 | 0 | NA | 0 | 0 | NA | NA | NA | NA | NA | NA | NA |
| | FLEET | 22 | 22 | 100.0 | 27 | 50.7 | 4,825 | 91,694 | 91,694 | 5.3 | 5.3 | 161 | 163 |
| 2006/07 ^d | C/V | 7 | 7 | 50.0 ^e | 10 | 14.7 | 2,058 | 41,553 | 27,651 | 5.0 | 7.4 | 32 | 31 |
| | C/P | 1 | 1 | 100.0 | 2 | 6.2 | 509 | 13,132 | 13,132 | 3.9 | 3.9 | 114 | 115 |
| | F/P | 1 | 1 | NA | 2 | 2 | NA | NA | NA | NA | NA | 3 | 4 |
| 2006/07 ^d | FLEET | 9 | 9 | 100.0 | 14 | 22.9 | 2,567 | 54,685 | 40,783 | 4.7 | 6.3 | 149 | 150 |
| | C/V | 6 | 6 | 50.0 ^e | 11 | 11.2 | 1,793 | 43,087 | 29,440 | 4.2 | 6.1 | 30 | 25 |
| | C/P | 1 | 1 | 100.0 | 2 | 6.1 | 493 | 9,978 | 9,978 | 4.9 | 4.9 | 110 | 109 |
| 2006/07 ^d | F/P | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | FLEET | 7 | 7 | 100.0 | 13 | 17.3 | 2,286 | 53,065 | 39,418 | 4.3 | 5.8 | 140 | 134 |

^aSome vessels participated as both a C/P and F/P, but are counted once in the total number of vessels.

^bSize frequency sample taken on retained catch; each data set typically consists of 100 crab.

^cEach legal tally typically consists of 600 crab.

^dData includes IFQ, CDQ, and ACA combined. 2005/06 is the first year of crab rationalization and the first year CDQ and ACA quotas were assigned to this fishery.

^eAll catcher vessels were observed for at least 50% of their harvest in each of three trimesters.

NA = not applicable.

Table 4-6.-Bristol Bay red king crab fishing effort by vessel type, 2003 - 2006/07.

| Year | Vessel Type | Number of | | | Deliveries | Pounds Delivered ^a | Observed Pounds Delivered ^a | % Observed Pounds Delivered |
|----------------------|-------------|-----------|-----------|------------|------------|----------------------------------|--|-----------------------------------|
| | | Vessels | Pot Lifts | Deliveries | | | | |
| 2003 | C/V | 243 | 123,444 | 262 | 13,849,554 | 1,412,963 | 10.2 | |
| | C/P | 8 | 4,986 | 13 | 680,694 | 680,694 | 100.0 | |
| | CDQ | 13 | 5,704 | 20 | 1,166,662 | 813,392 | 69.7 | |
| | TOTAL | 264 | 134,134 | 295 | 15,696,910 | 2,907,049 | 18.5 | |
| 2004 | C/V | 243 | 87,606 | 256 | 13,506,397 | 1,165,737 | 8.6 | |
| | C/P | 8 | 3,370 | 14 | 606,041 | 606,041 | 100.0 | |
| | CDQ | 12 | 5,359 | 21 | 1,133,013 | 904,294 | 79.8 | |
| | TOTAL | 263 | 96,335 | 291 | 15,245,451 | 2,676,072 | 17.6 | |
| 2005/06 ^b | C/V | 85 | 103,538 | 270 | 17,284,281 | 4,453,697 | 25.8 | |
| | C/P | 4 | 11,411 | 26 | 1,025,054 | 1,025,054 | 100.0 | |
| | TOTAL | 89 | 114,949 | 296 | 18,309,335 | 5,478,751 | 29.9 | |
| 2006/07 ^b | C/V | 80 | 67,929 | 201 | 14,882,355 | 4,099,757 | 27.5 | |
| | C/P | 3 | 3,811 | 12 | 561,822 | 561,822 | 100.0 | |
| | TOTAL | 83 | 71,740 | 213 | 15,444,177 | 4,661,579 | 30.2 | |

^aIncludes deadloss.

^bData includes IFQ and CDQ combined. 2005/06 is the first year of crab rationalization.

Table 4-7.—Bristol Bay red king crab observer sampling efforts for bycatch and retained catch by vessel type, 1988 – 2006/07.

| Year | Vessel Type | Number of ^a | | | | Number of | | | | Number of | | |
|------|-------------|------------------------|-------------|----------------|----------------------|-----------------|-------------------|---|---|---|--|-------------------------|
| | | Total Vessels | Obs Vessels | % Obs Coverage | Observer Deployments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c |
| 1988 | C/V | 180 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA |
| | C/P | 20 | 20 | 100.0 | 20 | 8.4 | 31 | - | - | - | 0 | - |
| | F/P | 5 | 5 | 100.0 | 5 | 1.9 | NA | NA | NA | NA | 0 | - |
| | FLEET | 205 | 25 | 12.2 | 25 | 10.3 | 31 | 146,179 | - | <.1 | - | 0 |
| 1989 | C/V | 193 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA |
| | C/P | 18 | 18 | 100.0 | 18 | 10.9 | 94 | - | - | - | 110 | - |
| | F/P | 12 | 12 | 100.0 | 12 | 6.8 | NA | NA | NA | NA | 101 | - |
| | FLEET | 223 | 30 | 13.5 | 30 | 17.6 | 94 | 205,528 | - | <.1 | - | 211 |
| 1990 | C/V | 220 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA |
| | C/P | 20 | 20 | 100.0 | 20 | 11.9 | 140 | - | - | - | - | - |
| | F/P | 15 | 15 | 100.0 | 15 | 8.9 | NA | NA | NA | NA | - | - |
| | FLEET | 255 | 35 | 13.7 | 35 | 20.8 | 140 | 262,761 | - | 0.1 | - | - |
| 1991 | C/V | 277 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA |
| | C/P | 25 | 25 | 100.0 | 26 | 14.2 | 272 | - | - | - | 163 | - |
| | F/P | 14 | 14 | 100.0 | 14 | 7.4 | NA | NA | NA | NA | 130 | - |
| | FLEET | 316 | 39 | 12.3 | 40 | 21.5 | 272 | 226,999 | - | 0.1 | - | 293 |
| 1992 | C/V | 263 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA |
| | C/P | 18 | 18 | 100.0 | 19 | 9.0 | 290 | - | - | - | 99 | - |
| | F/P | 6 | 6 | 100.0 | 6 | 3.0 | NA | NA | NA | NA | 80 | - |
| | FLEET | 287 | 24 | 8.4 | 25 | 12.0 | 290 | 206,172 | - | 0.1 | - | 179 |

- Continued -

Table 4-7.--Page 2 of 5.

| Year | Vessel Type | Number of ^a | | | % Obs Coverage | Observer Deployments | Observer Months | Number of | | | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Number of | | |
|-----------------------|-------------|------------------------|-------------|-------------------|----------------|----------------------|-----------------|-----------------|-------------------|-------------------------|---|---|---|--|------------------------------|-----|----|
| | | Total Vessels | Obs Vessels | Pot Lifts Sampled | | | | Observer Months | Pot Lifts Sampled | Size Freq. ^c | | | | | Legal Tallies ^{b,d} | | |
| 1993 | C/V | 275 | 0 | 0.0 | 0 | 0.0 | NA | - | NA | NA | NA | NA | NA | NA | NA | NA | |
| | C/P | 17 | 17 | 100.0 | 19 | 10.6 | 558 | - | - | - | - | - | - | 124 | - | - | |
| | F/P | 7 | 7 | 100.0 | 7 | 4.5 | NA | NA | NA | NA | NA | NA | NA | 112 | - | - | |
| | FLEET | 299 | 24 | 8.0 | 26 | 15.1 | 558 | 252,739 | - | - | 0.2 | - | - | 236 | - | - | |
| 1994 | | | | | | | | | | | | | | | | | |
| NO COMMERCIAL FISHERY | | | | | | | | | | | | | | | | | |
| 1995 | | | | | | | | | | | | | | | | | |
| NO COMMERCIAL FISHERY | | | | | | | | | | | | | | | | | |
| 1996 | C/V | 192 | 0 | 0.0 | 0 | 0.0 | 0 | 73,908 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | C/P | 4 | 4 | 100.0 | 7 | 2.0 | 84 | 2,525 | 2,525 | 3.3 | 3.3 | 3.3 | 3.3 | 19 | 19 | 19 | 19 |
| | F/P | 2 | 2 | 100.0 | 2 | 0.8 | NA | NA | NA | NA | NA | NA | NA | 26 | 26 | 62 | 62 |
| | FLEET | 197 | 5 | 2.5 | 9 | 2.8 | 84 | 76,433 | 2,525 | 0.1 | 0.1 | 3.3 | 3.3 | 45 | 45 | 81 | 81 |
| 1997 | C/V | 248 | 0 | 0.0 | 0 | 0.0 | 0 | 86,885 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | C/P | 8 | 8 | 100.0 | 12 | 3.9 | 146 | 3,542 | 3,542 | 4.1 | 4.1 | 4.1 | 4.1 | 28 | 28 | 28 | 28 |
| | F/P | 3 | 3 | 100.0 | 3 | 1.6 | NA | NA | NA | NA | NA | NA | NA | 52 | 52 | 56 | 56 |
| | FLEET | 259 | 11 | 4.2 | 15 | 5.5 | 146 | 90,427 | 3,542 | 0.2 | 0.2 | 3.9 | 3.9 | 80 | 80 | 84 | 84 |
| 1998 | C/V | 263 | 0 | 0.0 | 0 | 0.0 | 0 | 131,757 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | C/P | 11 | 11 | 100.0 | 19 | 6.7 | 131 | 6,614 | 6,614 | 2.0 | 2.0 | 2.0 | 2.0 | 48 | 48 | 52 | 52 |
| | F/P | 5 | 5 | 100.0 | 3 | 1.8 | NA | NA | NA | NA | NA | NA | NA | 37 | 37 | 52 | 52 |
| | CDQ | 7 | 7 | 100.0 | 7 | 3.1 | 193 | 3,326 | 3,326 | 5.8 | 5.8 | 5.8 | 5.8 | 9 | 9 | 10 | 10 |
| FLEET | 284 | 21 | 7.4 | 29 | 11.6 | 324 | 141,697 | 9,940 | 0.2 | 0.2 | 3.3 | 3.3 | 94 | 94 | 114 | 114 | |

- Continued -

Table 4-7.-Page 3 of 5.

| Year | Vessel Type | Number of ^a | | Number of | | | | | Number of | | Number of | | |
|-------|------------------|------------------------|-------------|----------------|----------------------|-----------------|-------------------|---|---|---|--|-------------------------|------------------------------|
| | | Total Vessels | Obs Vessels | % Obs Coverage | Observer Deployments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c | Legal Tallies ^{b,d} |
| 1999 | C/V | 249 | 0 | 0.0 | 0 | 0.0 | 0 | 138,322 | NA | NA | NA | NA | NA |
| | C/P | 8 | 8 | 100.0 | 10 | 4.6 | 135 | 5,699 | 5,699 | 2.4 | 2.4 | 46 | 56 |
| | F/P | 3 | 3 | 100.0 | 1 | 1.0 | NA | NA | NA | NA | NA | 22 | 26 |
| | CDQ | 10 | 10 | 100.0 | 10 | 3.5 | 263 | 2,976 | 2,976 | 8.8 | 8.8 | 9 | 12 |
| | FLEET | 268 | 19 | 7.1 | 21 | 9.1 | 398 | 146,997 | 8,675 | 0.3 | 4.6 | 77 | 94 |
| 2000 | C/V ^e | 214 | 11 | 5.1 | 11 | 5.1 | 403 | 82,453 | 4,429 | 0.5 | 9.1 | 10 | 11 |
| | AFA C/V | 25 | 3 | 12.0 | 3 | 1.1 | 88 | 8,340 | 1,024 | 1.1 | 8.6 | 3 | 3 |
| | C/P | 7 | 7 | 100.0 | 9 | 3.4 | 156 | 3,238 | 3,238 | 4.8 | 4.8 | 28 | 29 |
| | F/P | 2 | 2 | 100.0 | 3 | 0.6 | NA | NA | NA | NA | NA | 14 | 17 |
| | CDQ | 11 | 11 | 100.0 | 11 | 4.4 | 423 | 4,663 | 4,663 | 9.1 | 9.1 | 1 | 0 |
| FLEET | 258 | 33 | 12.8 | 37 | 14.6 | 1,070 | 98,694 | 13,354 | 1.1 | 8.0 | 56 | 60 | |
| 2001 | C/V ^e | 193 | 20 | 10.4 | 20 | 9.5 | 359 | 51,624 | 5,746 | 0.7 | 6.2 | 19 | 19 |
| | AFA C/V | 31 | 3 | 9.7 | 3 | 1.0 | 48 | 6,662 | 682 | 0.7 | 7.0 | 3 | 3 |
| | C/P | 6 | 6 | 100.0 | 7 | 2.3 | 97 | 1,776 | 1,776 | 5.5 | 5.5 | 13 | 13 |
| | F/P | 3 | 3 | 100.0 | 3 | 1.2 | NA | NA | NA | NA | NA | 19 | 19 |
| | CDQ | 10 | 6 | 60.0 | 6 | 2.9 | 166 | 3,130 | 2,516 | 5.3 | 6.6 | 9 | 9 |
| FLEET | 241 | 36 | 14.9 | 39 | 16.9 | 670 | 63,192 | 10,720 | 1.1 | 6.3 | 63 | 63 | |
| 2002 | C/V ^e | 204 | 17 | 8.3 | 17 | 7.1 | 330 | 56,448 | 5,236 | 0.6 | 6.3 | 16 | 18 |
| | AFA C/V | 31 | 3 | 9.7 | 3 | 1.3 | 37 | 5,776 | 551 | 0.6 | 6.7 | 3 | 3 |
| | C/P | 7 | 7 | 100.0 | 8 | 2.3 | 144 | 2,591 | 2,591 | 5.6 | 5.6 | 21 | 21 |
| | F/P | 3 | 3 | 100.0 | 3 | 1.0 | NA | NA | NA | NA | NA | 9 | 9 |
| | CDQ | 10 | 6 | 60.0 | 6 | 2.7 | 242 | 3,513 | 2,875 | 6.9 | 8.4 | 9 | 9 |
| FLEET | 253 | 34 | 13.4 | 37 | 14.5 | 753 | 68,328 | 11,253 | 1.1 | 6.7 | 58 | 60 | |

- Continued -

Table 4-7.—Page 4 of 5.

| Year | Vessel Type | Number of ^a | | Number of | | | | Number of | | Number of | | | |
|----------------------|------------------|------------------------|-------------|----------------|----------------------|-----------------|-------------------|---|---|---|--|-------------------------|------------------------------|
| | | Total Vessels | Obs Vessels | % Obs Coverage | Observer Deployments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c | Legal Tallies ^{b,d} |
| 2003 | C/V ^e | 211 | 19 | 9.0 | 20 | 10.0 | 485 | 110,531 | 10,531 | 0.4 | 4.6 | 11 | 11 |
| | AFA C/V | 32 | 3 | 9.4 | 3 | 1.2 | 71 | 12,913 | 911 | 0.5 | 7.8 | 1 | 1 |
| | C/P | 8 | 8 | 100.0 | 10 | 3.6 | 175 | 4,986 | 4,986 | 3.5 | 3.5 | 35 | 32 |
| | F/P | 4 | 4 | 100.0 | 4 | 1.6 | NA | NA | NA | NA | NA | 16 | 18 |
| CDQ | | 13 | 8 | 61.5 | 9 | 3.7 | 279 | 5,704 | 4,372 | 4.9 | 6.4 | 22 | 12 |
| | FLEET | 264 | 39 | 14.8 | 46 | 20.1 | 1010 | 134,134 | 20,800 | 0.8 | 4.9 | 85 | 74 |
| 2004 | C/V ^e | 211 | 17 | 8.1 | 17 | 6.6 | 339 | 79,513 | 6,304 | 0.4 | 5.4 | 16 | 16 |
| | AFA C/V | 32 | 3 | 9.4 | 3 | 1.1 | 67 | 8,093 | 842 | 0.8 | 8.0 | 3 | 3 |
| | C/P | 8 | 8 | 100.0 | 9 | 2.8 | 130 | 3,370 | 3,370 | 3.9 | 3.9 | 17 | 17 |
| | F/P | 4 | 4 | 100.0 | 4 | 1.4 | NA | NA | NA | NA | NA | 31 | 33 |
| CDQ | | 12 | 8 | 66.7 | 9 | 4.7 | 226 | 5,359 | 4,312 | 4.2 | 5.2 | 23 | 23 |
| | FLEET | 263 | 37 | 14.0 | 42 | 16.6 | 762 | 96,335 | 14,828 | 0.8 | 5.1 | 90 | 92 |
| 2005/06 ^f | C/V | 85 | 20 | 23.5 | 22 | 19.5 | 1,390 | 103,538 | 25,283 | 1.3 | 5.5 | 50 | 48 |
| | C/P | 4 | 4 | 100.0 | 4 | 5.0 | 465 | 11,411 | 11,411 | 4.1 | 4.1 | 90 | 90 |
| | F/P | 1 | 1 | 100.0 | 2 | 2.0 | NA | NA | NA | NA | NA | 7 | 7 |
| | FLEET | 90 | 25 | 27.8 | 28 | 26.5 | 1,855 | 114,949 | 36,694 | 1.6 | 5.1 | 144 | 142 |

- Continued -

Table 4-7.--Page 5 of 5.

| Year | Vessel Type | Number of ^a | | | Observer Deployments | Observer Months | Number of | | | % Pot Lifts Sampled on Obs Vessel by Type ^b | Number of Legal Tallies ^{b,d} | | |
|----------------------|-------------|------------------------|-------------|----------------|----------------------|-----------------|-------------------|---|---|--|--|-------------------------|----|
| | | Total Vessels | Obs Vessels | % Obs Coverage | | | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | | | Size Freq. ^c | |
| 2006/07 ^f | C/N | 80 | 19 | 23.8 | 21 | 16.6 | 1,074 | 67,929 | 18,972 | 1.6 | 5.7 | 44 | 39 |
| | C/P | 3 | 3 | 100.0 | 3 | 3.1 | 140 | 3,811 | 3,811 | 3.7 | 3.7 | 38 | 38 |
| | F/P | 1 | 1 | 100.0 | 1 | 1.3 | NA | NA | NA | NA | NA | 0 | 0 |
| | FLEET | 83 | 22 | 26.5 | 25 | 21.1 | 1,214 | 71,740 | 22,783 | 1.7 | 5.3 | 82 | 77 |

^aSome vessels participated as both a C/P and F/P and are only counted once in the total number of vessels.

^bInformation is not available for 1988-1993.

^cSize frequency sample taken on retained catch; each data set typically consists of 100 crab. Information is not available for 1990.

^dEach legal tally typically consists of 600 crab.

^eNon-AFA catcher vessels.

^fSince 2005/06 the harvest and sample data includes combined IFQ and CDQ information combined. Prior to crab rationalization in 2005, CDQ data was reported separately.

NA = not applicable.

Table 4-8.—Comparison of the number of vessels that pre-season registered to harvest Tanner crab to the number of vessels that harvested Tanner crab, and the percentage of all vessels that harvested Tanner crab that were observed during the Bering Sea Tanner crab fishery, 2005/2006 and 2006/2007.

| Year | Number of catcher vessels that pre-season registered to harvest Tanner crab | Number of catcher vessels that harvested Tanner crab ^a | Number of catcher vessels that harvested Tanner crab that carried observers ^a | Percent of all catcher vessels that harvested Tanner crab that carried observers ^b |
|-----------|---|---|--|---|
| 2005/2006 | 106 | 41 | 14 | 34.1% |
| 2006/2007 | 83 | 55 | 20 | 36.4% |

^aIncludes vessels that incidentally harvested Tanner crab, vessels that engaged in directed harvest of Tanner crab, and vessels that both incidentally and directly harvested Tanner crab.

^bObserver present and acting in the capacity of an onboard observer during harvest and delivery.

Table 4-9.—Bering Sea Tanner crab fishing effort by vessel type, 2006/07.

| Year | Vessel Type | Number of | | | Deliveries | Pounds Delivered ^b | Observed Pounds Delivered ^a | % Observed Pounds Delivered |
|----------------------|-------------|----------------------|-----------|------------|------------|-------------------------------|--|-----------------------------|
| | | Vessels ^a | Pot Lifts | Deliveries | | | | |
| 2005/06 ^c | C/V | 41 | 31,394 | 85 | 927,674 | 377,978 | 41.9 | |
| | C/P | 1 | 323 | 2 | 25,213 | 25,213 | 100.0 | |
| | TOTAL | 42 | 31,717 | 87 | 952,887 | 403,191 | 42.3 | |
| 2006/07 ^c | C/V | 55 | 50,621 | 126 | 1,986,778 | 855,345 | 43.1 | |
| | C/P | 3 | 2,893 | 10 | 135,811 | 135,811 | 100.0 | |
| | TOTAL | 58 | 53,514 | 136 | 2,122,589 | 991,156 | 46.7 | |

^aSome vessels harvested Tanner crab both observed and unobserved and are accounted for in both categories.

^bIncludes deadloss.

^cData includes IFQ and CDQ. 2005/06 is the first year of crab rationalization.

Table 4-10.—Bering Sea Tanner crab observer sampling efforts for bycatch and retained catch by vessel type, 2005/06 - 2006/07.

| Year | Vessel Type ^a | Number of | | | % Pot Lifts Sampled | Number of Deliveries | Pounds Delivered ^b |
|----------------------|-------------------------------|-----------|-----------|-------------------|---------------------|----------------------|-------------------------------|
| | | Vessels | Pot Lifts | Pot Lifts Sampled | | | |
| 2005/06 ^c | Unobserved Vessels | 27 | 19,330 | NA | 52 | 549,696 | |
| | Observed Vessels ^c | 15 | 12,387 | 1,629 | 35 | 403,191 | |
| | TOTAL | 42 | 31,717 | 1,629 | 87 | 952,887 | |
| 2006/07 ^c | Unobserved Vessels | 36 | 33,068 | NA | 85 | 1,131,433 | |
| | Observed Vessels ^c | 24 | 20,446 | 421 | 51 | 991,156 | |
| | TOTAL | 58 | 53,514 | 421 | 136 | 2,122,589 | |

^aSome vessels harvested Tanner crab both observed and unobserved and are accounted for in both categories.

^bIncludes deadloss.

^cData includes IFQ and CDQ. 2005/06 is the first year of crab rationalization.

Table 4-11.— Bering Sea snow crab fishing effort by vessel type, 2004 - 2006/07.

| Year | Vessel Type | Number of | | | Deliveries | Pounds Delivered ^a | Observed Pounds Delivered ^a | % Observed Pounds Delivered |
|----------------------|-------------|-----------|-----------|------------|------------|-------------------------------|--|-----------------------------|
| | | Vessels | Pot Lifts | Deliveries | | | | |
| 2004 | C/V | 183 | 106,144 | 229 | 21,504,123 | 2,421,672 | 11.3 | |
| | C/P | 6 | 3,943 | 11 | 666,027 | 666,027 | 100.0 | |
| | CDQ | 10 | 13,622 | 25 | 1,772,222 | 1,772,222 | 100.0 | |
| | TOTAL | 199 | 123,709 | 265 | 23,942,372 | 4,859,921 | 20.3 | |
| 2005 | C/V | 162 | 66,712 | 184 | 22,066,179 | 3,674,096 | 16.7 | |
| | C/P | 6 | 3,151 | 12 | 970,108 | 970,108 | 100.0 | |
| | CDQ | 9 | 3,345 | 23 | 1,855,841 | 1,855,841 | 100.0 | |
| | TOTAL | 177 | 73,208 | 219 | 24,892,128 | 6,500,045 | 26.1 | |
| 2005/06 ^b | C/V | 76 | 105,508 | 306 | 33,650,679 | 11,979,880 | 35.6 | |
| | C/P | 4 | 15,004 | 44 | 3,323,211 | 3,323,211 | 100.0 | |
| | TOTAL | 80 | 120,512 | 350 | 36,973,890 | 15,303,091 | 41.4 | |
| 2006/07 ^b | C/V | 67 | 78,611 | 272 | 32,525,172 | 11,206,761 | 34.5 | |
| | C/P | 4 | 10,808 | 35 | 3,830,477 | 3,830,477 | 100.0 | |
| | TOTAL | 71 | 89,419 | 307 | 36,355,649 | 15,037,238 | 41.4 | |

^aIncludes deadloss.

^bData includes IFQ and CDQ. 2005/06 is the first year of crab rationalization.

Table 4-12.—Bering Sea snow crab observer sampling efforts for bycatch and retained catch by vessel type, 1995–2006/07.

| Year | Vessel Type | Number of ^a | | | Number of | | | | Number of | | | | |
|------|-------------|------------------------|-------------|---------------|----------------------|-----------------|-------------------|---|---|---|--|-------------------------|----------------------------|
| | | Total Vessels | Obs Vessels | % Ob Coverage | Observer Deployments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c | Legal Tallies ^d |
| 1995 | C/V | 234 | 0 | 0.0 | NA | NA | NA | - | NA | NA | NA | NA | NA |
| | C/P | 19 | 19 | 100.0 | 36 | 1,574 | - | - | - | - | 465 | 475 | 475 |
| | F/P | 15 | 15 | 100.0 | 17 | NA | NA | NA | NA | NA | - | - | - |
| | FLEET | 268 | 34 | 12.7 | 53 | 1,574 | 506,802 | - | 0.3 | - | 465 | 475 | 475 |
| 1996 | C/V | 219 | 0 | 0.0 | NA | NA | NA | - | NA | NA | NA | NA | NA |
| | C/P | 15 | 15 | 100.0 | 35 | 1,412 | - | - | - | - | 479 | 494 | 494 |
| | F/P | 13 | 13 | 100.0 | 15 | NA | NA | NA | NA | NA | 246 | 292 | 292 |
| | FLEET | 247 | 28 | 11.3 | 50 | 1,412 | 520,651 | - | 0.3 | - | 725 | 786 | 786 |
| 1997 | C/V | 216 | 0 | 0.0 | NA | NA | 680,725 | NA | NA | NA | NA | NA | NA |
| | C/P | 14 | 14 | 100.0 | 24 | 1,728 | 73,415 | 73,415 | 2.4 | 2.4 | 607 | 621 | 621 |
| | F/P | 11 | 11 | 100.0 | 17 | NA | NA | NA | NA | NA | 440 | 447 | 447 |
| | FLEET | 237 | 25 | 10.5 | 41 | 1,728 | 754,140 | 73,415 | 0.2 | 2.4 | 1,047 | 1,068 | 1,068 |
| 1998 | C/V | 217 | 0 | 0.0 | NA | NA | 825,832 | NA | NA | NA | NA | NA | NA |
| | C/P | 12 | 12 | 100.0 | 21 | 5,872 | 65,436 | 65,436 | 9.0 | 9.0 | 598 | 609 | 609 |
| | F/P | 11 | 11 | 100.0 | 14 | NA | NA | NA | NA | NA | 751 | 762 | 762 |
| | CDQ | 20 | 20 | 100.0 | 60 | 1,726 | 930,843 | 105,011 | 4.4 | 4 | 1,429 | 1,453 | 1,453 |
| | FLEET | 260 | 43 | 16.5 | 35 | 7,598 | 891,268 | 65,436 | 0.9 | 11.6 | 1,349 | 1,371 | 1,371 |
| 1999 | C/V | 231 | 0 | 0.0 | NA | NA | 846,163 | NA | NA | NA | NA | NA | NA |
| | C/P | 10 | 10 | 100.0 | 15 | 1,593 | 52,880 | 52,880 | 3.0 | 3.0 | 694 | 8 | 8 |
| | F/P | 11 | 11 | 100.0 | 12 | NA | NA | NA | NA | NA | 736 | 683 | 683 |
| | CDQ | 276 | 22 | 91.7 | 28 | 789 | 46,490 | 14,131 | 1.7 | 6 | 59 | 46 | 46 |
| | FLEET | 252 | 43 | 17.1 | 55 | 2,382 | 945,533 | 67,011 | 0.3 | 3.6 | 1,489 | 737 | 737 |

- Continued -

Table 4-12.-Page 2 of 3.

| Year | Vessel Type | Number of ^a | | | Number of | | | | % Pot Lifts | | Number of | |
|------|-------------|------------------------|-------------|---------------|-----------------------|-------------------------|---|---|---|--|-------------------------|----------------------------|
| | | Total Vessels | Obs Vessels | % Ob Coverage | Observer Deploy-ments | Observer Months Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c | Legal Tallies ^d |
| 2000 | C/V | 220 | 0 | 0.0 | NA | NA | 161,579 | NA | NA | NA | NA | NA |
| | C/P | 9 | 9 | 100.0 | 10 | 202 | 8,485 | 8,485 | 2.4 | 2.4 | 76 | 60 |
| | F/P | 5 | 5 | 100.0 | 5 | NA | NA | NA | NA | NA | 111 | 91 |
| 2001 | CDQ | 13 | 12 | 92.3 | 12 | 629 | 12,570 | 12,185 | 5.0 | 5 | 32 | 26 |
| | FLEET | 247 | 26 | 10.5 | 27 | 831 | 182,634 | 20,670 | 0.5 | 4.0 | 219 | 177 |
| | C/V | 200 | 7 | 3.5 | 7 | 241 | 159,438 | 4,663 | 0.2 | 5.2 | 7 | 6 |
| 2002 | C/P | 7 | 7 | 100.0 | 10 | 487 | 17,492 | 17,492 | 2.8 | 2.8 | 162 | 83 |
| | F/P | 3 | 3 | 100.0 | 3 | NA | NA | NA | NA | NA | 74 | 64 |
| | CDQ | 11 | 11 | 100.0 | 11 | 771 | 14,270 | 14,270 | 5.4 | 5.4 | 33 | 11 |
| 2003 | FLEET | 221 | 28 | 12.7 | 31 | 1499 | 191,200 | 36,425 | 0.8 | 4.1 | 276 | 164 |
| | C/V | 183 | 10 | 5.5 | 12 | 809 | 292,846 | 16,021 | 0.3 | 5.0 | 29 | 21 |
| | C/P | 8 | 8 | 100.0 | 9 | 509 | 14,820 | 14,820 | 3.4 | 3.4 | 170 | 121 |
| 2003 | F/P | 5 | 5 | 100.0 | 5 | NA | NA | NA | NA | NA | 192 | 105 |
| | CDQ | 11 | 11 | 100.0 | 15 | 1,098 | 18,845 | 17,264 | 5.8 | 6.3 | 12 | 10 |
| | FLEET | 205 | 32 | 15.6 | 41 | 2,416 | 326,511 | 48,105 | 0.7 | 5.0 | 403 | 257 |
| 2003 | C/V | 188 | 18 | 9.6 | 19 | 741 | 136,280 | 12,813 | 0.5 | 5.8 | 20 | 20 |
| | C/P | 5 | 5 | 100.0 | 5 | 129 | 3,623 | 3,623 | 3.6 | 3.6 | 47 | 47 |
| | F/P | 5 | 5 | 100.0 | 6 | NA | NA | NA | NA | NA | 61 | 61 |
| 2003 | CDQ | 10 | 9 | 90.0 | 10 | 746 | 14,583 | 13,519 | 5.1 | 5.5 | 61 | 61 |
| | FLEET | 206 | 35 | 17.0 | 40 | 1,616 | 154,486 | 29,955 | 1.0 | 5.4 | 189 | 189 |

- Continued -

Table 4-12.-Page 3 of 3.

| Year | Vessel Type | Number of ^a | | | Number of | | | Number of | | Number of | | | |
|----------------------|-------------|------------------------|-------------|---------------|----------------------|-----------------|-------------------|---|---|---|--|-------------------------|----------------------------|
| | | Total Vessels | Obs Vessels | % Ob Coverage | Observer Deployments | Observer Months | Pot Lifts Sampled | Pot Lifts on all Vessels by Type ^b | Pot Lifts on all Obs Vessels by Type ^b | % Pot Lifts Sampled by Vessel Type ^b | % Pot Lifts Sampled on Obs Vessel by Type ^b | Size Freq. ^c | Legal Tallies ^d |
| 2004 | C/V | 183 | 19 | 10.4 | 19 | 13.7 | 688 | 106,144 | 11,067 | 0.6 | 6.2 | 19 | 19 |
| | C/P | 6 | 6 | 100.0 | 7 | 3.2 | 159 | 3,943 | 3,943 | 4.0 | 4.0 | 44 | 44 |
| | F/P | 5 | 5 | 100.0 | 5 | 3.2 | NA | NA | NA | NA | NA | 58 | 59 |
| | CDQ | 10 | 10 | 100.0 | 10 | 11.0 | 780 | 13,622 | 13,622 | 5.7 | 5.7 | 61 | 56 |
| | FLEET | 202 | 38 | 18.8 | 41 | 31.1 | 1,627 | 123,709 | 28,632 | 1.3 | 5.7 | 182 | 178 |
| 2005 | C/V | 162 | 13 | 8.0 | 13 | 8.1 | 336 | 66,712 | 5,571 | 0.5 | 6.0 | 18 | 17 |
| | C/P | 6 | 6 | 100.0 | 6 | 3.0 | 91 | 3,151 | 3,151 | 2.9 | 2.9 | 32 | 26 |
| | F/P | 3 | 3 | 100.0 | 4 | 1.9 | NA | NA | NA | NA | NA | 37 | 38 |
| | CDQ | 9 | 9 | 100.0 | 9 | 6.5 | 210 | 3,345 | 3,345 | 6.3 | 6.3 | 48 | 39 |
| | FLEET | 179 | 31 | 17.3 | 32 | 19.5 | 637 | 73,208 | 12,067 | 0.9 | 5.3 | 135 | 120 |
| 2005/06 ^e | C/V | 76 | 28 | 36.8 | 31 | 40.4 | 1,997 | 105,508 | 37,256 | 1.9 | 5.4 | 104 | 95 |
| | C/P | 4 | 4 | 100.0 | 7 | 11.0 | 586 | 15,004 | 15,004 | 3.9 | 3.9 | 208 | 197 |
| | F/P | 2 | 2 | 100.0 | 3 | 5.1 | NA | NA | NA | NA | NA | 32 | 32 |
| 2006/07 ^e | FLEET | 82 | 34 | 41.5 | 41 | 56.5 | 2,583 | 120,512 | 52,260 | 2.1 | 4.9 | 344 | 324 |
| | C/V | 67 | 24 | 35.8 | 31 | 31.8 | 870 | 78,611 | 28,201 | 1.1 | 3.1 | 80 | 70 |
| | C/P | 4 | 4 | 100.0 | 9 | 10.0 | 248 | 10,808 | 10,808 | 2.3 | 2.3 | 181 | 157 |
| | F/P | 2 | 2 | 100.0 | 3 | 4.1 | NA | NA | NA | NA | NA | 49 | 56 |
| | FLEET | 73 | 30 | 41.1 | 43 | 45.9 | 1,118 | 89,419 | 39,009 | 1.3 | 2.9 | 310 | 283 |

^aSome vessels participated as both a C/P and F/P, but are counted once in the total number of vessels.

^bInformation is not available for 1995 - 1996.

^cSize frequency sample taken on retained catch; each data set typically consists of 100 crab. Information is not available for 1995.

^dEach legal tally typically consists of 600 crab. Information is not available for 1995.

^eSince 2005/06 the harvest and sample data includes IFQ and CDQ information combined. Prior to crab rationalization in 2005, CDQ data was reported separately.

NA = not applicable.

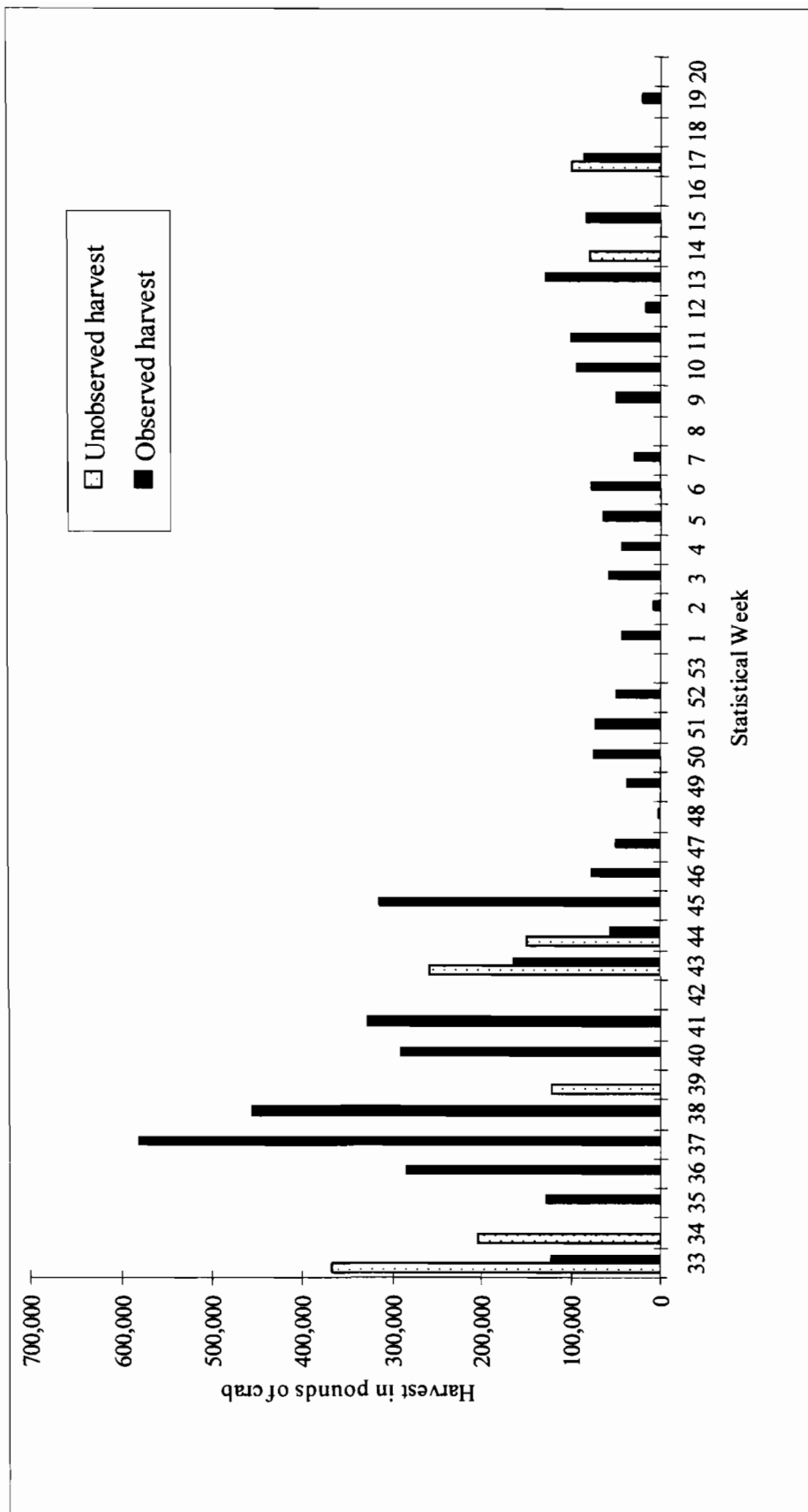


Figure 4-1.—Comparison of observed harvest to unobserved harvest during statistical weeks August 15, 2006 to May 15, 2007 combining harvest from both east and west of 174° W longitude in the Aleutian Islands golden king crab fishery, 2006/07.

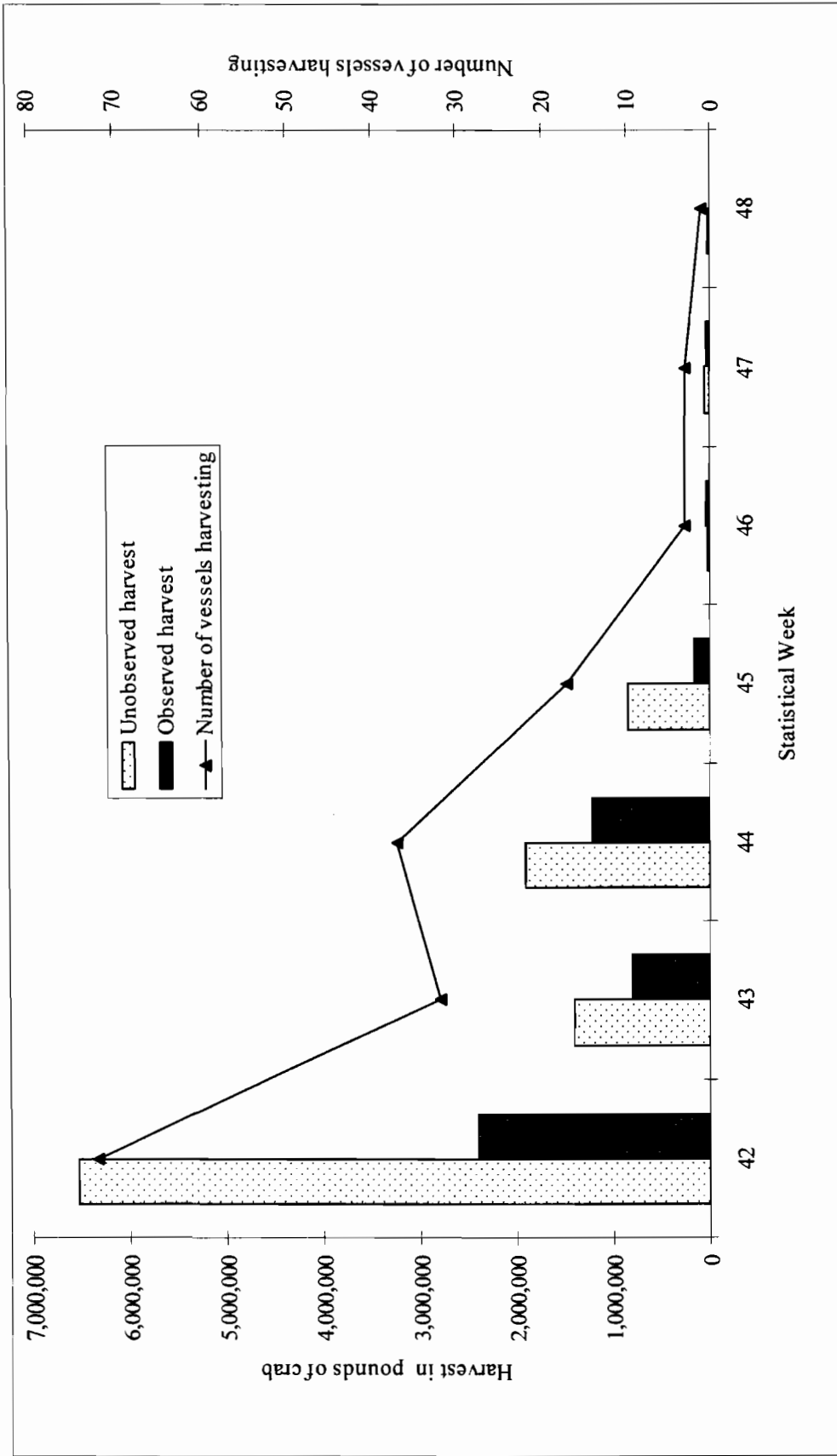


Figure 4-2.—Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks October 15, 2006 to December 6, 2006 in the Bristol Bay red king crab fishery, 2006/07.

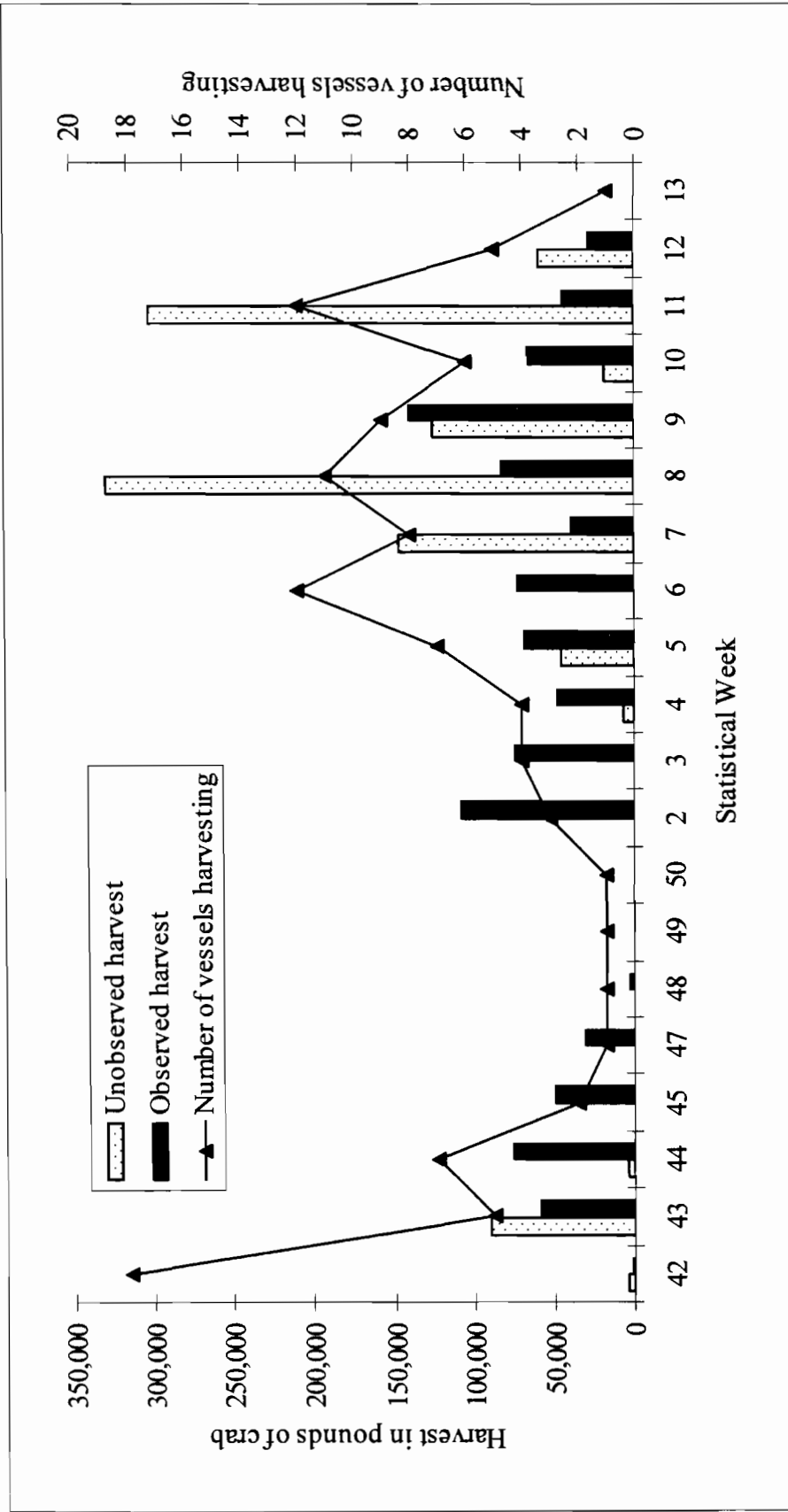


Figure 4-3.—Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks October 15 to December 16, 2006, and January 1 to March 31, 2007 in the Bering Sea Tanner crab fishery, 2006/07.

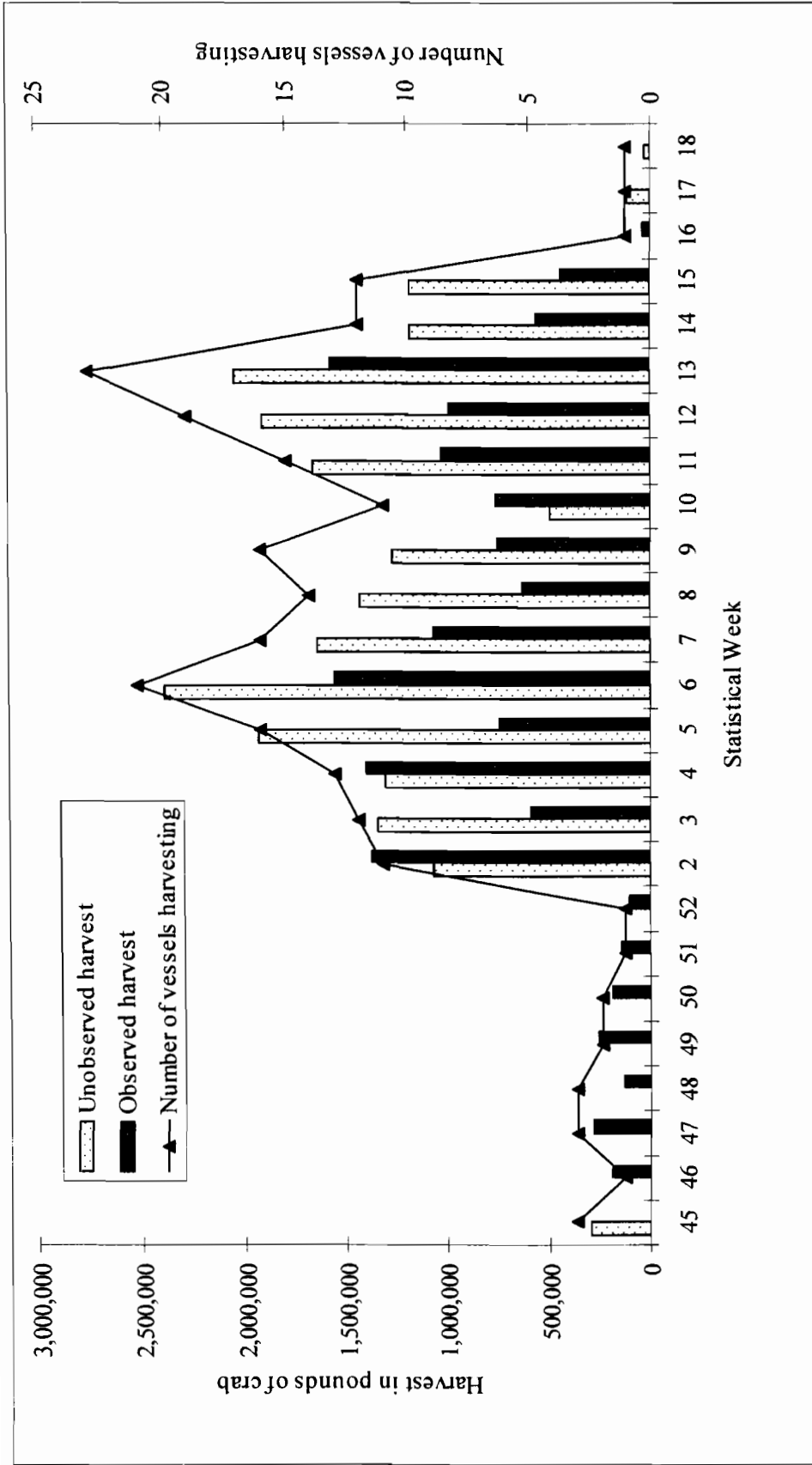


Figure 4-4. Comparison of observed harvest to unobserved harvest, and total vessels harvesting during statistical weeks November to December 31, 2006, and January 8 to May 6, 2007 in the Bering Sea snow crab fishery, 2006/07.

FEDERAL REQUIREMENTS FOR STATE OF ALASKA
MANAGEMENT MEASURES UNDER THE AUSPICES OF THE
FISHERY MANAGEMENT PLAN FOR BERING SEA/ALEUTIAN
ISLANDS KING AND TANNER CRABS:
A REPORT TO THE ALASKA BOARD OF FISHERIES



By

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Regional Information Report Number 5J99-03
Alaska Department of Fish and Game
Division of Commercial Fisheries
P.O. Box 25526
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February 27, 1999

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Introduction

Crab fisheries of the Bering Sea/Aleutian Islands (BS/AI) area are managed under a federal fishery management plan (FMP) for BS/AI king and Tanner crabs. The original FMP (NPFMC 1989) was recently revised (NPFMC 1998). The FMP specifies a cooperative state-federal management approach that defers much of the management to the State, while the most controversial measures are fixed in the FMP and require a plan amendment to change.

When adopting State regulations for BS/AI crab fisheries, the Alaska Board of Fisheries (Board) must consider and discuss on the record the FMP goal and all of the objectives, the National Standards of the Magnuson-Stevens Fishery Conservation and Management Act (NMFS 1996), and other applicable federal law. In addition, the Secretary of Commerce published the National Standards Guidelines to assist in the development of FMPs. The crab FMP specifies that the State will provide written explanations of the reasons for its decisions concerning management of crab fisheries. It also specifies that representatives from the North Pacific Fishery Management Council (Council), National Marine Fisheries Service, and NOAA General Counsel will participate in the State's development of regulations for management of king and Tanner crabs in the BS/AI area, including direct participation in the Board meeting for the purpose of assisting the State in determining the extent to which proposed management measures are consistent with the FMP, Magnuson-Stevens Act and its National Standards, and other applicable federal law.

This report is intended to aid the Board in their deliberations at their March 1999 meeting by providing a concise summary of these considerations. It is a revised version of a previous report (Murphy 1997) that has been substantially modified and updated by the junior author in part to reflect recent revisions to the FMP. Although much of the text has been excerpted from the FMP, the FMP should be directly consulted for complete descriptions and explanations.

FMP Management Goal

The management goal in the FMP is to maximize the overall long-term benefit to the nation of BS/AI king and Tanner crab stocks by coordinated Federal and State management, consistent with responsible stewardship for conservation of the crab resources and their habitats.

FMP Management Objectives

The FMP provides seven management objectives as summarized below:

1. Biological Conservation Objective: *Ensure the long-term reproductive viability of king and Tanner crab populations.*

To ensure continued reproductive viability through protection of reproductive potential, management must prevent overfishing. The maintenance of adequate reproductive potential in each crab stock will take precedence over economic and social considerations.

2. Economic and Social Objective: *Maximize economic and social benefits to the nation over time.*

Economic benefits are broadly defined to include, but are not limited to, profits, income, employment, benefits to consumers, and less tangible or less quantifiable social benefits such as the economic stability of coastal communities. To ensure that economic and social benefits derived for fisheries covered by this FMP are maximized over time, the following will be examined in the selection of management measures:

- a. The value of crab harvested (adjusted for the amount of crab dying prior to processing and discarded, known as deadloss) during the season for which management measures are considered;
- b. The future value of crab, based on the value of a crab as a member of both the parent and harvestable stock;
- c. Subsistence harvests within the registration area; and
- d. Economic impacts on coastal communities.

This examination will be accomplished by considering, to the extent that data allow: the impact of management alternatives on the size of the catch during the current and future seasons and their associated prices, harvesting costs, processing costs, and employment; the distribution of benefits among members of the harvesting, processing, and consumer communities; and management costs and other factors affecting the ability to maximize the economic and social benefits as defined in this section.

Social benefits are tied to economic stability and impacts of commercial fishing associated with coastal communities. While social benefits can be difficult to quantify, economic indices may serve as proxy measures of the social benefits that accrue from commercial fishing. Social and economic impacts of BS/AI crab fisheries on coastal communities can be quite significant and must be considered in attempts to attain the economic and social objective. Subsistence harvests must also be considered to ensure that subsistence requirements are met as required by law.

3. Gear Conflict Objective: *Minimize gear conflict among fisheries.*

Management measures developed for the king and Tanner crab fisheries will take into account the interaction of those fisheries, and the people engaged in them, with other fisheries.

4. Habitat Objective: *Preserve the quality and extent of suitable habitat.*

The quality and availability of habitat supporting the BS/AI area king and Tanner crab populations are important. Fishery managers should strive to ensure that optimal habitat is available for juvenile and breeding, as well as exploitable, segments of the population. It also will be important to consider the potential impacts of crab fisheries on other fish and shellfish populations.

5. Vessel Safety Objective: *Provide public access to the regulatory process for vessel safety considerations.*

Upon request, and when appropriate, the Council and the State shall consider, and may provide for, temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented because of weather and other ocean conditions affecting the safety of vessels.

6. Due Process Objective: *Ensure that access to the regulatory process and opportunity for redress are available to interested parties.*

In order to attain the maximum benefit to the nation, the interrelated biological, economic and social, habitat, and vessel safety objectives outlined above must be balanced among one another. A continuing dialogue between fishery managers, fishery scientists, fishermen, processors, consumers, and other interested parties is necessary to keep this balance.

7. Research and Management Objective: *Provide fisheries research, data collection, and analysis to ensure a sound information base for management decisions.*

Necessary data must be collected and analyzed in order to measure progress relative to other objectives and to ensure that management actions are adjusted to reflect new knowledge. Achieving the objective will require new and ongoing research and analysis relative to stock conditions, dynamic feedback to market conditions, and adaptive management strategies.

FMP Management Measures

The FMP defers much of the management of the BS/AI crab fisheries to the State of Alaska using the following three categories of management measures:

Category 1: Federal management measures fixed by the FMP.

Category 2: Framework management measures (the State can change them following criteria set out in the FMP).

Category 3: Management measures deferred to the State.

FMP management measures are summarized by category in Table 1.

Table 1. Management measures for king and Tanner crab fisheries in the BS/AI management unit by category.

| Category 1 (Fixed in FMP) | Category 2 (Frameworked in FMP) | Category 3 (Discretion of State) |
|---|---|--|
| Legal Gear | Minimum Size Limits | Reporting Requirements |
| Permit Requirements | Guideline Harvest Levels | Gear Placement and Removal |
| Federal Observer Requirements | Inseason Adjustments | Gear Storage |
| Limited Access | Districts, Subdistricts, and Sections | Vessel Tank Inspection |
| Norton Sound Super-Exclusive Registration | Fishing Seasons | Gear Modifications |
| | Sex Restrictions | Bycatch Limits (in crab fisheries) |
| | Pot Limits | State Observer Requirements |
| | Registration Areas | Other |
| | Closed Waters | |

Management measures in category 1 may be addressed through a plan amendment to the North Pacific Fishery Management Council (NPFMC). As such, they are not under the discretion of the State of Alaska and are not discussed further in this report. A description of these measures is provided in the FMP. Management measures in categories 2 and 3 may be adopted under State laws subject to the appeals process specified in the FMP and are discussed further in this report.

Category 2 – Framework Management Measures

Minimum Size Limits

Under the FMP, the State can adjust size limits within the constraints of available information on:

1. Size at maturity (physiological, morphometric, or functional);
2. Protection of reproductive capability;
3. Market and other economic considerations;
4. Natural and discard mortality rates;
5. Growth rates; and
6. Yield per recruit.

Biological considerations, such as 1, 2, and 4-6, are used to establish minimum legal size limits to ensure that conservation needs are served. Preference for larger crabs based upon market and other economic considerations is accommodated by industry rather than through regulation. A change in minimum size limits requires an analysis with appropriate documentation.

Minimum size limits may be set at various intervals above the average size of maturity depending on a species' life history pattern. In developing fisheries with insufficient information, there may be no size limit set.

Guideline Harvest Levels

The FMP authorizes the State to set preseason guideline harvest levels (GHLs) under State regulations. Seasons or areas may be closed when the GHL is reached, or current inseason information may be used to close them prior to or after reaching the GHL. The following factors are approved and will be considered to the extent information is available when establishing GHLs:

1. Estimates of exploitable biomass;
2. Estimates of recruitment;
3. Estimates of threshold;
4. Estimates of maximum sustainable yield (MSY) or optimum yield (OY); and

5. Market and other economic considerations.

The GHL is the result of a process that includes the examination of the effects of different harvesting strategies on the seven objectives of management listed previously. While harvest strategies will be evaluated relative to all seven objectives, GHL will most frequently be used as a management measure to achieve only the first two objectives. For this reason, the GHL is primarily composed of two interrelated components: a biological component and a socioeconomic component.

The biological component, acceptable biological catch (ABC), is set to achieve the biological conservation objective of preventing overfishing. The ABC serves as the upper-bound constraint on harvest because maintenance of adequate reproductive potential takes precedence over economic and social considerations. Having specified an ABC, a GHL must be chosen to be less than or equal to the ABC. The target harvest level is to maximize the anticipated discounted benefits to the fishery over the long term. These benefits include profits, personal income, employment, benefits to consumers, and less tangible or less quantifiable social benefits such as the economic stability of coastal communities.

Exact procedures for determining appropriate ABCs and GHLs vary between crab resources in the BS/AI area due to differences in the quality and quantity of resource databases. Information necessary to evaluate the federally approved factors (1-5 above) for establishing GHLs includes data from trawl surveys, pot surveys, fishery performance statistics (catch per unit effort), price, personal income, employment, and other market and economic data.

Inseason Adjustments

The FMP authorizes the State to make inseason adjustments to GHLs, to fishing period lengths, and to close areas under State regulations. When making inseason adjustments, the State shall consider the following inseason data to the extent it is available:

1. Overall fishing effort;
2. Catch per unit effort and rate of harvest;
3. Relative abundance of king or Tanner crab;
4. Achievement of GHLs;
5. Proportion of soft-shelled crabs and rate of deadloss;
6. General information on stock condition;
7. Timeliness and accuracy of catch reporting;
8. Adequacy of subsistence harvest; and
9. Other factors that affect ability to meet the FMP objectives.

When an unanticipated event occurs that affects preseason predictions, or a preseason prediction proves to be incorrect, compensatory inseason adjustments must be made to keep the management system on track toward meeting the biological and economic objectives of the FMP. All inseason adjustments must be recorded, justified in writing, and attached to the emergency order for review by the public, the State, NMFS, and other regulatory agencies.

District, Subdistrict, and Section Boundaries

The FMP authorizes the State to adjust district, subdistrict, and section boundaries on the basis of any of the following criteria:

1. If the area contains a reasonably distinct stock of crab that requires a separate GHL estimate to avoid possible overharvest;
2. If the stock requires a different size limit from other stocks in the registration area;
3. If different timing of molting and breeding requires a different fishing season;
4. If estimates of fishing effort are needed preseason so that overharvest can be prevented; or
5. If part of an area is relatively unutilized and unexplored, and if creation of a new district, subdistrict, or section will encourage exploration and utilization.

Fishing Seasons

Fisheries are closed during sensitive biological periods to protect crab from mortality caused by handling and stress when shells are soft, and to maximize meat recovery by delaying harvest until the shells have filled out. Fisheries conducted during sensitive biological periods should prevent any irreparable damage to the stocks.

Within biological constraints, the open fishing season is set:

1. To minimize deadloss;
2. To produce the best quality product;
3. To minimize fishing during severe weather conditions;
4. To minimize the cost of industry operations;
5. To coordinate the king and Tanner crab fisheries with other fishery demands on the same harvesting, processing, and transportation systems; and
6. To reduce the cost of enforcement and management before, during and after the season, both of which are affected by the timing and area of fisheries for king and Tanner crabs and other resources.

Sex Restrictions

West coast crab fisheries harvest only male crab, a restriction that is assumed to contribute to maximum reproductive potential. Under the FMP, unless a surplus is determined to be available, female crabs cannot be taken. There have been some recent studies indicating that there are probably surplus female crab which can be taken when stock levels are high. However, the accumulative effects of a female harvest and the subsequent environmental impacts have not been evaluated. When a surplus of crabs is shown to exist, the FMP authorizes an experimental harvest under a State permit if fishermen provide accurate documentation of harvest rates and location, and processing and marketing results are made available to the management agency.

Pot Limits

The FMP authorizes the State to use pot limits to attain the biological conservation objective and the economic and social objective of the FMP. When establishing pot limits, the State can consider, within constraints of available information:

1. Total vessel effort relative to GHJ;
2. Probable concentrations of pots by area;
3. Potential for conflict with other fisheries;
4. Potential for handling mortality of target or nontarget species;
5. Adverse effects on vessel safety, including hazards to navigation;
6. Enforceability of pot limits; and
7. Analysis of the effects on industry.

The FMP sets standards for the adoption of pot limits. Pot limits must be designed in a nondiscriminatory manner. For example, pot limits that are a function of vessel size can be developed which affect large and small vessels equally. Historic data on pot registration and length overall could be used for developing pot limit regulations.

The Secretary of Commerce, after a review of the pot limits adopted by the Board in 1992, concluded that the nondiscriminatory language in the FMP requires the economic burden imposed by pot limits to be shared equally by large and small vessels alike.

Only special types of situations warrant the use of pot limits. There are at least two such cases:

1. Restrict deployment of excessive amounts of gear to attain the biological conservation objective in the event of pot loss from advancing ice cover.

2. Restrict excessive amounts of gear to allow a small guideline harvest level from a depressed stock to attain the economic and social objective within biological conservation constraints.

Registration Areas

The FMP adopts existing State registration areas within the BS/AI fishery management unit. The management unit is divided by the State into three king crab registration areas - Bering Sea, Bristol Bay, and Aleutian Islands and one Tanner crab registration area - Westward.

Registration areas may be further divided into fishing districts, subdistricts, and sections for purposes of management and reporting. State regulations require vessels to register for fishing in these areas, and may require vessels to register for specific districts within a registration area.

King crab registration areas within the management unit are designated as either exclusive or nonexclusive. Vessels can register for any one exclusive area but cannot fish in any other exclusive area during the registration year. Vessels can fish any or all nonexclusive areas.

Designation of an area or district as exclusive must be supported by a written finding by the State that considers the extent to which the designation will:

1. Facilitate proper management of the fishery;
2. Help provide vessels with a reasonable opportunity to participate in the fishery;
3. Avoid sudden economic dislocation;
4. Encourage efficient use of vessels and gear;
5. Result in economic benefits offset by economic costs and inefficiencies; and
6. Yield results that could be attained by other management measures.

The FMP describes examples of situations in which the designation and maintenance of the exclusive registration area might be appropriate which are summarized as follows:

1. Sequential season openings that give an advantage to highly mobile vessels;
2. Timing of price settlements;
3. Historic utilization by a fleet with limited mobility;
4. Vessel effort shifts due to seasonal crab availability;
5. Rapid growth and advancement in fishing efficiency that increases the potential for overharvest;
6. Small vessel fleet with restricted carrying capacity requires a longer fishing period to ensure safety during bad weather;

7. Small vessel fleet with a limited ability to transport quantities of pot gear safely; and
8. Multiple discrete harvestable stocks within the area.

Closed Waters

The FMP recognizes the current State regulations that prohibit commercial fishing for king crab in waters within 10 miles of mean lower low water around St. Lawrence, King, and Little Diomed Islands. The FMP also recognizes the State closure to protect the Norton Sound subsistence king crab fishery.

The State may designate new closed water areas or expand or reduce existing State closed water areas. When making such changes, the State shall consider the following appropriate factors:

1. The need to protect subsistence fisheries;
2. The need to protect critical habitat for target or nontarget species;
3. The prevention of conflict between harvesting of species; and
4. The creation of navigational hazard.

Category 3 - Management Measures Deferred to State

Reporting Requirements

Current State reporting requirements include:

1. Reporting the company or individual that purchased the catch;
2. The full name and signature of the permit holder;
3. The vessel that landed it with its license plate number;
4. The type of gear used;
5. The amount of gear (number of pots, pot lifts);
6. The weight and number of crab landed including deadloss;
7. The dates of landing and capture; and
8. The location of capture.

Processing companies are required to report this information for each landing purchased, and vessel operators are required to provide information to the processor at the time of sale. All reports (fish tickets) are confidential.

Gear Placement and Removal

Placement of unbaited gear, with doors secured open, on the fishing grounds before and after a season has been allowed within certain limits. Such early placement or late removal has been justified in light of the following considerations:

1. Its lack of biological impacts;
2. Enforcement problems and costs borne by the public and the industry;
3. Lack of potential gear conflict;
4. The unavailability of loading or unloading facilities and gear storage areas;
5. Vessel safety;
6. Increasing the competitiveness of smaller vessels; and
7. Decreasing the fishing costs.

Gear Storage

Crab pots are generally stored on land or in designated storage areas at sea. Storage in a nonfishing condition in ice-free water areas of low crab abundance has been justified based on the following considerations:

1. Expected biological impacts;
2. Potential enforcement costs to the public;
3. Costs to vessel owners of storage on land;
4. Availability of other land and sea storage areas; and
5. The possibility that it would lead to gear conflict.

Vessel Tank Inspections

Vessel tank (or live-hold) and freezer inspections are required before the opening of a king or Tanner crab fishing season to meet the legal requirements of the State's landing laws, provide effort information, and provide for a fair start to the fishery. The State normally considers the following factors when determining whether inspections should be required:

1. Enforcement requirements;
2. Ability of vessels to move easily between the fishing grounds and the location of inspection centers;
3. Time necessary for the vessels to transport their gear from storage areas to fishing grounds;
4. Fuel consumption that the inspection requirement will cause; and
5. Equity of allowing all participants to start the fishery at substantially the same time.

Gear Modifications

Pots are the specified legal commercial gear for capturing crab in the BS/AI area. State regulations require escape rings or mesh panels in pots used in the BS/AI Tanner, snow, and golden (brown) king crab fisheries, in the Bristol Bay red king crab fishery, and in the Pribilof District king crab fishery. State regulations also require incorporation of biodegradable twine as an escape

mechanism on all pots which will terminate a pot's catching and holding ability in case the pot is lost.

Bycatch Limits

The State may implement limits on crab bycatch in crab fisheries managed under the FMP. Often, regulation of bycatch in the directed fishery involves no, or limited, allocation because the same fishermen participate in both fisheries.

State Observer Requirements

The State may place observers aboard crab fishing and/or processing vessels when the State finds that observers provide the only practical mechanism to obtain essential biological and management data or when observers provide the only effective means to enforce regulations. The State currently requires onboard observer on all catcher/processor or floating-processor vessels participating in the king, Tanner, and snow crab fisheries. Observers are also required on all vessels participating in the Aleutian Islands king crab fisheries and some other fisheries as a condition of obtaining a permit to fish.

Other

State government is not limited to only the management measures described in the FMP. Implementation of other management measures not described in the FMP must be consistent with the FMP, the Magnuson-Stevens Act, and other applicable federal laws, and may occur only after consultation with the Council. Other management measures the State may implement are subject to the review and appeals procedures described in the FMP.

Procedure to Appeal Actions by the State

The FMP describes in detail the process whereby individuals may appeal actions taken by the State concerning crab management in the BS/AI area. FMP crab regulations adopted by the Board are subject to an administrative appeal process for review by the Secretary of Commerce. The applicant must first petition the Board to reconsider its regulation. If the applicant receives an adverse ruling, it will be reviewed by the Crab Interim Action Committee for comment to the Secretary. Secretarial review is limited to whether the challenged regulation is consistent with the FMP, Magnuson-Stevens Act, and other applicable federal law. If the Secretary determines that the regulation is inconsistent with the FMP, the Secretary may supersede the regulation by publishing a federal rule for the thirty-day comment period or immediately publishing an interim final rule.

Magnuson-Stevens Act National Standards

Regulatory measures for crab in federal waters must be consistent with the following national standards of the Magnuson-Stevens Fishery Conservation and Management Act (NMFS 1996):

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be:
 - a. Fair and equitable to all such fishermen;
 - b. Reasonably calculated to promote conservation; and
 - c. Carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; no such measure shall have economic allocation as its sole purpose.
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid necessary duplication.
8. Conservation and management measures shall, consistent with the conservation requirements of this act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to:

- a. Provide for the sustained participation of such communities; and
 - b. To the extent practicable, minimize adverse economic impacts on such communities.
9. Conservation and management measures shall, to the extent practicable:
- a. Minimize bycatch; and
 - b. To the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Other Applicable Federal Law

Regulatory Flexibility Act (5 U.S.C. 601 et seq.):

Under this Act agencies must endeavor to fit regulatory and informational requirements to the scale of the business. To achieve this, the agency should solicit and seriously consider flexible regulatory proposals. This requires the agency to recognize differences in scale and size of the regulated entities, and to consider regulations that do not impose undue burden on small businesses.

Executive Order 12866, dated September 30, 1993 (superseding EO 12291):

To achieve the purpose of the Regulatory Flexibility Act, EO 12866 directs agencies to promulgate only necessary regulations and to assess all costs and benefits of available regulatory alternatives, including not regulating, and providing economic incentives to encourage the desired behavior. The agency should choose the regulatory approach that maximizes net benefits, including economic, environmental, public health and safety, distributive impacts, equity, and where the agency has determined that the benefits of the intended regulation justify its costs.

The agency shall base its decision on the best reasonably obtainable scientific, technical, economic and other information concerning the need for, and consequences of, the intended regulation.

Acknowledgments

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Fishery Management Report No. 07-43

**Annual Management Report for the Shellfish Fisheries
of the Kodiak, Chignik, and Alaska Peninsula Areas,
2006**

**Lynn A. Mattes
and
Kally Spalinger**

July 2007

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | at | @ | standard length | SL |
| kilogram | kg | compass directions: | | total length | TL |
| kilometer | km | east | E | | |
| liter | L | north | N | Mathematics, statistics | |
| meter | m | south | S | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | west | W | alternate hypothesis | H _A |
| millimeter | mm | copyright | © | base of natural logarithm | e |
| | | corporate suffixes: | | catch per unit effort | CPUE |
| Weights and measures (English) | | Company | Co. | coefficient of variation | CV |
| cubic feet per second | ft ³ /s | Corporation | Corp. | common test statistics | (F, t, χ^2 , etc.) |
| foot | ft | Incorporated | Inc. | confidence interval | CI |
| gallon | gal | Limited | Ltd. | correlation coefficient (multiple) | R |
| inch | in | District of Columbia | D.C. | correlation coefficient (simple) | r |
| mile | mi | et alii (and others) | et al. | covariance | cov |
| nautical mile | nmi | et cetera (and so forth) | etc. | degree (angular) | ° |
| ounce | oz | exempli gratia | e.g. | degrees of freedom | df |
| pound | lb | (for example) | | expected value | E |
| quart | qt | Federal Information Code | FIC | greater than | > |
| yard | yd | id est (that is) | i.e. | greater than or equal to | ≥ |
| | | latitude or longitude | lat. or long. | harvest per unit effort | HPUE |
| Time and temperature | | monetary symbols | | less than | < |
| day | d | (U.S.) | \$, ¢ | less than or equal to | ≤ |
| degrees Celsius | °C | months (tables and figures): first three letters | Jan., ..., Dec | logarithm (natural) | ln |
| degrees Fahrenheit | °F | registered trademark | ® | logarithm (base 10) | log |
| degrees kelvin | K | trademark | ™ | logarithm (specify base) | log ₂ , etc. |
| hour | h | United States (adjective) | U.S. | minute (angular) | ' |
| hour | h | United States of America (noun) | USA | not significant | NS |
| minute | min | U.S.C. | United States Code | null hypothesis | H ₀ |
| second | s | U.S. state | use two-letter abbreviations (e.g., AK, WA) | percent | % |
| Physics and chemistry | | | | probability | P |
| all atomic symbols | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| alternating current | AC | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| ampere | A | | | second (angular) | " |
| calorie | cal | | | standard deviation | SD |
| direct current | DC | | | standard error | SE |
| hertz | Hz | | | variance | |
| horsepower | hp | | | population | Var |
| hydrogen ion activity (negative log of) | pH | | | sample | var |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

FISHERY MANAGEMENT REPORT NO. 07-43

**ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES
OF THE KODIAK, CHIGNIK, AND ALASKA PENINSULA AREAS, 2006**

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TABLE OF CONTENTS

| | Page |
|---|-------------|
| TABLE OF CONTENTS | i |
| LIST OF TABLES | v |
| LIST OF FIGURES..... | vi |
| ABSTRACT..... | 1 |
| INTRODUCTION..... | 1 |
| Kodiak Area | 1 |
| Alaska Peninsula Area..... | 1 |
| TANNER CRAB..... | 2 |
| Introduction | 2 |
| Kodiak District | 2 |
| Description of the District | 2 |
| Overview of Fishery Regulations | 2 |
| Historic Background..... | 2 |
| Overview of the 2005/06 Kodiak District Tanner Crab Season | 4 |
| Northeast Section Fishery..... | 4 |
| Eastside Section Fishery | 5 |
| Southeast Section Fishery..... | 5 |
| Southwest Section Fishery..... | 6 |
| Semidi Island Overlap Section Fishery | 6 |
| 2006 Docksides Sample Statistics..... | 7 |
| Status of Kodiak District Tanner Crab Stock | 7 |
| Chignik District | 7 |
| Description of the District | 7 |
| Overview of Fishery Regulations | 7 |
| Historic Background..... | 8 |
| Overview of the 2005/06 Chignik District Tanner Crab Season | 8 |
| Castle, Chignik, and Kuiukta (Dorner) Bays | 8 |
| Ivanof and Mitrofanina | 9 |
| 2006 Docksides Sample Statistics..... | 9 |
| Status of Chignik District Tanner Crab Stock | 9 |
| South Peninsula District | 9 |
| Description of the District | 9 |
| Overview of Fishery Regulations | 10 |
| Historic Background..... | 10 |
| Overview of the 2005/06 South Peninsula District Tanner Crab Season | 11 |

TABLE OF CONTENTS (Continued)

| | |
|---|-----------|
| 2006 Docksides Sample Statistics | 11 |
| Status of South Peninsula District Tanner Crab Stock | 12 |
| DUNGENESS CRAB | 12 |
| Introduction | 12 |
| Kodiak District | 12 |
| Description of the Area | 12 |
| Overview of Fishery Regulations | 12 |
| Historic Background | 12 |
| 2006/07 Kodiak District Dungeness Crab Season | 13 |
| Chignik District | 13 |
| Description of the District | 13 |
| Overview of Fishery Regulations | 14 |
| 2006/07 Chignik District Dungeness Crab Season | 14 |
| Alaska Peninsula District | 14 |
| Description of the District | 14 |
| Overview of Fishery Regulations | 14 |
| Historic Background | 14 |
| 2006/07 Alaska Peninsula District Dungeness Crab Fishery | 14 |
| Status of Kodiak, Alaska Peninsula, and Chignik Districts Dungeness Crab Stocks | 14 |
| KING CRAB | 15 |
| General Red King Crab Information | 15 |
| General Golden King Crab Information | 15 |
| Kodiak Area | 15 |
| Description of the Area | 15 |
| Red King Crab | 16 |
| Overview of Fishery Regulations | 16 |
| Historic Background | 16 |
| Status of Kodiak Area Red King Crab Stocks | 16 |
| Golden King Crab | 17 |
| Overview of Fishery Regulations | 17 |
| Historic Background | 17 |
| 2006 Kodiak Area Golden King Crab Fishery | 17 |
| Status of Kodiak Area Golden King Crab Stock | 17 |
| Alaska Peninsula Area | 17 |
| Description of the Area | 17 |
| Red King Crab | 17 |
| Overview of Fishery Regulations | 17 |
| Historic Background | 18 |
| Status of Alaska Peninsula Area Red King Crab Stocks | 18 |

TABLE OF CONTENTS (Continued)

| | |
|--|----|
| Golden King Crab | 18 |
| Overview of Fishery Regulations | 18 |
| Historic Background..... | 18 |
| 2006 Alaska Peninsula Area Golden King Crab Fishery | 18 |
| Status of Alaska Peninsula Area Golden King Crab Stock | 18 |
| SHRIMP | 19 |
| Shrimp Trawl Fishery Introduction | 19 |
| Shrimp Pot Fishery Introduction | 19 |
| Kodiak District | 19 |
| Description of the District | 19 |
| Historic Background..... | 19 |
| Overview of Fishery Regulations | 20 |
| 2006/07 Kodiak District Shrimp Pot and Trawl Seasons | 21 |
| Status of Kodiak District Shrimp Stocks | 21 |
| South Peninsula and Chignik Districts | 21 |
| Description of the Districts | 21 |
| Historic Background..... | 21 |
| Overview of Fishery Regulations | 22 |
| 2006/07 South Peninsula and Chignik Districts Shrimp Pot and Trawl Season..... | 22 |
| Status of South Peninsula and Chignik Districts Shrimp Stocks | 22 |
| RED SEA CUCUMBER | 22 |
| Introduction | 22 |
| Kodiak and Chignik Districts | 23 |
| Description of the Districts | 23 |
| Historic Background..... | 23 |
| 2006/07 Kodiak and Chignik Districts Red Sea Cucumber Season | 24 |
| 2006 Dockside Sample Statistics..... | 24 |
| Status of Kodiak and Chignik Districts Red Sea Cucumber Stocks | 24 |
| South Peninsula District | 25 |
| Description of the District | 25 |
| Historic Background..... | 25 |
| 2006/07 South Peninsula District Red Sea Cucumber Season | 25 |
| Status of South Peninsula District Red Sea Cucumber Stocks | 25 |
| GREEN SEA URCHINS..... | 25 |
| Introduction | 25 |
| Historic Background..... | 25 |
| 2006/07 Green Sea Urchin Season | 26 |
| Status of Green Sea Urchin Stocks..... | 26 |
| OCTOPUS..... | 26 |
| Introduction | 26 |
| Historic Background..... | 26 |

TABLE OF CONTENTS (Continued)

| | |
|---|----|
| 2006 Kodiak District Octopus Fishery | 27 |
| 2006 Alaska Peninsula and Chignik Districts Octopus Fisheries | 27 |
| Status of Kodiak, Chignik, and Alaska Peninsula Districts Octopus Stocks | 27 |
| RAZOR CLAMS | 27 |
| Historic Background..... | 28 |
| 2006 Razor Clam Season | 28 |
| Status of Kodiak, Chignik, and Alaska Peninsula Districts Razor Clam Stocks | 28 |
| OTHER MISCELLANEOUS SHELLFISH FISHERIES | 28 |
| ACKNOWLEDGMENTS | 28 |
| REFERENCES CITED | 29 |
| TABLES AND FIGURES | 31 |

LIST OF TABLES

| Table | Page |
|---|------|
| 1. Shellfish emergency orders issued for the Kodiak Area, 2006. | 32 |
| 2. Shellfish emergency orders issued for the Alaska Peninsula Management Area, 2006..... | 33 |
| 3. Tanner crab commercial catch, effort, and value for the Kodiak District, 1967 – 2005/06. | 34 |
| 4. Tanner crab guideline harvest level, effort, and harvest, including deadloss and personal use, by section for the Kodiak District, 2003/04 – 2005/06. | 35 |
| 5. Kodiak, Chignik, and South Peninsula districts Tanner crab guideline harvest levels and season dates, 2005/06. | 36 |
| 6. Tanner crab commercial catch, including deadloss and personal use, effort, and value for the Chignik District, 1968 – 2005/06..... | 37 |
| 7. Tanner crab commercial catch, including deadloss and personal use, effort, and value for the South Peninsula District, 1967-2005/06..... | 38 |
| 8. Dungeness crab commercial catch, effort, and value for the Kodiak District, 1962 – 2006/07..... | 39 |
| 9. Harvest, vessels, and landings by statistical area from the Kodiak District Dungeness crab fisheries, 2003/04 – 2006/07. | 41 |
| 10. Dungeness crab commercial catch, effort, and value for the Alaska Peninsula and Chignik districts combined, 1968 – 2006/07..... | 42 |
| 11. Red king crab commercial catch, effort, and value for the Kodiak Area, 1960/61 – 2006/07. | 43 |
| 12. Kodiak red king crab harvest composition and seasons, 1960/61 – 2006/07..... | 44 |
| 13. Golden king crab commercial catch, effort, and value for the Kodiak Area, 1983-2006..... | 45 |
| 14. Red king crab commercial catch, effort, and value for the Alaska Peninsula Area, 1947 – 2006/07. | 46 |
| 15. Shrimp trawl fishery catch, effort, and value for the Kodiak District, 1958 – 2005/06. | 47 |
| 16. Shrimp pot fishery catch and effort for the Kodiak District, 1969-2006..... | 49 |
| 17. Shrimp minimum acceptable biomass indices (MABI) and population estimates in millions of pounds from surveyed districts and sections, 2002-2006. | 50 |
| 18. Trawl shrimp fishery catch, effort, and value for the South Peninsula and Chignik districts, 1968 – 2005/06. | 51 |
| 19. Red sea cucumber commercial catch, effort, and value for the Kodiak and Chignik districts, 1991-2006. | 52 |
| 20. Red sea cucumber and green sea urchin guideline harvest levels (GHL), 2006/07. | 53 |
| 21. Green sea urchin commercial catch, effort, and value for the Kodiak District, 1980 – 2006/07. | 54 |
| 22. Octopus commercial catch, effort, and value for the Kodiak District, 1985-2006..... | 55 |
| 23. Octopus commercial catch, effort, and value for the Chignik and South Peninsula districts combined, 1980-2006. | 56 |
| 24. Razor clam commercial catch, effort, and value for the Kodiak District, 1960-2006..... | 57 |

LIST OF FIGURES

| Figure | Page |
|--|------|
| 1. Alaska Department of Fish and Game shellfish management regions, 2006..... | 58 |
| 2. Kodiak District and sections for Tanner crabs and sea cucumber fishery management, 2006..... | 59 |
| 3. Chignik and South Peninsula districts for Tanner crab and sea cucumber fishery management, 2006. | 60 |
| 4. Carapace width and shell condition of the harvest from the Kodiak, Chignik and South Alaska Peninsula districts Tanner crab fishery, 2006. | 61 |
| 5. Number of Tanner crabs per kilometer towed in the 2006 Kodiak District trawl survey. | 62 |
| 6. Number of Tanner crabs per kilometer towed in the 2006 Chignik and South Peninsula districts trawl survey. | 63 |
| 7. Kodiak District for the Dungeness crab fishery and fishing seasons, 2006. | 64 |
| 8. Kodiak District Dungeness crab carapace width frequencies and shell condition from dockside samples, 2003 2006..... | 65 |
| 9. Kodiak District Dungeness crab harvest, in pounds and CPUE (legal crab per pot), by month, for the 2006 fishery. | 66 |
| 10. Chignik and Alaska Peninsula districts for Dungeness crab fishery management, 2006/07..... | 67 |
| 11. Kodiak Area districts for king crab fishery management, 2006..... | 68 |
| 12. Number of red king crabs per kilometer towed from the 2006 Kodiak and Alaska Peninsula areas trawl survey..... | 69 |
| 13. Alaska Peninsula Area and districts for king crab fishery management, 2006. | 70 |
| 14. Kodiak District and sections for shrimp fishery management, 2006..... | 71 |
| 15. Shrimp harvests from the Kodiak, Chignik, and South Peninsula districts, 1958-2006..... | 72 |
| 16. Chignik District and sections for shrimp fishery management, 2006. | 73 |
| 17. South Peninsula District and sections for shrimp fishery management, 2006..... | 74 |

ABSTRACT

This annual management report summarizes shellfish fisheries, excluding weathervane scallops *Patinopecten caurinus*, for the Kodiak, Chignik, and Alaska Peninsula areas during 2006. Commercial fisheries occurred for Tanner crab *Chionoecetes bairdi*, Dungeness crab *Cancer magister*, giant Pacific octopus *Octopus dofleini*, and red sea cucumber *Parastichopus californicus*. Historically, these management areas have supported various Pandalid shrimp fisheries and red king crab *Paralithodes camtschaticus* fisheries.

Key words: Tanner crab, *Chionoecetes bairdi*, Dungeness crab, *Cancer magister*, red sea cucumber, *Parastichopus californicus*, red king crab, *Paralithodes camtschaticus*, Pacific octopus, *Octopus dofleini*, Pandalid shrimp, *Pandalus* spp, catch per unit effort, exclusive economic zone, EEZ, guideline harvest level, GHL, Alaska Board of Fisheries, BOF, Kodiak, Chignik, Alaska Peninsula.

INTRODUCTION

This report covers shellfish fisheries in the Gulf of Alaska south of the latitude of Cape Douglas (58° 51.10' N lat.), west of the longitude of Cape Fairfield (148° 50.25' W long.), and east of Scotch Cap Light (164° 44' W long.). The three primary management divisions within this report are the Kodiak, Chignik, and South Peninsula areas (Figure 1).

KODIAK AREA

The Kodiak Area includes the Pacific Ocean waters south of the latitude of Cape Douglas (58° 51.10' N lat.) on the Alaska Peninsula, east of the longitude of Cape Kumlik (157° 27' W long.), and west of 148° 50.25' W long. (Figure 2). The Kodiak Area encompasses both the waters of the territorial sea, 0–3 nautical miles (nmi), and waters of the Exclusive Economic Zone (EEZ), (3–200 nmi). The management area varies slightly for Dungeness crab *Cancer magister* and Pandalid *Pandalus* spp. shrimp, where it extends from the latitude of Cape Douglas to the longitude of Kilokak Rocks on the Alaska Peninsula (156° 19' W long). Management may occur at the area, district, or section level depending upon the target species.

Historically, the Kodiak Area supported red king crab *Paralithodes camtschaticus* and trawl-caught shrimp fisheries. Red king crab stocks are currently depressed and no fishing has occurred since the early 1980s. Minor harvests of green sea urchins *Strongylocentrotus droebachiensis*, golden king crab *Lithodes aequispinus*, and grooved Tanner crabs *Chionoecetes tanneri* have occurred sporadically. Various clam species, primarily razor clams *Siliqua* sp., were once harvested in large quantities.

The predominant commercial shellfish species harvested from the Kodiak area in 2006 were Tanner crab *Chionoecetes bairdi*, Dungeness crab, giant Pacific octopus *Octopus dofleini*, and red sea cucumber *Parastichopus californicus*. The most valuable shellfish species harvested was Tanner crab, worth an estimated \$3.05 million to the fleet. The Kodiak area weathervane scallop fishery will be summarized in a separate report (Barnhart *In prep*).

The Alaska Department of Fish and Game (ADF&G) issued ten emergency orders during 2006 to enact time and area regulatory actions to commercial fisheries. These actions changed commercial fishery openings and closures and modified fishing periods and fishing areas (Table 1).

ALASKA PENINSULA AREA

The Alaska Peninsula Area includes waters of the Pacific Ocean west of Kilokak Rocks (156° 19' W long.), and east of Scotch Cap Light (164° 44' W long.; Figure 3). However, in the red king crab fishery the eastern boundary is located at the longitude of Cape Kumlik

(157° 27' W long.). For Tanner crab fisheries, the Alaska Peninsula Area is divided into separate districts, Chignik and the Alaska Peninsula. The area divisions are detailed in each fishery description.

Commercial shellfish fisheries have occurred in the Alaska Peninsula Area for red king crab, Tanner crab, grooved Tanner crab, Dungeness crab, various Pandalid shrimp, red sea cucumber, and giant Pacific octopus. Shellfish stocks are considered depressed for most species within the management area. No commercial fishery for red king crab or shrimp has occurred since 1982. Harvest occurred in 2006 for Dungeness crab, Tanner crab and octopus. Three emergency orders were issued in 2006 that pertained to shellfish fisheries in the Alaska Peninsula Area (Table 2).

TANNER CRAB

INTRODUCTION

The Tanner crab fisheries in the Kodiak, Chignik, and South Peninsula districts are part of Registration Area J. Tanner crab fisheries open by regulation within each of the three districts on January 15 if the provisions of 5 AAC 35.507 KODIAK, CHIGNIK, AND SOUTH PENINSULA DISTRICTS C. *BAIRDI* TANNER CRAB, HARVEST STRATEGIES are met. Harvest strategies contain a threshold of mature male abundance as well as additional criteria that must be met for each district or section to open to commercial fishing. Mature male abundance is determined annually by a trawl survey conducted by ADF&G on the *R/V Resolution*. The survey data are also used to determine an annual guideline harvest level (GHL). Commercial fisheries remain open until this harvest level is attained or biological considerations occur that warrant closure to protect the long-term health of the stocks.

KODIAK DISTRICT

Description of the District

The Kodiak District for Tanner crab is defined as the Pacific Ocean waters of Registration Area J south of the latitude of Cape Douglas (58° 51.10' N lat.), west of the longitude of Cape Fairfield (148° 50.25' W long.), and east of the longitude of Cape Kumlik (157° 27' W long.). The district is further subdivided into eight sections: Northeast, Eastside, Southeast, Southwest, Semidi Island Overlap, Westside, North Mainland, and South Mainland (Figure 2).

Overview of Fishery Regulations

The Kodiak District is a limited entry district for Tanner crab fishing. Criteria within the harvest strategy specify that at least two sections in the district must be above the mature male threshold for the fishery to open. The district GHL must be at least 400,000 pounds, with each section having a GHL of 100,000 pounds or more. The Kodiak District has a sliding scale pot limit based on the district GHL that ranges from 20 to 60 pots per vessel. Gear may only be set or retrieved during daily fishing periods from 8:00 AM to 5:59 PM; however, fishing periods may be extended depending on the department's assessment of effort, fishery manageability, available harvest, and harvest rate.

Historic Background

The domestic Tanner crab fishery in the Kodiak District began in 1967 when 110,961 pounds were landed (Table 3). Compared to king crab fisheries, the Tanner crab fishery was slower to

develop. Consumers did not accept Tanner crab as readily, and processing facilities had yet to develop effective meat extraction techniques for canning.

During the 1969/70 season, over eight million pounds were harvested. In 1973, ADF&G initiated a pot survey to estimate relative abundance, predict recruitment trends, and develop annual harvest levels. The fishery continued to grow with annual harvests increasing to 30 million pounds in the mid-1970s. ADF&G implemented an April 30 season closure date in 1975 to protect crab at the onset of the mating and molting season. A minimum carapace width (CW) of 5.5 inches was established in 1976. The commercial fishery peaked during the 1977/78 season when over 33 million pounds were harvested.

Beginning in December 1978, the federal government assumed joint responsibility with the State of Alaska for Tanner crab management in the EEZ. The state managed the resources in the waters from shore to three nautical miles offshore while the federal government managed those from three to 200 nmi offshore. This joint-jurisdiction lasted until 1987, when the state again assumed full management authority for Tanner crab in the Kodiak District for all waters out to 200 nmi offshore.

In the early 1980s, Tanner crab stocks and commercial harvest began to decline. Concerns about the ability of the pot survey to predict recruitment from animals smaller than 114 mm CW prompted ADF&G to test trawl gear as a viable survey tool. In 1988, trawl surveys replaced pot surveys for crab stock assessment because they are faster and sample a wider range of crab sizes (Jackson 1990).

Tanner crab stocks continued to decline in the Kodiak District, and by the early 1990s, annual harvests averaged less than two million pounds. Beginning with the 1994/95 season, the fishery was closed due to the progressive decline in the harvestable surplus of Tanner crabs in the Kodiak District. The commercial fishery remained closed until the 2000/01 season when the population had increased above minimum threshold levels. During the six-year closure period a harvest strategy was developed by ADF&G and was adopted by the Alaska Board of Fisheries (BOF) in 1999. This harvest strategy specified minimum population levels (biological thresholds) and minimum guideline harvest levels (management thresholds) required to open a commercial fishery.

The following regulations were adopted by the BOF in the 2001/02 cycle and were in effect starting with the 2002/03 season: 1) The Kodiak District was designated superexclusive for Tanner crab; 2) criteria was adopted to delay the fishery opening for severe weather; 3) if less than six hours notice was provided for a fishery closure, baited gear may be left in waters deeper than 25 fathoms for up to three days following the closure; and 4) daily fishing periods were reduced from 12 hours to 10 hours per day. When the season is open gear may only be operated from 8:00 AM to 5:59 PM, and may be left to soak from 6:00 PM until 7:59 AM.

The Commercial Fisheries Entry Commission (CFEC) developed a limited entry program using 2000/01 and 2001/02 as qualifying years to determine participation history. The CFEC limitation to participate in the Kodiak District Tanner crab fishery began during the 2003/04 season.

During the 2004/05 cycle, the BOF adopted several additional regulations: 1) daily fishing periods could be extended based on the department's assessment of effort, manageability, and harvest rates; 2) pot limits in the Semidi Island Overlap Section were increased to 70 per vessel; 3) the Semidi Island Overlap Section could open when either the Southwest Section or the

Chignik District opened; 4) the Semidi Island Overlap Section closed by emergency order; and 5) vessels participating in the Semidi Island Overlap Section were required to either report daily or provide daily logbook data.

Overview of the 2005/06 Kodiak District Tanner Crab Season

The Northeast, Eastside, Southeast, and Southwest sections of the Kodiak District met criteria specified in the harvest strategy for a commercial fishery opening in 2006, with a combined GHL of 2,100,000 pounds, which was an increase of 350,000 pounds from the 2004/05 fishery (Table 4). The Northeast Section GHL was set at 550,000 pounds, the Eastside Section GHL was set at 1,300,000 pounds, the Southeast Section GHL was set at 100,000 pounds, and the Southwest Section GHL was set at 150,000 pounds. The Semidi Island Overlap Section also opened during the 2005/06 season but there was no set GHL.

The scheduled opening date for the Kodiak District Tanner crab fishery was January 15 unless the fishery was delayed for weather due to gale force winds or greater, as outlined in 5 AAC 35.510 FISHING SEASONS FOR REGISTRATION AREA J. The criteria for a weather delay were met on January 14 and 15 in 2006; therefore, the season opened two days late at NOON on January 17. Sixty-eight permit holders recorded landings on 67 unique vessels during the 2005/06 fishery. The total harvest, including deadloss and personal use, was 2,121,384 pounds from 248 landings. The estimated exvessel fishery value was \$3.05 million as indicated by the price per pound on fish tickets (Table 3).

Similar to the 2004/05 season, a partial section closure occurred in the Northeast Section during the 2005/06 season. The Chiniak Bay portion of the Northeast Section closed at NOON on January 27. The remainder of the Northeast Section closed at 2:00 PM on March 2 (Table 5). Forty one vessels harvested 519,730 pounds from the Northeast Section (Table 4). The Northeast Section catch per unit effort or catch of legal crabs per pot (CPUE) averaged 27 crabs during the season.

The Eastside Section waters closed at NOON on January 26. Forty three vessels harvested 1,302,378 pounds from the Eastside Section (Table 4). The Eastside Section CPUE averaged 51 legal crabs per pot.

The Southeast Section waters closed at 2:00 PM on February 2. Nine vessels harvested 130,292 pounds from the Southeast Section (Table 4). The Southeast Section CPUE averaged 35 crabs.

This was the third year since 1994 that the Southwest Section opened. The waters of the entire Southwest Section closed January 20 at 6:00 PM. Seven vessels harvested 168,984 pounds from the Southwest Section (Table 4). The Southwest Section CPUE averaged 61 crabs.

Northeast Section Fishery

Based on the 2005 trawl survey estimate of abundance, the total population of mature male Tanner crab in the Northeast Section was 4,880,517 crabs (Spalinger 2006), above the regulatory threshold of 1,123,000 crabs. Because the population estimate was above the long-term average of mature male abundance, the regulatory harvest strategy prescribed a 20% exploitation rate on molting mature male abundance, but not exceeding 30% exploitation on legal-size crabs. This resulted in a 2006 GHL of 550,000 pounds, which was the same as the 2005 GHL (Table 4). Twenty-four vessels registered for the Northeast Section during tank inspections on January 16. Over the course of the fishery, 41 vessels participated in the Northeast Section.

Approximately 13 vessels participated in the vicinity of Chiniak and Kalsin bays. The number of legal crab per pot (CPUE) varied from the 20s to the high 40s. By late January, approximately 120,000 pounds had been landed from Chiniak and Kalsin bays. The inseason target was 140,000 pounds. A closure for Chiniak Bay was announced for January 27. The timing of this closure was due to the reported harvest, estimated harvest onboard, and to avoid a large number of vessels placing pots in Chiniak Bay after the Eastside Section closure.

Vessels moved into Marmot Bay after the closure of Chiniak Bay, and additional vessels moved into the Northeast Section after other section closures, particularly after the Eastside Section closed. The majority of the fleet concentrated in outer Marmot Bay. Catch rates quickly declined, and just as quickly, participation dropped. As effort declined, catch rates for some vessels improved. The entire Northeast Section closed at 2:00 PM on March 2.

Eastside Section Fishery

Based on the 2005 trawl survey estimates of abundance, the population of mature male Tanner crabs in the Eastside Section was 11,007,627 crabs (Spalinger 2006), well above the regulatory threshold of 1,552,000 crabs. Because the population estimate was above the long-term average of mature male abundance, the regulatory harvest strategy prescribed a 20% exploitation rate on molting mature abundance, but not exceeding 30% exploitation on legal-size crabs. This resulted in a 2005/06 fishery GH L of 1,300,000 pounds, which was twice the 650,000 pound GH L from the 2004/05 fishery (Table 4).

The 2003 trawl survey results indicated a significant decline in the abundance of legal-sized male Tanner crabs in Ugak Bay and Kiliuda Bay. In recent seasons these areas provided a large portion of the harvest. As a result these bays were closed during the 2003/04 season. The 2004 trawl survey showed an increase in the legal-sized males in Ugak Bay, but continued low numbers in Kiliuda Bay. As a result, Ugak Bay was opened for the 2004/05 season while Kiliuda Bay remained closed. The 2005 trawl survey results showed an increase in legal-sized males in Ugak Bay and Kiliuda Bay, as a result, both were opened to commercial fishing for the 2005/06 season.

Forty-one vessels registered for the Eastside Section during tank inspections. The majority of effort was concentrated in offshore areas. The fleet concentrated in the trench at the mouth of Ugak Bay and in the offshore waters known as the "horseshoe". Only a few vessels fished inside Ugak Bay. Six vessels fished the entire season in Kiliuda Bay.

The seasonal CPUE average was 51 crab per pot with most vessels pulling their gear twice per day. Catch rates were generally higher in offshore areas and some vessels had CPUE over 100 crab per pot for several days. Catch rates in Kiliuda were slower, but remained consistently between 20–30 crab per pot, with vessels pulling their gear once per day. A tender offloaded crab from vessels fishing in Kiliuda Bay twice during the season.

The Eastside Section closed at NOON on January 26. Forty-three vessels fished the Eastside Section landing 1,302,378 pounds (Table 4) and exceeding the GH L by 0.2%.

Southeast Section Fishery

Based on the 2005 trawl survey estimates of abundance, the total population of mature male Tanner crabs in the Southeast Section was 1,823,984 crab (Spalinger 2006), and was above the regulatory threshold of 733,000 crabs. Because the population estimate was above the long-term

average of mature male abundance, the regulatory harvest strategy prescribed a 20% exploitation rate on molting mature abundance but not exceeding 30% exploitation on legal-size crabs. This resulted in a GHL of 100,000 pounds, the same as in 2005 (Table 4).

No vessels began the season in the Southeast Section. One vessel switched to the Southeast Section from the Eastside Section after 2.5 days of fishing, and three vessels switched to the Southeast Section after the Southwest Section closed on January 20, 2006. The remaining participants switched after the Eastside Section closure. Weather from January 26–28 was windy and extremely cold. Many vessels reported icing conditions and did not work gear these three days. Two vessels discontinued fishing on January 31 due to poor fishery performance.

Total harvest on January 31 was estimated to be 83,000 pounds, and average harvest was approximately 1,000 crab per day per vessel. Department staff estimated the following day's harvest (February 1) would be 5,000 to 7,000 crab, or 11,000 to 15,000 pounds bringing the total to 94,000 to 98,000 pounds. Due to weather and variable performance among participants, the department decided to wait on making a decision until reports were received on February 1st. The fleet harvested an additional 13,000 pounds, and a closure was announced for the following day (February 2) at 2 PM, providing a 6-hour notice within a fishery period. Total harvest from the section was 130,292 pounds (Table 4), 30% over the GHL.

Southwest Section Fishery

Based on the 2005 trawl survey estimates of abundance, the total population of mature male Tanner crabs in the Southwest Section was 1,421,130 crabs (Spalinger 2006), this was above the regulatory threshold of 1,236,000 crabs. The regulatory harvest strategy prescribed a 10% exploitation rate on molting mature abundance because the population estimate was less than the long-term average of mature male abundance. This resulted in a 2006 GHL of 150,000 pounds, 300,000 pounds less than in 2005 (Table 4).

This was the second consecutive year that the Southwest Section opened. Prior to 2004/05, the Southwest Section had not opened since 1994. Seven vessels registered for the Southwest Section during tank inspections on January 16. Two vessels began fishing outside Alitak Bay, while all remaining vessels fished inside of Alitak Bay. Vessels averaged 41 pot lifts per day during the first three days of the fishery, with a CPUE of 61 legal male crabs, compared to 51 legal male crabs per pot lift the first three days in 2005. Based on this information the estimated harvest for the first three fishing periods was approximately 115,000 pounds. The daily harvest and landing information collected through January 19 indicated that the GHL for the section would be reached by 6:00 PM on January 20. Participants were notified during the evening harvest reports on January 19 that there would be an announcement for the section in the morning update on January 20. An announcement was made on 4125 MHz on the single sideband radio at 10:30 AM announcing the closure for 6:00 PM. Each vessel fishing in the section was also contacted via satellite dispatch. Seven vessels fished the Southwest Section harvesting 168,984 pounds (Table 4), 13% above the GHL from the Southwest Section.

Semidi Island Overlap Section Fishery

The Semidi Island Overlap Section opened in 2004/05 because both the Southwest Section of the Kodiak District and the Chignik District were opened. The Southwest Section of the Kodiak District was open to commercial fishing in 2006, as well as the Chignik District, therefore the Semidi Island Overlap Section opened. The Semidi Island Overlap Section closed with the

Chignik District on the regulatory closure date of March 31. Three or fewer vessels participated in this fishery, therefore, all data is confidential.

2006 Dockside Sample Statistics

Tanner crabs were sampled at dockside from deliveries during the course of the season. Listed in priority order, samplers obtained the following information: confidential interviews with vessel captains, average weights, and carapace width/shell condition data. During confidential interviews, samplers obtained detailed information regarding effort, location, and bycatch which were used to evaluate fishery performance. Forty-five percent of all landings were sampled.

The average weight of crabs from the Northeast Section was 2.29 pounds per crab, compared to 2.42 pounds for the Eastside Section, 2.40 pounds per crab for the Southeast Section, and 2.52 pounds for the Southwest Section. Harvested crabs were predominantly new shell and averaged 148 mm carapace width (Figure 4). Of the crabs sampled in the Northeast Section, 94.5% were new shell, 5.3% old shell, and 0.2% very old shell. Shell ages of the Eastside Section were 96.4% new shell, 3.6% old shell, and 0.0% very old. Shell ages of the Southeast Section were 76.2% new shell, 23.8% old shell, and 0.0% very old. Shell ages of the Southwest Section were 86.8% new shell, 13.0% old shell, and 0.2% very old.

Status of Kodiak District Tanner Crab Stock

The 2006 Kodiak District estimate based on the summer survey of 165 million Tanner crabs of all sizes and sex was more than double the estimate in 2005 (69.2 million crabs), 2004 (73.1 million crabs) and 2003 (73.5 million crabs). However, the population of legal male Tanner crab decreased by almost 2.0 million crabs, 6.6 million crabs in 2005 compared to 4.6 million crabs in 2006 (Spalinger *In prep*). The number of males less than 70 mm CW and juvenile females showed the highest increase in numbers, 133.8 million crabs, combined, in 2006, compared to 22.0 million crabs in 2005. The highest densities of crabs were found in the Eastside Section (Figure 5); this is similar to the results of recent years' surveys. The 2006 summer survey estimates will be used to establish the GHs for the 2006/07 season.

Egg clutches of 3,988 mature female Tanner crabs were examined during the survey. Of all mature females, 47.2% were primiparous, an increase from 16.6% in 2005. Of mature females, 52.6% had clutches that were more than half full. This was a decline from 2005 when 81% of mature females had a clutch fullness of 50% or greater (Spalinger *In prep*).

CHIGNIK DISTRICT

Description of the District

The Chignik District for Tanner crab includes the Pacific Ocean waters of Registration Area J east of a line from the southernmost tip of Kupreanof Point to the easternmost point of Castle Rock, and east of a line extending southeast 135° from the easternmost point of Castle Rock, and west of the longitude of the easternmost tip of Cape Kumlik (Figure 3).

Overview of Fishery Regulations

The Chignik District is designated as a superexclusive registration district for Tanner crab. Vessels larger than 58 feet in overall length may not take Tanner crab in the Chignik District. A criterion within the harvest strategy specifies that the district GH must be at least 200,000 pounds for a commercial fishery to occur.

The following regulations were adopted by the BOF in the 2001/02 cycle and were in effect for the 2003/04 season: 1) The Chignik District was designated superexclusive for Tanner crab; 2) if less than six hours notice is provided for a fishery closure, baited gear may be left in waters deeper than 25 fathoms for up to three days following the closure; and 3) daily fishing periods were established. When the season is open for a Tanner crab fishery, gear may only be operated from 8:00 AM to 5:59 PM Gear may be left to soak from 6:00 PM until 7:59 AM.

Additional regulations were adopted by the BOF that were in effect for the 2004/05 season; 1) The requirement that the South Peninsula District must open for the Chignik District to open was repealed; and 2) the pot limit is 30 pots per vessel until the GHL exceeds 600,000 pounds. Pot limits for GHLS greater than 600,000 pounds are 1,000 pots for the entire fishing fleet with no more than 75 pots per vessel. The individual pot limit is calculated by dividing the 1,000 total pot limit by the number of vessels that register by the deadline specified in 5 AAC 35.506(e) (6).

Historic Background

The Chignik District Tanner crab fishery began in 1968 when 21,100 pounds were harvested (Table 6). The fishery peaked during the 1975/76 season when 35 vessels harvested approximately 11.2 million pounds. Annual harvest declined in the late 1970s. Recruitment failures in the early 1980s led to smaller annual harvests until 1989 when a small increase in harvest occurred. Historically, much of the effort in the Chignik District occurred in late March following the closure of the Kodiak and South Peninsula districts. The most productive areas were offshore between Mitrofanina Island and Lighthouse Rocks.

ADF&G did not survey the Chignik District until 1981. Surveys in the early 1980s predicted poor recruitment. As expected, the recruitment was low and subsequent fisheries had lower harvests. Catches declined first in the productive offshore areas, then later in bays. The district was closed to commercial fishing in 1990 and remained closed until the 2004/05 season.

Overview of the 2005/06 Chignik District Tanner Crab Season

The Chignik District met the criteria specified in the harvest strategy for a commercial fishery opening in 2005/06. Approximately 1.5 million crabs were estimated to be mature male, exceeding the threshold of mature male abundance of 973,000 crabs, resulting in a guideline harvest level (GHL) of 200,000 pounds.

The fishery opened as scheduled at NOON on January 15, 2006 (Table 5). Harvest from the 2005/06 Chignik District fishery, including deadloss, was 143,164 pounds from seven landings made by a total of four unique vessels (Table 6). Two other vessels registered and purchased tags but did not make a landing. During the first three weeks of the fishery, effort was primarily concentrated in the Ivanof Bay area. A partial closure of the Ivanof Bay area or all waters west of 159° W long., closed by emergency order at 5:59 PM on February 10, 2006. The remainder of the Chignik District closed by regulation at NOON on March 31, 2006.

The estimated exvessel fishery value, excluding deadloss, of \$170,796 resulted from an initial payment of \$1.20 per pound. It is not known if a retroactive payment will be made on the 2006 fishery landings.

Castle, Chignik, and Kuiukta (Dorner) Bays

The 2005 trawl survey estimated 127,144 legal male crabs in Castle Bay. Because the molting mature male abundance was below the long-term average for the district, the harvest strategy

(5 AAC 35.507) limited the exploitation rate to no more than 10% of the molting mature male abundance. Furthermore, the harvest could not exceed this 10% rate or 30% of the legal male abundance. The exploitation of legal males was calculated at 30% of the legal male abundance in Castle Bay, 38,143 crabs (85,059 pounds). However, the inseason target was set at a more conservative 60,000 pounds due to the previous season's fishery performance being inconsistent with what had been expected, based on survey results. Only three vessels made landings from Castle, Chignik, and Kuiukta bays totaling less than 30,000 pounds. High fuel prices may have been a contributing factor in these areas receiving little effort. Sand Point was the only port where crabs were landed from the Chignik District.

Ivanof and Mitrofanina

The 2005 trawl survey estimated approximately 110,000 legal male crabs in Ivanof Bay and 149,000 legal male crabs in Mitrofanina. Because the molting mature male abundance was below the long-term average for the district, the harvest strategy (5 AAC 35.507) limited the exploitation rate to no more than 10% of the molting mature male abundance. Furthermore, the harvest could not exceed this 10% rate or 30% of the legal male abundance. The exploitation of legal males was calculated at 30% of the legal male abundance in Ivanof Bay and Mitrofanina, 77,417 crabs (172,640 pounds). However, the inseason target was set at a more conservative 120,000 pounds (50,000 pounds from Ivanof Bay and 70,000 pounds from Mitrofanina), to prevent overharvest in the areas closest to the processor in Sand Point.

The majority of fishing effort in the Chignik District occurred in the Ivanof Bay and Mitrofanina areas. Catch rates in Ivanof Bay remained strong through the second week in February. Average CPUEs were 35 crabs per pot. By February 7, total harvest in Ivanof Bay had exceeded the preseason target. Therefore, all waters of the Chignik District west of 159° W long. were closed to commercial fishing on February 10, 2006. Approximately 116,000 pounds of Tanner crabs were harvested from the Ivanof Bay area.

2006 Dockside Sample Statistics

Tanner crabs were sampled from one commercial delivery during the season. The sampler was relocated to King Cove on January 26 to sample the South Peninsula District commercial Tanner crab fishery.

Status of Chignik District Tanner Crab Stock

The overall crab abundance in the Chignik District more than tripled from 13.7 million crabs in 2005 to 42.0 million crabs in 2006 (Spalinger *In prep*). The number of juvenile females and males less than 70 mm CW showed the largest increase in 2006, and accounted for the majority of the increase in the total abundance of crabs. Based on survey data, the highest density of crab were found in Ivanof and Castle bays (Figure 6). Egg clutches of 659 mature female Tanner crabs were examined during the survey. Approximately 48.4% of mature females had a clutch fullness of 50% or higher.

SOUTH PENINSULA DISTRICT

Description of the District

The South Peninsula District for Tanner crab includes the Pacific Ocean waters of Registration Area J west of a line from the southernmost tip of Kupreanof Point to the easternmost tip of

Castle Rock, west of a line extending southeast 135° from the easternmost tip of Castle Rock, and east of a line extending south from Scotch Cap Light (Figure 3).

Overview of Fishery Regulations

The South Peninsula District is a nonexclusive registration district for Tanner crab. Vessels over 58 feet in overall length may not take Tanner crab in the South Peninsula District. Additional criteria within the harvest strategy specify that the district GHL must be at least 200,000 pounds for a fishery opening. The pot limit ranges from 30 to 75 pots per vessel depending on the GHL.

The following regulations were adopted by the BOF in the 2001/02 cycle and were in effect for the 2003/04 season: 1) If less than six hours notice is provided for a fishery closure, baited gear may be left in waters deeper than 25 fathoms for up to three days following the closure; and 2) daily fishing periods were established. When the season is open for a Tanner crab fishery, gear may only be operated from 8:00 AM to 5:59 PM. Gear may be left to soak from 6:00 PM to 7:59 AM.

Historic Background

The first harvest of Tanner crab in the South Peninsula District occurred in 1967 when 3,100 pounds were landed (Table 7). The fishery grew quickly and, by the 1972/73 season, the annual harvest exceeded five million pounds. In 1975, seasons were imposed to protect adult crab during the mating and molting period. In 1976, the minimum size limit of 5.5" CW was established. During the five fishing seasons from 1974/75 through 1978/79, harvests ranged from five to almost nine million pounds. The fishery peaked during the 1978/79 season when nearly nine million pounds of crab were harvested. From 1979/80 to 1983/84 harvest and average CPUE declined as a result of low recruitment, and in the 1983/84 season the fleet landed less than two million pounds. Recruitment improved in subsequent years and the harvest increased to almost four million pounds in 1985/86. The harvest decreased again to about one million pounds in the 1988/89 season, and ADF&G predicted a decline in recruitment based on analysis of the ADF&G trawl survey. The fishery was closed from the 1989/90 season through the 1999/2000 season due to the low abundance of legal-sized crab and the lack of recruitment.

In 1999, ADF&G presented the BOF with a comprehensive harvest strategy for Tanner crab in the South Peninsula District. The criteria in the harvest strategy were met for a commercial fishery opening in 2000/01. The South Peninsula District opened for the first time since 1989/90 with a 375,000-pound GHL. Fifty-five vessels harvested 258,631 pounds from 67 landings (Table 7). The fishery lasted for four days. The criteria in the harvest strategy were not met for a commercial fishery opening in 2001/02 or 2002/03, based on the trawl survey results.

The 2003 trawl survey indicated the South Peninsula District was above the established threshold level of molting-mature abundance for a commercial fishery opening in 2003/04. However, stocks within the district had continued to decline since the commercial fishery conducted in 2000/01. The population of Tanner crab in the South Peninsula District was not likely to remain above the threshold. Therefore, the commercial fishery in the South Peninsula District remained closed for the 2003/04 season. The 2004 trawl survey indicated the South Peninsula District was above the established threshold level of molting-mature abundance for the second year in a row, therefore the 2004/05 fishery opened with a GHL of 300,000 pounds.

The South Peninsula District is and was not separated into any smaller management units (e.g. sections). Concentrations of crabs in a small number of bays or marginally commercial

quantities spread across large areas may put the abundance calculation over the threshold needed to open the entire South Peninsula District, while some portions of the district may not be capable of sustaining a harvest (Urban and Vining 2005). Therefore, ADF&G submitted a proposal to the BOF in 2005 to split the district into two sections at 162° W longitude (Figure 3). This would allow for the opportunity for a fishery in one portion of the district where stocks are capable of sustaining a harvest while protecting other portions of the district where stocks are weak or rebuilding (Urban and Vining 2005). The proposal was approved by the BOF and the Eastern and Western sections were in place for the 2005/06 fishery.

Overview of the 2005/06 South Peninsula District Tanner Crab Season

The South Peninsula District Western Section met criteria specified in the harvest strategy for a commercial fishery opening for the 2005/06 season. Over 2.26 million crabs were estimated to be mature males, exceeding the threshold of 1.25 million mature male crabs, resulting in a GHL of 290,000 pounds for the Western Section (Table 5). The Eastern Section did not meet criteria specified in the harvest strategy for a commercial fishery opening for the 2005/06 season.

The fishery opened as scheduled on January 15, 2006. Weather on the day of tank inspections and the opening day of the fishery was poor. The weather delayed some of the smaller vessels from leaving port by approximately one half day. During the course of the season, there were many days with high winds, in excess of 40 knots, and rough seas; many fishers used those days to come to port to deliver their catch.

After February 1 there were only six vessels and one processor participating in the fishery; this simplified estimating the harvest. The processors voluntarily used the Interagency Electronic Reporting System (e-landings) to enter fish tickets. This allowed managers to have real time access to fish ticket and landing data, rather than having to wait a week or more for fish tickets to arrive via the mail.

The fishery closed at 5:59 PM on February 17, 2006. Projected harvest from voluntary catch reports, fish ticket information, and cannery landing reports indicated that the 290,000 pound GHL would be attained at the time of closure.

Annual harvest from the 2005/06 South Peninsula District Tanner crab fishery including deadloss, was 287,749 pounds from 47 landings made by a total of 15 unique vessels (Table 7). The estimated exvessel fishery value of \$353,391 resulted from an initial payment of \$1.23 per pound.

2006 Dockside Sample Statistics

ADF&G personnel were deployed to Sand Point and King Cove a week prior to the fishery opening. In the week preceding the fishery, buoy tags were sold, inseason reporting worksheets were distributed, and general fishery information was provided. Tanner crab were sampled from commercial deliveries in King Cove through February 5. The sampler was removed from King Cove on February 6 due to the low number of vessels still fishing and the small GHL remaining. Only two small deliveries were taken to Sand Point. All samplers obtained the following information, in order of priority: confidential interviews with vessel captains, average weight, and carapace width and shell condition data. Through confidential interviews, samplers obtained detailed information regarding effort, location, and bycatch that was used to evaluate fishery performance. Interviews were obtained from 31 of the 47 deliveries (66%). Fifty-five percent of

all landings were sampled for carapace width which averaged 148 mm carapace width (Figure 4). The average weight was 2.27 lbs.

Status of South Peninsula District Tanner Crab Stock

The overall crab abundance in the South Peninsula District has increased from 16.1 million crabs in 2004 to 22.3 million crabs in 2005 to 77.3 million crabs in 2006 (Spalinger *In prep*). Based on the 2006 trawl survey data, the highest density of crab were in Morzhovoi Bay (Figure 6). The number of juvenile females and males less than 70 mm CW showed the largest increase in 2006, and accounted for most of the increase in total crab abundance. Egg clutches of 1,141 mature female Tanner crabs were examined during the survey. Almost 51.2% of the mature females examined had a clutch fullness of 50% or higher.

DUNGENESS CRAB

INTRODUCTION

The Dungeness crab fisheries that occur in the Kodiak, Chignik, and Alaska Peninsula districts are part of Registration Area J. There is no established GHL for Dungeness crab. Dungeness crab are managed by regulating sex, size, and season ('3-S' management). Only male crab 6.5" CW or larger may be retained during the open fishing season. There are no pot limits established for any of the Dungeness crab fishing districts. Participants must hold a valid CFEC interim use permit card, obtain a shellfish registration from ADF&G, and have circulating seawater tanks inspected prior to participating in the fishery.

KODIAK DISTRICT

Description of the Area

The Kodiak District for Dungeness crab includes the waters of Registration Area J south of the latitude of Cape Douglas (58° 51.85' N lat.), west of the longitude of Cape Fairfield (148° 50.25' W long.) and east of the longitude of Kilokak Rocks (156° 19' W long.) (Figure 7).

Overview of Fishery Regulations

The Kodiak District has nonexclusive registration for Dungeness crab fishing. In most waters of the Kodiak District, Dungeness crab may be taken from May 1 through January 1. In the waters south of the latitude of the southernmost tip of Boot Point and south of the latitude of the southernmost tip of Cape Ikolik, Dungeness crab may be taken from June 15 through January 1 (Figure 7).

Historic Background

Dungeness crabs were first harvested commercially in 1962 when 1.9 million pounds, including deadloss, were taken (Table 8). Minor increases in recruitment led to slight production increases in harvest during the late 1970s. Prior to 1977, the Dungeness crab fishery was open year round. Closures were first implemented by the BOF from January 1 to April 30 when fishers were unable to operate effectively in the winter, due to storms. This season change was aimed at reducing the amount of gear left fishing with extremely long soak times. Some gear had been left fishing all winter without being checked or maintained. The June 15 opening date was set for the south end of Kodiak to avoid high incidences of female red king crab bycatch in Dungeness gear.

During the early 1980s, declines in abundance of other commercially harvested Alaskan shellfish occurred and created a void in markets that still demanded crab (Jackson 1997). This led to an increase in both effort and harvest of Dungeness crab in the Kodiak District. A harvest of almost 5.6 million pounds occurred during the 1981/82 Kodiak District season. Effort peaked during the 1985/86 season when 125 vessels participated in the fishery (Table 8).

The Kodiak District fishery has in recent years been prosecuted primarily on crabs newly recruited to legal size (Figure 8). The fishery has experienced years of low harvest that correspond to fluctuations in recruitment. Reduced effort may also contribute to decreased fishery harvest. Participation decreased from 62 vessels in 1991 to only 21 or less since the 1996/97 season.

Another factor limiting interest and effort in the Kodiak District Dungeness crab fishery during the 1990s was a lower market value. The toxin causing paralytic shellfish poisoning (PSP) was documented in the viscera of Dungeness crabs. The Alaska Department of Environmental Conservation (ADEC) placed restrictions on the sale of live and whole cooked crabs beginning in 1992. Prices paid for Kodiak Dungeness crabs dropped from \$1.37 per pound in 1991/92 to \$0.86 per pound in 1992/93 after ADEC restrictions took effect. ADEC restrictions have remained in place since their initial implementation in the early 1990s. Prices have fluctuated and reached a high of \$2.04 price per pound in 1997/98.

2006/07 Kodiak District Dungeness Crab Season

The 2006/07 Kodiak District Dungeness crab fishery opened on May 1 in all areas except Kodiak's south end which opened on June 15. Twelve vessels harvested 148,502 pounds from 62 landings (Table 8).

Harvest peaked in August and steadily declined through October, with some harvest continuing into November and December (Figure 9). As in the previous three seasons, the majority of harvest during 2006/07 came from waters in statistical areas near Sitkinak and Tugidak islands (Table 9).

An average of two legal crabs per pot was landed during the 2006/07 season. This was the lowest CPUE in five seasons (Table 8). CPUE has historically been highest in the late summer months, presumably as crab molt to legal size and are then available to the commercial fishery under '3-S' management.

Price paid per pound in 2006/07 averaged \$1.45, up from \$1.25 in 2005/06 (Table 8). The estimated exvessel value for the 2006/07 season was \$215,328, a decline from the exvessel value in 2005/06 (\$485,519).

Dungeness crabs harvested in the Kodiak District had a mean CW of 174 mm in 2006/07, approximately the same since 2003 (Figure 8). The percentage of pre-recruit crabs taken in the commercial harvest during the 2006/07 season was 12.8%, which was similar to the 11% from the 2004/05 season and higher than the 2% from the 2005/06 season.

CHIGNIK DISTRICT

Description of the District

The Chignik District for Dungeness crab includes waters of Registration Area J that are west of the longitude of Kilokak Rocks (156° 19' W long.), and east of a line extending 135° southeast from Kupreanof Point (55° 33.98' N lat., 159° 35.88' W long.) (Figure 10).

Overview of Fishery Regulations

The Chignik District is a superexclusive registration area for Dungeness crab fishing. Male Dungeness crab with a 6.5" or larger CW may be taken from May 1 to January 1.

2006/07 Chignik District Dungeness Crab Season

Prior to 2001, the Chignik and Alaska Peninsula districts were combined. Since the creation of the Chignik District in 2002 until the 2006/07 season, less than three vessels or processors have participated in the fishery annually. Therefore, harvest information is combined with the Alaska Peninsula District. During the 2006/07 season, a total of four vessels participated in either the Chignik or South Peninsula district landing 261,798 pounds of Dungeness crab (Table 10).

ALASKA PENINSULA DISTRICT

Description of the District

The Alaska Peninsula District for Dungeness crab includes all waters of Registration Area J west of a line extending 135° southeast from Kupreanof Point (55° 33.98' N lat., 159° 35.88' W long.), and east of the longitude of Scotch Cap Light (164° 44' W long.) (Figure 10).

Overview of Fishery Regulations

The Alaska Peninsula District is a superexclusive registration area for Dungeness crab fishing. Male Dungeness crab with a 6.5" or larger CW may be taken from May 1 to January 1.

Historic Background

Prior to 2001, the Alaska Peninsula District also included the Chignik District. Historically, Dungeness crab catches from the district have been sporadic, with the highest catch recorded in 1968 when almost 1.3 million pounds were landed (Table 10). Subsequent effort and harvest remained low for many years, presumably due to low prices and better prospects in other crab fisheries. During the early 1980s, the decline in king crab stocks and a stronger market for Dungeness crab generated renewed interest in the fishery. The BOF specified the Alaska Peninsula District as a superexclusive registration area in 1983. Since then, effort in the district has declined and catches since 1986/87 have been small.

2006/07 Alaska Peninsula District Dungeness Crab Fishery

The 2006/07 Alaska Peninsula District Dungeness crab season opened May 1. Data is combined with the Chignik District to maintain confidentiality. During the 2006/07 season, a total of four vessels participated in the Chignik or South Peninsula district landing 261,798 pounds of Dungeness crab (Table 10).

STATUS OF KODIAK, ALASKA PENINSULA, AND CHIGNIK DISTRICTS' DUNGENESS CRAB STOCKS

No stock assessments have been conducted for Dungeness crab in the Kodiak, Chignik, or Alaska Peninsula districts. ADF&G activity has been limited to monitoring commercial fishery deliveries and conducting vessel operator interviews.

KING CRAB

GENERAL RED KING CRAB INFORMATION

Historically, major red king crab fisheries have occurred in the Kodiak and Alaska Peninsula areas. Stock size is estimated annually by a trawl survey conducted aboard the *R/V Resolution*. The red king crab fishery in the Kodiak Area may open by regulation on September 25 if biomass estimates meet or exceed threshold levels described in the Harvest Strategy for Kodiak and Bristol Bay Red King Crab and Saint Matthew Island and Pribilof Blue King Crab, Special Publication Number 7 (Pengilly and Schmidt 1995). In 2005, the BOF modified the opening of the red king crab fishery to be via emergency order rather than by a set date in regulation. In the Kodiak Area, a threshold abundance estimate of 5.12 million fertilized females was established in the harvest strategy. The female abundance threshold is further broken down by individual Kodiak management districts. Additional harvest strategy criteria restrict harvest to only 20% of mature male abundance and place harvest caps on legal-sized males at 60% of the estimated legal-size population. Trawl surveys indicate red king crab population levels remain low in the Kodiak and Alaska Peninsula areas.

GENERAL GOLDEN KING CRAB INFORMATION

Minor harvest of golden king crabs, previously called 'brown' king crab, has occurred in the Kodiak Area. ADF&G manages the golden king crab fishery by commissioner's permit. The Alaska Peninsula Area has not been explored for golden king crabs. In the Kodiak and Alaska Peninsula areas, golden king crabs may be harvested from January 1 to December 31. Conditions of the commissioner's permit for golden king crabs state; (1) a valid CFEC permit card is required; (2) a tank inspection is required; (3) gear must comply with 5 AAC 34.425 **LAWFUL GEAR FOR REGISTRATION AREA K**; (4) only male golden king crab 6.5" carapace width or greater may be retained; (5) pots may not be longlined; (6) a 75 pot limit is in effect and buoy tags supplied by ADF&G are required; (7) logbooks are required; (8) ADF&G must be notified of all deliveries; (9) pots must be fished 125 fathoms or deeper in all areas except Shelikof Strait and the Southeast and Eastside districts of the Kodiak Area where they may be fished 100 fathoms or deeper; (10) retention of Pacific cod for sale is not permitted, nor is simultaneous participation in the state-waters Pacific cod fishery; (11) weekly radio schedule updates may be required; and (12) the department reserves the right to deploy ADF&G personnel on board the vessel as an onboard observer with cost borne by the department. No GHF is established for the golden king crab fishery.

KODIAK AREA

Description of the Area

The Kodiak King Crab Management Area includes waters of the Gulf of Alaska south of the latitude of Cape Douglas (58° 51.10' N lat.) and east of the longitude of Cape Kumlik (157° 27' W long.). The Kodiak Area is further subdivided into five districts for king crab management, which include the Northeast, Southeast, Southwest, Semidi Island, and Shelikof districts (Figure 11).

RED KING CRAB

Overview of Fishery Regulations

The Kodiak Area is exclusive registration for red king crab. The Kodiak Area has a sliding scale pot limit based on the GHL that ranges from 25 to 75 pots per vessel.

Historic Background

Beginning in 1936, small amounts of red king crab were landed in Kodiak but catches were not officially recorded until 1950. This period in the history of the fishery was exploratory in nature with fishers developing gear, locating commercially harvestable quantities of crab and developing markets for product. In 1960/61, the king crab season was open year round and 21 million pounds were landed (Table 11). The fishery peaked during the 1965/66 season when over 94 million pounds of crab were landed during a ten-month fishing season. After this peak, catches dropped to 12 million pounds by the 1969/70 season. By the 1972/73 season, the decline had been reversed and harvests started increasing. The 1972/73 fishery lasted 10 days under a fixed quota system. One district was reopened for an additional eight-day fishery when it was determined that the initial harvest fell almost three million pounds short of the district quota.

During the 1970s, several fishing seasons for crabs with minimum sizes ranging from 7.0 to 8.0 inches occurred (Table 12). Often, second fishing seasons within a year targeted larger, older crabs. Annual harvests ranged from almost 10.9 million pounds during the 1971/72 season to almost 24.1 million pounds during the combined 1975/76 seasons. Harvest declined in the late 1970s and by the 1978/79 season, harvest totaled 12.0 million pounds. The 1981/82 season harvest was the highest of the previous 13 seasons at 24.2 million pounds. The 1982/83 season total harvest declined to 8.7 million pounds, the lowest in 24 years. However, effort was the highest on record.

ADF&G did not open the 1983/84 season to red king crab fishing due to poor stock condition. The population of adult male crabs was the lowest recorded in 13 years of annual population assessments. ADF&G developed a harvest strategy that included a threshold level of 5.1 million female red king crab before considering any future fishery openings (Pengilly and Schmidt 1995). The red king crab fishery in the Kodiak Area has not opened since the 1982/83 season.

Since 1988, ADF&G has conducted trawl surveys to assess king and Tanner crab populations around Kodiak Island, along the Alaska Peninsula, and around the eastern Aleutian Islands. The Kodiak Area remains closed because the abundance estimates of female crabs are well below threshold levels. Complete information on the Westward Region trawl survey catches can be obtained from ADF&G in the Regional Information Report series.

The pot limit for commercial king crab fishing in the Kodiak area was reduced in 1993. A sliding scale of 25-75 pots per vessel was selected based on the projected harvest guideline. Although a fishery had not occurred in the prior 10 years, the pot limit was aimed at reducing effort when the fishery does reopen.

STATUS OF KODIAK AREA RED KING CRAB STOCKS

The Kodiak red king crab population remains at historically low levels, and fishing seasons for red king crabs have remained closed since the 1982/83 season. During the 2006 Kodiak trawl survey, ADF&G completed 216 hauls in known king crab habitat. The red king crab population was estimated to be 215,976 crabs (up from 113,710 crabs in 2005 and down from 369,779 crabs

in 2004) of which 84,648 were legal-sized males (Spalinger *In prep*). Annual fluctuations in total population size are common when populations, such as Kodiak red king crab, become depressed and localized. As seen in Figure 12, the majority of red king crabs were found in the Southwest and Shelikof districts (Spalinger *In prep*). The mature red king crab female population was estimated to be 74,259 crabs, well below the 5.1 million crab threshold required for a fishery opening. Only 66.9% of the mature female crab sampled had an estimated ovigerity of 50% or greater (Spalinger *In prep*). That is an increase from 55.6% of adult female king crabs with clutches of $\geq 50\%$ fullness in 2005 (Spalinger 2006).

GOLDEN KING CRAB

Overview of Fishery Regulations

The Kodiak Area is nonexclusive registration for golden king crab. Pot limits are stated in the commissioner's permit.

Historic Background

Interest in harvesting golden king crab increased after the collapse of the red king crab stocks. Although golden king crabs were occasionally landed with red king crab in prior years, the first recorded landings occurred in 1983. In that year, 12 vessels explored the Kodiak Area with limited success. The catch totaled 111,398 pounds from 36 landings (Table 13). The largest harvest from this fishery totaled 146,478 pounds, which was taken in 1986.

Since 1988, most of the effort consisted of no more than two vessels annually, resulting in confidential catch information. During most of these years, there has been no activity.

2006 KODIAK AREA GOLDEN KING CRAB FISHERY

No effort occurred in 2006.

STATUS OF KODIAK AREA GOLDEN KING CRAB STOCK

ADF&G does not assess the golden king crab stock in the Kodiak Area. Given the low interest in the commercial fishery, the population is believed to be small when compared to populations in the Bering Sea, Aleutian Islands, and inside waters of Southeast Alaska. Detailed logbook data are collected, and this information may yield better insight to golden king crab distribution and stock size in the Kodiak Area.

ALASKA PENINSULA AREA

Description of the Area

The Alaska Peninsula King Crab Management Area has as its eastern boundary the longitude of Cape Kumlik (157° 27' W long.), and as its western boundary the longitude of Scotch Cap Light (164° 44' W long.). The Alaska Peninsula Area is further divided into the Unimak Bight, Central, and West Chignik districts (Figure 13).

RED KING CRAB

Overview of Fishery Regulations

The Alaska Peninsula Area is a superexclusive registration area for red king crab. The area has a sliding scale pot limit based on the GHM that ranges from 40 to 75 pots per vessel.

Historic Background

The red king crab fishery in the Alaska Peninsula Area began in 1947, when 141,000 pounds were landed (Table 14). The largest historic catch of 22.6 million pounds occurred in 1966 (Table 14). Throughout the 1970s and early 1980s, most of the harvest occurred in the Central District with Pavlof Bay being the most productive area. The annual catch in the Unimak Bight District during the same period averaged less than half the annual harvest taken from the Central District. Catches in the West Chignik District during this period varied depending on effort, but annually did not exceed 386,000 pounds.

During the 1980/81 season, the Alaska Peninsula Area harvest totaled just over 5.0 million pounds, the highest catch since the 1968/69 season. The catch was the result of strong recruitment from 1978 through 1980. Recruitment of young crabs to legal size has declined severely since that time, resulting in a closure of the fishery since the 1982/83 season.

STATUS OF ALASKA PENINSULA AREA RED KING CRAB STOCKS

ADF&G has annually conducted a trawl survey of the Alaska Peninsula crab stocks since 1988 with the *R/V Resolution*. The 2006 survey consisted of 136 tows in king crab habitat throughout the registration area. Data from the survey indicate the red king crab population remains at very low levels. The population slightly increased from an estimate of 31,102 crabs in 2005 to 34,178 crabs in 2006 (Spalinger *In prep*). Because the stock is at a very low level, with patchy distribution, population estimates can vary widely each year. As has been the case with previous surveys in the Alaska Peninsula Area, wide ranges in sizes of both sexes were captured.

GOLDEN KING CRAB

Overview of Fishery Regulations

The Alaska Peninsula Area is a superexclusive registration area for golden king crab. Each vessel may operate up to 75 pots to harvest golden king crab.

Historic Background

On occasion, fishers have expressed an interest in exploring the Alaska Peninsula Area for golden king crab. Little to no effort has occurred within the area. In 1983, five vessels registered but no catch was landed. Presently, male golden king crab six inches or greater in carapace width may be taken from January 1 through December 31 under a permit issued by the commissioner.

2006 ALASKA PENINSULA AREA GOLDEN KING CRAB FISHERY

No vessels registered to fish for golden king crab in the Alaska Peninsula Area during 2006.

STATUS OF ALASKA PENINSULA AREA GOLDEN KING CRAB STOCK

ADF&G does not assess golden king crab stocks in the Alaska Peninsula Area. Exploratory efforts by commercial fishers have yet to locate quantities sufficient to sustain a commercial fishery in this area.

SHRIMP

SHRIMP TRAWL FISHERY INTRODUCTION

The trawl shrimp fisheries that occur in the Kodiak, Chignik, and South Peninsula districts are part of shrimp Registration Area J. All of Registration Area J is a nonexclusive registration area for trawl shrimp. The majority of historically-productive inshore sections have established biomass thresholds for commercial fishery openings, called Minimum Acceptable Biomass Indices (MABI). These thresholds and their derivation are explained in the Westward Region Shrimp Fishery Management Plan (Jackson 2005; ADF&G 1982). Sections with MABI thresholds open and close by emergency order. An emergency order can be issued between June 15 and February 28 in the Kodiak District, and May 15 through February 14 in the Chignik and South Peninsula districts. The remaining general section or unspecified waters within these districts open by established seasons, without threshold criteria, or established GHLS. Shrimp abundance estimates are determined by trawl surveys conducted aboard the *R/V Resolution*.

SHRIMP POT FISHERY INTRODUCTION

The pot shrimp fisheries that occur in the Kodiak, Chignik, and South Peninsula districts are part of shrimp Registration Area J. All of Registration Area J is a nonexclusive registration area for pot shrimp. With the exception of six sections located in the Kodiak and Chignik districts, fishing for shrimp with pots is open all year, and no GHLS are established.

KODIAK DISTRICT

Description of the District

The Kodiak District for shrimp includes waters of shrimp Registration Area J that are east of the longitude of Kilokak Rocks. The Kodiak District is further divided into fifteen sections: Inner Marmot Bay, Ugak Bay, Kiliuda Bay, Two Headed Island, Alitak Bay, Olga Bay, Uyak Bay, Uganik Bay, West Afognak, North Afognak, Mainland, Marmot Island, Chiniak Bay, Alitak Flats, and General sections (Figure 14).

Historic Background

The Kodiak trawl shrimp fishery began with a harvest of 31,886 pounds in 1958 (Jackson and Ruccio 2003; Table 15). The fishery grew rapidly to an annual harvest of almost 12.7 million pounds in 1962. The fishery slowed when shore plants and the fishing fleet were badly damaged by the 1964 earthquake and tsunami, but then quickly surged to a peak Kodiak District harvest of almost 82.2 million pounds in 1971. As Kodiak shrimp catches declined in the 1970s, much of the vessel effort shifted into the Chignik and South Peninsula districts (Jackson and Ruccio 2003). The Westward Region harvest peaked in 1973 with over 120 million pounds of shrimp (Figure 15). Stock abundance and fisheries declined sharply thereafter. The northern pink shrimp *Pandalus borealis* has been the most prevalent species in the harvest, contributing over 95% by weight. Other species landed included sidestriped *P. dispar*, coonstriped *P. hypsinotus*, spot *P. platyceros*, and humpy *P. goniurus* shrimps.

ADF&G initiated a voluntary logbook program in 1967. The resulting database, plus data from trawl surveys conducted by ADF&G since the early 1970s, provided a means for establishing harvest levels. The system was flexible during its development stage, but in 1981, the industry requested a management scheme be defined and adopted into regulation. This led to the

WESTWARD REGION SHRIMP MANAGEMENT PLAN, which was approved by the BOF in 1982. The objectives of this management plan were to maintain shrimp stocks at a level termed "representative biomass index" (RBI) as determined by survey trawls, while allowing a fishery during rebuilding periods. A minimum level at which any harvest could occur was established and termed MABI.

Concurrent with approval of the WESTWARD REGION SHRIMP MANAGEMENT PLAN in 1982, the BOF also enacted an additional management strategy as an "economic alternative" known as the MAINLAND SHRIMP MANAGEMENT PLAN. This alternative strategy allowed shrimp fishing in some bays on the Alaska Peninsula and around Afognak Island regardless of survey results. In September of 1997, the BOF repealed the MAINLAND SHRIMP MANAGEMENT PLAN due to concerns about the lack of information needed for the sustainability of the fishery. This left only the General Section comprising offshore areas, open annually from June 15 through February 28. Much of the state waters within the General Section are closed to non-pelagic trawls, including otter and beam shrimp trawl nets. ADF&G requires vessels registering in the General Section to provide logbooks for fishery management and research. There has been little commercial trawl effort in the General Section since the 1986/87 season.

Pot fishing for shrimp has been recorded since 1969 in the Kodiak District, but it has never been a large fishery (Jackson and Ruccio 2003). The North Afognak, West Afognak, and Mainland sections of the Kodiak District were closed to all commercial shrimp fishing in 1997. The BOF closed these sections due to concerns that inadequate information existed regarding the biology and stock status of shrimp in the Westward Area. In March 2003, the BOF amended 5 AAC 31.590 WESTWARD AREA SHRIMP FISHERIES MANAGEMENT PLAN to contain conservative management tools to allow pot shrimp fishing opportunities in these areas. Season dates, a guideline harvest range (GHR), and a mandatory logbook requirement was adopted. These new regulations became effective July 1, 2003. In all other areas, shrimp may be taken year round with pots, and ADF&G requests that logbooks be submitted with fish tickets. The largest landing was less than 19,000 pounds of spot shrimp tails in 1983 (Table 16).

Overview of Fishery Regulations

To participate in commercial shrimp fishing in the Kodiak District, a vessel operator is required to obtain a shellfish registration from ADF&G and an interim use permit card from CFEC. Effective July 1, 2003, vessel operators may not be registered to take shrimp in more than one district at a time.

In the Kodiak District, shrimp may be taken with trawl gear in the General Section from June 15 through February 28. The remaining sections of the Kodiak District are only opened by emergency order. Currently, there is no closed season for shrimp fishing with pot gear in the Kodiak District with the exception of the North Afognak, West Afognak, and Mainland sections, which have a fishing season of May 1 through February 28, unless closed earlier by emergency order. There is a GHR of 0 to 40,000 pounds whole weight for these three sections, and no more than 15,000 pounds may be harvested from an individual section during a calendar year¹.

¹ The current regulation 5 AAC 31.590 limits harvest to 15,000 pounds per calendar year; however, registration and guideline harvest ranges are from May 1 through February 28. ADF&G intends to submit a proposal to the BOF to clarify this discrepancy.

Logbooks are required of fishers targeting shrimp in the North Afognak, West Afognak, and Mainland sections.

2006/07 KODIAK DISTRICT SHRIMP POT AND TRAWL SEASONS

There was no pot fishing effort for shrimp in 2006/07.

STATUS OF KODIAK DISTRICT SHRIMP STOCKS

ADF&G conducts trawl surveys to assess shrimp biomass. Surveys have been conducted every three years in the Kodiak District. Beginning in 2003, portions of the Kodiak District were surveyed on an annual basis. Most of the General Section is not surveyed nor is there any established MABI in the General Section. Since 2003, no sections in the Kodiak District produced shrimp population estimates above the department's established MABI. In the Kodiak District, the highest catch of shrimp per mile towed in 2005 was found in Marmot and Wide bays (Table 17; Jackson 2006). Most sections remain well below historic population levels. In 2001 and 2002, Wide Bay showed some increase in shrimp population size, but the population size decreased again in 2003 and has not shown an increase (Table 17).

Trawl gear does not adequately sample the rocky habitat typically associated with shrimps taken by pot gear. Therefore, no inferences about spot and coonstriped shrimps are drawn from the trawl survey.

SOUTH PENINSULA AND CHIGNIK DISTRICTS

Description of the Districts

The Chignik District for shrimp includes all waters west of a line extending south from Kilokak Rocks and east of a line from Kupreanof Point to the easternmost point of Castle Rock, and east of a line extending 135° southeast from the easternmost point of Castle Rock. The Chignik District is further divided into nine sections: Kujulik Bay, Chignik Bay, Kuiukta Bay, Mitrofanina Island, Ivanof Bay, Chiginagak Bay, Seal Cape, Nakalilok Bay, and Aniakchak Bay sections (Figure 16). The offshore waters in the Chignik District are not assigned sections.

The South Peninsula District for shrimp includes all waters west of a line from Kupreanof Point to the easternmost point of Castle Rock, west of a line extending 135° southeast from the easternmost point of Castle Rock and east of the longitude of Cape Sarichef. The South Peninsula District is further divided into eight sections: Stepovak Bay, Unga Straits, West Nagai, Beaver Bay, Kenoy's Island, Pavlof Bay, Belkofski Bay, and Morzhovoi Bay sections (Figure 17). The offshore waters in the South Peninsula District are not assigned sections.

Historic Background

Shrimp fishing in the South Peninsula and Chignik districts began in 1968, but catch levels remained relatively low until the 1972/73 season when 14.7 million pounds were harvested from the South Peninsula District and 4.8 million pounds were harvested from the Chignik District (Table 18). The historic high catch was reached in the 1973/74 season. Catches declined rapidly after the 1977/78 season until all South Peninsula sections were closed in 1980/81. Although the Sutwik Island Section and all offshore waters of the Chignik District remained open for the 1981/82 season, only 70,948 pounds of shrimp were landed from those areas. Since that time, all the inshore waters have remained closed, and no fishing has occurred in the offshore areas.

The Chiginagak, Nakalilok, and Aniakchak sections of the Chignik District were closed to all commercial shrimp fishing in 1997. The BOF closed these sections due to concerns that inadequate information existed regarding the biology and stock status of shrimp in the Westward Area. In March 2003, the BOF created 5 AAC 31.592 CHIGNIK DISTRICT POT SHRIMP FISHERIES MANAGEMENT PLAN.

Overview of Fishery Regulations

The shrimp fisheries that occur in the Chignik and South Peninsula districts are part of Registration Area J. All of Registration Area J is a nonexclusive registration area for shrimp fishing. To participate in commercial shrimp fishing in Area J, a vessel operator is required to obtain an interim use permit card from CFEC and a shellfish registration from ADF&G.

In the Chignik and South Peninsula districts shrimp may be taken with trawl gear from May 15 through February 14 provided that estimated shrimp populations are above established thresholds. The majority of the sections in these two districts are open and closed by emergency order when abundance thresholds are met or exceeded. The remaining waters of the Chignik and South Peninsula districts, similar to the General Section of the Kodiak District, have no established MABI and are open annually during the established season.

Currently there is no closed season for shrimp fishing with pot gear in the Chignik District with the exception of Chiginagak, Nakalilok, and Aniakchak Bay sections, which have a fishing season of May 1 through February 28, unless closed earlier by emergency order. There is a GHR of 0 to 40,000 pounds whole weight for these three sections, and no more than 15,000 pounds may be harvested from an individual section during a calendar year. Logbooks are required of fishers targeting shrimp in the Chiginagak, Nakalilok, and Aniakchak Bay sections. There are no closed sections in the South Peninsula District for vessels using pot gear.

2006/07 SOUTH PENINSULA AND CHIGNIK DISTRICTS SHRIMP POT AND TRAWL SEASON

There was no fishing effort for shrimp with pot gear or trawl gear in the South Peninsula or Chignik districts during the 2006/07 seasons.

STATUS OF SOUTH PENINSULA AND CHIGNIK DISTRICTS SHRIMP STOCKS

The South Peninsula and Chignik districts were surveyed in 2006. Shrimp abundance indices from the 2006 survey were below MABI levels in all South Peninsula and Chignik district sections that were surveyed (Table 16). Shrimp densities within the South Peninsula and Chignik districts were similar to those found during the 1995, 2002 and 2004 surveys (Jackson 2006).

RED SEA CUCUMBER

INTRODUCTION

The red sea cucumber fishery in the Kodiak, Chignik, and South Peninsula districts is part of miscellaneous shellfish Registration Area J. The sea cucumber dive fisheries are nonexclusive registration fisheries. The districts and sections in use for Tanner crab management are used to delineate sea cucumber management. GHs are established annually and fisheries remain open until section GHs are attained or the biological closure begins. Weekly fishing periods are announced and established by emergency order. Fishing periods begin on or about October 1 and

continue until the established GHGs are attained. Most sections have been open from one to three days per fishing period. Historically, dive gear has been the only method used to harvest sea cucumbers in the Kodiak, Chignik, and South Peninsula districts. The use of mixed gasses in the dive fishery is allowed. Divers are required to submit dive logs at the time of landing, with the ADF&G copy of the fish ticket. Each diver is required to have a CFEC permit card and register with ADF&G prior to participating in the fishery.

KODIAK AND CHIGNIK DISTRICTS

Description of the Districts

The Kodiak District for sea cucumbers includes Pacific Ocean waters of miscellaneous shellfish Registration Area J south of the latitude of Cape Douglas (58° 51.10' N lat.), west of the longitude of Cape Fairfield (148° 50.25' W long.), and east of the longitude of Cape Kumlik (157° 27' W long.). The district is further subdivided into eight sections: Northeast, Eastside, Southeast, Southwest, Semidi Island, Westside, North Mainland, and South Mainland (Figure 2).

The Chignik District for sea cucumbers includes the Pacific Ocean waters of Registration Area J west of the longitude of Cape Kumlik (157° 27' W long.), east of a line from the southern most tip of Kupreanof Point (55° 34' N lat., 159° 36' W long.) to the easternmost point of Castle Rock, and east of a line extending 135° from the easternmost point of Castle Rock (Figure 3). The Chignik District is not subdivided into sections for sea cucumber management.

Historic Background

Red sea cucumbers were not harvested commercially in the Westward Region until 1991 (Table 19). In 1991 and 1992 processors recruited divers to gather small numbers of red sea cucumbers in the Kodiak and Chignik areas to test marketability. In the spring of 1993 several processors recruited divers to prosecute a commercial fishery for red sea cucumbers in those same areas.

In February of 1994 ADF&G announced several management measures intended to prevent overharvest of the red sea cucumber resource. A seasonal closure from May 1 through September 30 was established to protect spawning aggregates of red sea cucumbers. In addition, GHGs were established for the Kodiak and Chignik districts. Management areas based on the Tanner crab fishing sections were utilized in the Kodiak District in an attempt to spread the effort and harvest around the island and prevent localized depletion. A GHG was set for each of the individual sections based on historic production and fishery performance. Registration permit provisions included a weekly fishing period of five days and daily dive logs submitted by the divers with fish tickets. The fishery was reopened April 1, 1994 and closed on April 30.

Following the May 1 to September 30 closure in 1994, ADF&G again opened the Kodiak and Chignik districts to red sea cucumber fishing. GHGs for the Kodiak and Chignik districts combined during the 1994/95 season totaled 225,000 pounds with weekly fishing periods of three days. The shortened fishing periods were set to allow ADF&G a better opportunity to assess inseason fishery performance. GHGs were quickly reached in the sections surrounding Kodiak Island.

The 1995/96 sea cucumber fishing season opened on October 1, 1995. Evaluation of another year of fishery performance resulted in a decreased GHG. The GHG for the Kodiak District was 135,000 pounds, and the Chignik District GHG was set at 25,000 pounds. Effort again concentrated on the Eastside, Southeast, Southwest, and Westside sections of Kodiak. Although

outlying areas along the Alaska Peninsula have historically remained open for the duration of the regulatory season, divers were reluctant to cross Shelikof Strait due to stormy weather and the expectation of marginal returns. From 1998-2004, the fishery in the Kodiak District has followed a similar pattern of approximately five fishing periods of varying length occurring before the areas around Kodiak Island obtained their respective GHGs and were closed for the season. The development of sea cucumber dive fisheries in both Kodiak and Chignik are very closely related. Therefore, the Chignik District information will continue to be reported in the Kodiak section of this Area Management Report.

2006/07 KODIAK AND CHIGNIK DISTRICTS RED SEA CUCUMBER SEASON

The 2006/07 fishery opening was Sunday, October 1, 2006. The 2006/07 GHG for the Kodiak District totaled 145,000 pounds of eviscerated product (Table 20), the same as in 2005/06. The GHG for Uganik Bay in the Westside Section remained at 5,000 pounds due to poor fishery performance in previous seasons. The Chignik District GHG was 25,000 pounds. Twenty-one divers registered (up from eighteen in 2005/06) with a high of eighteen divers participating during the first opening. This effort level is similar to the recent highest level of participation (2003) when 25 divers registered with a high of 17 participating during two openings. The Eastside, Southeast, Southwest, and Westside sections of the Kodiak Area were closed by emergency order to prevent divers from exceeding the GHGs. Only one processor purchased product; therefore, harvest information is confidential.

The level of participation for the 2006/07 sea cucumber fishery was unknown up until one week prior to the fishery. Based on conservative estimates of anticipated participation, the first dive fishing period was established as a two-day opening on Sunday, October 1 and Monday, October 2. Twenty divers registered and eighteen participated during the first fishery opening. There were a total of four fishing periods and twelve days of fishing. All sections in the Kodiak District except the Northeast and Mainland sections closed; the Southwest and Westside sections closed on October 14, and the Eastside and Southeast sections closed on October 21.

While fishing in the Chignik District historically has occurred in the spring, there was no effort in the Chignik District during the 2006/07 fishery.

2006 Dockside Sample Statistics

Over the course of the fishery, dockside samplers conducted interviews with vessel operators at each delivery. Logbook data supplied by divers was much improved from previous seasons; most of the logbooks contained latitude and longitude data as opposed to only bay names or statistical areas. Eighteen landings were sampled for average weights at the point of delivery. The average eviscerated weight for sampled Kodiak District red sea cucumbers was 0.68 pounds per animal.

STATUS OF KODIAK AND CHIGNIK DISTRICTS RED SEA CUCUMBER STOCKS

There are no population estimates for red sea cucumbers in the Westward Region. Following the establishment of GHGs in 1995, catch rates from diver logbook data in the commercial fishery have remained stable. Biomass levels, especially at depths unavailable to divers, are unknown.

SOUTH PENINSULA DISTRICT

Description of the District

The South Peninsula District for red sea cucumbers includes all Pacific Ocean waters west of a line from the southernmost tip of Kupreanof Point to the easternmost tip of Castle Rock, west of a line extending southeast 135° from the easternmost tip of Castle Rock, and east of the latitude of Scotch Cap Light (Figure 3).

Historic Background

The waters adjacent to the south side of the Alaska Peninsula were initially explored for red sea cucumber in 1993. Very little effort has historically occurred in the South Peninsula District for red sea cucumbers. Effort occurred in the 1994 season with three divers. The catch during this season remains confidential as less than three divers made a landing. There have been no landings in the South Peninsula District since 1994.

2006/07 SOUTH PENINSULA DISTRICT RED SEA CUCUMBER SEASON

No fishing occurred during the 2006/07 season in the South Peninsula District sea cucumber fishery. The season was open from October 1 through April 30 with a GHL of 5,000 pounds for exploratory fishing.

STATUS OF SOUTH PENINSULA DISTRICT RED SEA CUCUMBER STOCKS

Biomass assessment is not conducted on red sea cucumbers in the South Peninsula District; therefore, actual population levels are unknown. In addition, the extent of the westward range of red sea cucumbers is not well documented. ADF&G trawl surveys have captured red sea cucumbers as far west as Pavlof Bay.

GREEN SEA URCHINS

INTRODUCTION

Fishers participate in the green sea urchin fishery under the terms of a miscellaneous shellfish permit as authorized in 5 AAC 38.062. Commercial fishing regulations set the season from October 1 to January 31. Sea urchins may be taken only by hand picking, which may be aided by the use of diving gear, an abalone iron, or a sea urchin rake. A valid CFEC interim use permit card and registration with ADF&G are required. Logbooks are mandatory and must be submitted with completed fish tickets. There are currently no size limits for green sea urchins in regulation. However, buyers have only purchased green sea urchins that are approximately 2 to 2.25 inches or greater in test diameter.

HISTORIC BACKGROUND

The green sea urchin was not harvested commercially in the Westward Region until 1980 when a small amount was taken in the Kodiak Area to test marketability (Table 21). There was little further interest in green sea urchins in Kodiak until 1985 when several thousand pounds were harvested. In 1986, the harvest increased with more divers participating. Peak harvest occurred in 1988 with 190,509 pounds of urchins (Table 21). Kodiak green sea urchins are usually shipped live to Japan for processing.

In 2000, ADF&G developed conservative GHGs for the green sea urchin fisheries based on historic harvest information. The sections utilized for Tanner crab and red sea cucumber management were adopted for green sea urchin management. Sections that lacked historic harvest data were assigned a 5,000 pound GHG (Table 20). Sections that had been previously explored and had some prior harvest were assigned a 10,000 pound GHG to help prevent local depletion. ADF&G will work closely with fishery participants to collect baseline biological data from the green sea urchin fishery.

2006/07 GREEN SEA URCHIN SEASON

No vessels were registered for the 2006/07 green sea urchin season in the Kodiak Area.

STATUS OF GREEN SEA URCHIN STOCKS

No stock assessment work is currently being done on green sea urchin populations in the Kodiak and Alaska Peninsula areas. Given the low effort levels in the fishery, data from logbooks on CPUE varies widely and does not lend itself to inferences on stock status. Fishery information indicates the biomass is not large when compared to other areas on the Pacific coast and when compared to an annual worldwide sea urchin harvest estimated at 100 million pounds (Lourie and Sanders 2000).

OCTOPUS

INTRODUCTION

Harvest of the giant Pacific octopus occurs in the Kodiak, Chignik, and South Peninsula districts of miscellaneous shellfish Registration Area J. There is no closed season for directed fisheries for octopus; however, fisheries may only occur under the authority of a commissioner's permit. To target octopus, a valid octopus permit card for the gear type to be used must be obtained from CFEC. While in possession of an octopus commissioner's permit, vessel operators may not participate in other fisheries such as the state-waters Pacific cod *Gadus macrocephalus* fishery. Vessel operators may retain octopus bycatch up to 20% of their target species weight with any valid CFEC permit card. Vessel operators registered for an octopus fishery may only retain permissible bycatch levels of other species. As part of the commissioner's permit requirements, individuals targeting octopus are required to maintain a logbook. No GHGs are established for the octopus fishery.

In 2001, ADF&G adopted a revised product recovery rate for octopus designated as "gutted" on fish tickets. The revision has changed historic data within the department's fish ticket database from 1995 to present; therefore, this report may contain data that is different from previously published reports on octopus harvest.

HISTORIC BACKGROUND

Octopus is considered a groundfish species by National Marine Fisheries Service (NMFS) and a shellfish species under BOF regulation. Before 1985, no distinction between state and federal waters was made regarding octopus harvest. In the period from 1977 to 1984, 51,479 pounds were harvested from state and federal waters in the Kodiak District. During these years the highest recorded harvest in the Kodiak District occurred in 1980 with 19,342 pounds of octopus. Much of the octopus harvested was used as bait or kept for personal consumption and was not reported on fish tickets. Harvests were likely higher than indicated.

The octopus fishery experienced a dramatic increase in the 1990s. The decline of many crab stocks in the Gulf of Alaska resulted in reduced harvest opportunity or fishery closures for many of the crab fisheries that had been prosecuted with pot gear from late fall to early spring. To fill the void, many pot-gear fishers turned to Pacific cod in those months. In turn, octopus retention increased during Pacific cod fisheries. ADF&G worked with industry to ensure that all octopus harvest, particularly harvests that were not sold but were retained as bait, was documented on fish tickets. ADF&G also began requiring vessels to specify, at the time of registration for groundfish fisheries, their intent to retain octopus as bycatch. Octopus has long been sought as bait in the Pacific halibut *Hippoglossus stenolepis* longline fisheries and the Pacific cod pot fisheries. Periodic episodes of favorable market conditions also resulted in large amounts of octopus sold to processors.

Historically, the majority of octopus harvest in the Kodiak, Chignik, and South Peninsula districts has occurred within state waters (Tables 22 and 23). In 1991, there were 106,748 pounds of octopus harvested from state waters in the Kodiak District. In that same year, 22,607 pounds of octopus were harvested from federal waters in the Kodiak District. Octopus harvest decreased substantially in the mid-1990s, only to increase sharply with the advent of the state-waters Pacific cod fisheries in 1997. In the Kodiak District, harvest reached a record high in 1998 with a combined state and federal harvest of 375,379 pounds of octopus. In the Chignik and South Peninsula districts, harvest reached a record high in 2004 with a combined harvest of 330,192 pounds of octopus (Table 23).

2006 KODIAK DISTRICT OCTOPUS FISHERY

Four vessels were registered to target octopus in 2006; however, little effort occurred. The 2006 incidental harvest of octopus in the Kodiak District totaled 237,894 pounds from state and federal waters (Table 22). Forty two vessels harvested 69,086 pounds from 185 landings in state waters. A total of 168,808 pounds were harvested from federal waters by 46 vessels making 245 landings. Fish tickets with price information listed an average of \$0.57 per pound for an estimated exvessel fishery value of \$135,600 for the state and federal waters harvests combined.

2006 ALASKA PENINSULA AND CHIGNIK DISTRICTS OCTOPUS FISHERIES

One vessel registered for directed fishing of octopus in the Chignik and South Peninsula districts in 2006. The 2006 incidental harvest of octopus in the Chignik and South Peninsula districts totaled 75,604 pounds from state and federal waters (Table 23). Forty four vessels harvested 52,663 pounds of octopus from 167 landings in state waters. A total of 22,941 pounds of octopus were harvested from federal waters by 21 vessels making 61 landings. Fish tickets with price information listed an average of \$0.51 per pound for an estimated exvessel fishery value of \$38,559 for the state and federal water harvest combined.

STATUS OF KODIAK, CHIGNIK, AND ALASKA PENINSULA DISTRICTS OCTOPUS STOCKS

No stock assessment is currently conducted on octopus in the Westward Region; the population status is unknown.

RAZOR CLAMS

The commercial razor clam fishery in the Kodiak, Chignik, and South Peninsula districts are part of miscellaneous shellfish Registration Area J. The Alaska razor clam *Siliqua alta* and the

Pacific razor clam *S. patula* may be harvested only under the authority of a commissioner's permit. There are no established GHs for clam fishing.

HISTORIC BACKGROUND

Razor clams have been harvested in the Kodiak Management Area from the early 1920s through 1986 (Table 24). Though many Kodiak Island beaches were explored with some success, the principal commercial harvest occurred about 70 miles northwest of Kodiak in the Kukak Bay, Hallo Bay, Big River, and Swikshak Beach regions of the Alaska Peninsula. Digging continued on a somewhat regular basis until the early 1960s when a combination of increasing federal and state clam processing regulations, poor market conditions, and the 1964 earthquake precipitated a decline in harvests. Commercial harvesting of clams for human consumption has not been re-established, and the fishery has been strictly hand digging for use as bait in the Dungeness crab fishery. The certification program conducted by the DEC ended in July 1980. Currently, there are no clam beaches in the Kodiak Area commercially certified as safe for human consumption.

Many of the principal harvest areas along the Alaska Peninsula are adjacent to the Katmai National Monument, which includes all the land above mean high water from Cape Douglas to Cape Kubugakli. Commercial activity within the monument is restricted by the current policy of the U.S. Park Service, which dictates a ban on camping to conduct a business enterprise within the monument. In 1986, the BOF adopted a regulation prohibiting hydraulic mechanical dredges from harvesting clams in the Kodiak District east of Kilokak Rocks. No commercial activity has occurred in the Kodiak, Chignik or South Peninsula districts since 1986.

2006 RAZOR CLAM SEASON

There was no harvest of razor clams in 2006.

STATUS OF KODIAK, CHIGNIK, AND ALASKA PENINSULA DISTRICTS RAZOR CLAM STOCKS

The potential for a razor clam harvest in the Kodiak District has been established by historic catch records and studies conducted by ADF&G. These studies, however, were conducted in the mid-1970s and are of little benefit in judging stock status at this time.

OTHER MISCELLANEOUS SHELLFISH FISHERIES

Periodic interest has arisen in harvesting other miscellaneous shellfish in the Kodiak, Chignik, and South Peninsula areas. Request for fishing permits for snails, intertidal mollusks, crabs, and mussels have occurred. Information on harvesting shellfish species not described in this report can be obtained by contacting ADF&G. Regulations governing other miscellaneous shellfish can be found in Chapter 38 of the shellfish regulations.

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TABLES AND FIGURES

Table 1.--Shellfish emergency orders issued for the Kodiak Area, 2006.

| Emergency Order | Effective Date | Explanation |
|---------------------|----------------|--|
| <u>Tanner Crab</u> | | |
| 4-S-01-06 | 1/15/2006 | Delayed the opening of the Kodiak Tanner crab fishery 24-hours due to weather. |
| 4-S-02-06 | 1/16/2006 | Second 24-hour weather delay of the Kodiak Tanner crab fishery. |
| 4-S-04-06 | 1/20/2006 | Closed the Southwest Section to Tanner crab fishing for the remainder of the 2005/2006 season. |
| 4-S-05-06 | 1/26/2006 | Closed the Eastside Section to Tanner crab fishing for the remainder of the 2005/2006 season. |
| 4-S-06-06 | 1/27/2006 | Closed the Chiniak Bay portion of the Northeast Section to Tanner crab fishing for the remainder of the 2005/2006 season. |
| 4-S-07-06 | 2/2/2006 | Closed the Southeast Section to Tanner crab fishing for the remainder of the 2005/2006 season. |
| <u>Sea Cucumber</u> | | |
| 4-S-12-06 | 10/1/2006 | Opened the Kodiak District for the first 48-hour fishing period for red sea cucumbers. |
| 4-S-13-06 | 10/6/2006 | Opened the Southeast and Eastside Sections for a 48 hour fishing period; opened the Westside Section for a 72 hour fishing period; opened the Uganik Bay area for a 48 hour fishing period; and the remainder of the Kodiak District for a 72 hour fishing period for red sea cucumbers. |
| 4-S-14-06 | 10/14/2006 | Closed the Southwest and Westside Sections for the remainder of the 2006/07 season. Opened the Southeast Section for a 24 hour fishing period; opened the Eastside Section for an 8 hour fishing period, opened the Uganik Bay area for a 30 hour fishing period, and the remainder of the Kodiak District for a 72 hour fishing period for red sea cucumbers. |
| 4-S-15-06 | 10/21/2006 | Closed the Eastside, Southeast, Southwest and Westside Sections for the remainder of the 2006/2007 season. Opened the Northeast Section for a 72 hour fishing period; and opened the Uganik Bay area for a 6 hour fishing period. |

Table 2.-Shellfish emergency orders issued for the Alaska Peninsula Management Area, 2006.

| Emergency Order | Effective Date | Explanation |
|--------------------|----------------|--|
| <u>Tanner Crab</u> | | |
| 4-S-03-06 | 1/19/2006 | Closed the waters of Cold Bay in the Western Section of the South Peninsula District to Tanner crab fishing for the remainder of the 2005/2006 season. |
| 4-S-09-06 | 2/10/2006 | Closed the Chignik District west of 159° W long. to Tanner crab fishing for the remainder of the 2005/2006 season. |
| 4-S-10-06 | 2/17/2006 | Closed the Western Section of the South Peninsula District to Tanner crab fishing for the remainder of the 2005/2006 season. |

Table 3.—Tanner crab commercial catch, effort, and value for the Kodiak District, 1967 – 2005/06.

| Year/Season | GHL | Number | | | | Pots Lifted | Average CPUE ^a | Average Weight | Average Price Per Pound | Exvessel Value (millions) |
|-----------------------------|-----------|---------|----------|--------------------|-----------------------|----------------|------------------------------|-------------------|----------------------------|------------------------------|
| | | Vessels | Landings | Crabs ^a | Pounds ^a | | | | | |
| 1967 | NA | NA | 83 | NA | 110,961 | NA | NA | NA | \$0.07 | NA |
| 1968 | NA | NA | 817 | NA | 2,560,687 | NA | NA | NA | \$0.10 | NA |
| 1969 | NA | 85 | 955 | NA | 6,827,312 | 72,748 | 43 | NA | \$0.11 | NA |
| 1969/70 | NA | 67 | 833 | 3,237,244 | 8,416,782 | 78,266 | 42 | 2.6 | \$0.11 | NA |
| 1970/71 | NA | 82 | 453 | 2,686,067 | 6,744,163 | 60,967 | 44 | 2.5 | \$0.11 | NA |
| 1971/72 | NA | 46 | 505 | 3,878,618 | 9,475,902 | 65,907 | 59 | 2.4 | \$0.13 | NA |
| 1972/73 | NA | 105 | 1,466 | 13,609,688 | 30,699,777 | 188,158 | 72 | 2.3 | \$0.17 | NA |
| 1973/74 | NA | 123 | 1,741 | 11,857,573 | 29,820,899 | 217,523 | 55 | 2.5 | \$0.20 | NA |
| 1974/75 | NA | 74 | 471 | 5,459,940 | 13,649,966 | 73,826 | 74 | 2.5 | \$0.17 | NA |
| 1975/76 | NA | 104 | 1,168 | 10,748,958 | 27,336,909 | 199,304 | 54 | 2.5 | \$0.20 | NA |
| 1976/77 | NA | 102 | 998 | 7,830,727 | 20,720,079 | 164,213 | 48 | 2.6 | \$0.33 | NA |
| 1977/78 | NA | 148 | 1,483 | 12,401,243 | 33,281,472 | 251,621 | 49 | 2.6 | \$0.43 | NA |
| 1978/79 | NA | 218 | 1,225 | 10,702,829 | 29,173,807 | 275,455 | 38 | 2.7 | \$0.55 | NA |
| 1979/80 | NA | 211 | 1,385 | 6,813,128 | 18,623,875 | 282,946 | 24 | 2.7 | \$0.55 | NA |
| 1980/81 | NA | 188 | 771 | 4,398,631 | 11,748,629 | 174,351 | 25 | 2.7 | \$0.65 | NA |
| 1981/82 | NA | 221 | 950 | 5,413,467 | 13,756,159 | 230,403 | 24 | 2.5 | \$1.65 | NA |
| 1982/83 | NA | 348 | 1,439 | 7,744,812 | 18,927,061 | 377,562 | 21 | 2.4 | \$1.25 | NA |
| 1983/84 | NA | 303 | 1,229 | 5,891,968 | 14,478,066 | 303,764 | 19 | 2.5 | \$1.20 | NA |
| 1984/85 | NA | 217 | 710 | 4,540,114 | 11,947,696 | 176,215 | 26 | 2.6 | \$1.96 | NA |
| 1985/86 | NA | 234 | 603 | 3,454,957 | 8,990,612 | 160,220 | 22 | 2.6 | \$1.97 | NA |
| 1986/87 | NA | 190 | 506 | 1,832,962 | 4,839,446 | 111,198 | 16 | 2.6 | \$2.64 | NA |
| 1987/88 | NA | 178 | 560 | 1,648,064 | 3,959,504 | 103,391 | 16 | 2.4 | \$2.27 | NA |
| 1988/89 | NA | 171 | 566 | 2,096,540 | 5,185,563 | 86,056 | 24 | 2.5 | \$2.84 | NA |
| 1989/90 | NA | 232 | 547 | 1,437,905 | 3,446,937 | 96,956 | 15 | 2.4 | \$2.64 | NA |
| 1990/91 | NA | 137 | 445 | 764,357 | 1,917,713 | 54,110 | 14 | 2.5 | \$1.56 | NA |
| 1991/92 | NA | 143 | 434 | 982,391 | 2,400,213 | 47,384 | 21 | 2.4 | \$2.23 | NA |
| 1992/93 | NA | 140 | 353 | 518,982 | 1,318,446 | 43,528 | 12 | 2.5 | \$2.11 | NA |
| 1993/94 | NA | 130 | 379 | 511,131 | 1,253,462 | 41,587 | 12 | 2.5 | \$2.25 | NA |
| 1994/95 to 1999/00 | | | | | NO COMMERCIAL FISHERY | | | | | |
| 2000/01 | 500,000 | 144 | 192 | 193,138 | 510,407 | 7,233 | 27 | 2.6 | \$2.08 | \$1.10 |
| 2001/02 | 500,000 | 181 | 279 | 146,655 | 361,166 | 10,446 | 14 | 2.5 | \$2.20 | \$0.79 |
| 2002/03 | 510,000 | 72 | 276 | 215,594 | 511,324 | 11,108 | 19 | 2.4 | \$2.48 | \$1.26 |
| 2003/04 | 795,000 | 66 | 251 | 254,990 | 566,218 | 15,491 | 16 | 2.2 | \$2.31 | \$1.31 |
| 2004/05 | 1,750,000 | 86 | 287 | 776,188 | 1,800,197 | 21,399 | 36 | 2.3 | \$1.71 | \$3.08 |
| 2005/06 | 2,100,000 | 67 | 248 | 889,748 | 2,121,384 | 21,962 | 41 | 2.4 | \$1.44 | \$3.05 |
| 5 year average ^c | 1,131,000 | 94 | 268 | 456,635 | 1,072,058 | 16,081 | 25 | 2.3 | \$2.03 | \$1.90 |

^a Includes deadloss and personal use.

^b Average CPUE is number of crab per pot

^c 5 year average is last 5 years of fishery data (2001/02-2005/06).

NA = not available

Table 4.—Tanner crab guideline harvest level, effort, and harvest, including deadloss and personal use, by section for the Kodiak District, 2003/04 – 2005/06.

| Year | Section ^a | GHL | Vessels | Permits | Harvest | Pots Lifted | CPUE ^b |
|---------|--------------------------|-----------|-----------------|--------------|--------------|--------------|-------------------|
| 2003/04 | Northeast | 245,000 | 43 | 44 | 259,572 | 6,281 | 19 |
| | Eastside | 450,000 | 20 | 20 | 219,980 | 6,781 | 15 |
| | Southeast | 100,000 | 15 | 16 | 86,666 | 2,429 | 16 |
| | Southwest | Closed | | | | | |
| | Semidi | Closed | | | | | |
| | <i>Total</i> | 795,000 | 66 ^c | 68 | 566,218 | 15,491 | 16 |
| 2004/05 | Northeast | 550,000 | 43 | 43 | 467,516 | 6,876 | 25 |
| | Eastside | 650,000 | 27 | 27 | 665,339 | 8,607 | 33 |
| | Southeast | 100,000 | 9 | 9 | 92,398 | 1,711 | 20 |
| | Southwest | 450,000 | 20 | 20 | 574,944 | 4,021 | 56 |
| | Semidi | n/a | Confidential | Confidential | Confidential | Confidential | Confidential |
| | <i>Total^d</i> | 1,750,000 | 86 ^c | 86 | 1,800,197 | 21,399 | 36 |
| 2005/06 | Northeast | 550,000 | 41 | 42 | 519,730 | 8,565 | 27 |
| | Eastside | 1,300,000 | 43 | 43 | 1,302,378 | 10,478 | 51 |
| | Southeast | 100,000 | 9 | 9 | 130,292 | 1,489 | 35 |
| | Southwest | 150,000 | 7 | 7 | 168,984 | 1,108 | 61 |
| | Semidi | n/a | Confidential | Confidential | Confidential | Confidential | Confidential |
| | <i>Total^d</i> | 2,100,000 | 67 ^c | 68 | 2,121,384 | 21,640 | 41 |

^a The Semidi Island Overlap Section (abbreviated Semidi) does not have a GHL.

^b CPUE is number of crab per pot lift.

^c Total unique vessels; several vessels participated in multiple sections.

^d Totals do not include confidential data.

Confidential = less than three vessels made landings or less than three processors purchased product

Table 5.—Kodiak, Chignik, and South Peninsula districts Tanner crab guideline harvest levels and season dates, 2005/06.

| District/Section | GHL (pounds) | Opening date/time | Partial closure/time | Closure date time |
|------------------------|-----------------|---------------------------|-----------------------------------|-----------------------------|
| Kodiak | | | | |
| Northeast | 550,000 | Jan 17/ Noon ^a | January 27/Noon ^b | March 2/ 2:00 PM |
| Eastside | 1,300,000 | Jan 17/ Noon ^a | none | January 26/ Noon |
| Southeast | 100,000 | Jan 17/ Noon ^a | none | February 2/ 2:00 PM |
| Southwest | 150,000 | Jan 17/ Noon ^a | none | January 20/ 6:00 PM |
| Westside | | No Commercial Fishery | | |
| North Mainland | | No Commercial Fishery | | |
| South Mainland | | No Commercial Fishery | | |
| Semidi Island | n/a | Jan 15/ Noon | | March 31/ Noon ^c |
| Chignik | 200,000 | Jan 15/ Noon | February 10/ 5:59 PM ^d | March 31/ Noon |
| South Peninsula | | | | |
| Eastern | | No Commercial Fishery | | |
| Western | 290,000 | Jan 15/ Noon | January 19/5:59 PM ^e | February 17/ 5:59 PM |

^a The weather delay criteria was met for 2 days, delaying the opening by 48 hours.

^b Partial Closure of the Northeast Section (Chiniak Bay).

^c The Semidi Island Overlap Section (abbreviated Semidi Island) opened concurrent with the Chignik District, and closed when the Chignik District closed.

^d Partial closure of the Chignik District (west of 159° W long.).

^e Partial closure of the Western Section (Cold Bay).

Table 6.—Tanner crab commercial catch, including deadloss and personal use, effort, and value for the Chignik District, 1968 – 2005/06.

| Year/Season | GHL | Number | | | Pots Lifted | Average CPUE | Average Weight | Average Price Per Pound | |
|-----------------------------|---------|-----------------------|----------|-----------|-------------|--------------|----------------|-------------------------|--------|
| | | Vessels | Landings | Crabs | | | | | Pounds |
| 1968 | NA | NA | NA | NA | 21,100 | NA | NA | NA | |
| 1969 | NA | NA | NA | NA | 38,100 | NA | NA | NA | |
| 1969/70 | NA | NA | NA | NA | 2,800 | NA | NA | NA | |
| 1970/71 | NA | NA | NA | NA | 152,300 | NA | NA | NA | |
| 1971/72 | NA | CONFIDENTIAL HARVEST | | | | | | | |
| 1972/73 | NA | 15 | 56 | 297,363 | 747,788 | 8,080 | 51 | 2.5 | \$0.16 |
| 1973/74 | NA | 25 | 115 | 1,585,560 | 4,054,873 | 28,083 | 57 | 2.6 | \$0.20 |
| 1974/75 | NA | 25 | 91 | 1,438,508 | 3,649,444 | 22,675 | 63 | 2.5 | \$0.14 |
| 1975/76 | NA | 35 | 288 | 2,724,509 | 11,201,900 | 52,381 | 52 | 2.5 | \$0.19 |
| 1976/77 | NA | 21 | 141 | 2,098,226 | 5,672,919 | 40,604 | 52 | 2.7 | \$0.33 |
| 1977/78 | NA | 32 | 140 | 1,725,042 | 4,693,830 | 38,414 | 45 | 2.8 | \$0.42 |
| 1978/79 | NA | 39 | 126 | 926,253 | 2,536,105 | 28,378 | 33 | 2.7 | \$0.55 |
| 1979/80 | NA | 42 | 155 | 2,340,004 | 3,517,920 | 54,627 | 25 | 2.6 | \$0.54 |
| 1980/81 | NA | 24 | 112 | 1,534,847 | 3,653,723 | 44,022 | 35 | 2.4 | \$0.64 |
| 1981/82 | NA | 45 | 174 | 1,343,500 | 3,240,476 | 47,830 | 28 | 2.4 | \$1.21 |
| 1982/83 | NA | 48 | 136 | 1,432,029 | 3,497,370 | 60,210 | 24 | 2.4 | \$1.12 |
| 1983/84 | NA | 17 | 41 | 269,724 | 659,043 | 14,665 | 18 | 2.4 | \$1.09 |
| 1984/85 | NA | 15 | 27 | 162,448 | 375,476 | 15,708 | 10 | 2.3 | \$1.42 |
| 1985/86 | NA | 6 | 12 | 85,697 | 188,162 | 7,435 | 12 | 2.2 | \$1.97 |
| 1986/87 | NA | 10 | 20 | 89,329 | 195,060 | 7,052 | 13 | 2.2 | \$2.28 |
| 1987/88 | NA | 6 | 11 | 87,148 | 183,111 | 6,544 | 13 | 2.1 | \$2.33 |
| 1988/89 | NA | 6 | 34 | 142,470 | 323,120 | 9,845 | 15 | 2.3 | \$3.05 |
| 1989/90 to 2003/04 | | NO COMMERCIAL FISHERY | | | | | | | |
| 2004/05 | 400,000 | 23 | 59 | 186,706 | 415,111 | 7,456 | 25 | 2.2 | \$1.65 |
| 2005/06 | 200,000 | 4 | 7 | 57,547 | 143,164 | 2,037 | 28 | 2.5 | \$1.20 |
| 5 year average ^a | | 10 | 28 | 112,640 | 251,913 | 6,587 | 19 | 2.3 | \$2.10 |

^a 5 year average is the last 5 years of fishery data (1986/87 - 1988/89 and 2004/05 - 2005/06).

NA= Not available

Table 7.—Tanner crab commercial catch, including deadloss and personal use, effort, and value for the South Peninsula District, 1967 - 2005/06.

| Year/Season | GHL | Number | | | Pots Lifted | Average CPUE | Average Weight | Average Price Per Pound | |
|-----------------------------|-----------|---------|----------|-----------|-------------|-----------------------|----------------|-------------------------|--------|
| | | Vessels | Landings | Crabs | | | | | Pounds |
| 1967 | NA | NA | NA | NA | 3,100 | NA | NA | NA | |
| 1968 | NA | NA | 155 | 36,835 | 110,610 | NA | NA | 3.0 | NA |
| 1969 | NA | NA | 173 | 221,946 | 606,178 | NA | NA | 2.7 | NA |
| 1969/70 | NA | NA | NA | NA | 2,093,600 | NA | NA | NA | NA |
| 1970/71 | NA | 17 | 242 | 813,610 | 2,140,585 | NA | NA | 2.6 | \$0.10 |
| 1971/72 | NA | NA | NA | NA | 3,618,900 | NA | NA | NA | NA |
| 1972/73 | NA | 36 | 390 | 2,213,006 | 5,615,563 | 53,573 | 41 | 2.5 | NA |
| 1973/74 | NA | 44 | 386 | 3,504,668 | 8,300,578 | 58,444 | 60 | 2.4 | NA |
| 1974/75 | NA | 44 | 131 | 2,053,530 | 5,195,800 | 38,153 | 54 | 2.5 | \$0.14 |
| 1975/76 | NA | 36 | 288 | 2,724,509 | 6,926,161 | 52,381 | 52 | 2.5 | \$0.20 |
| 1976/77 | NA | 28 | 289 | 2,524,565 | 6,773,838 | 63,143 | 40 | 2.7 | \$0.32 |
| 1977/78 | NA | 36 | 374 | 2,847,948 | 7,446,270 | 70,587 | 40 | 2.6 | \$0.40 |
| 1978/79 | NA | 48 | 332 | 3,267,122 | 8,684,408 | 82,374 | 40 | 2.7 | \$0.51 |
| 1979/80 | NA | 61 | 363 | 2,581,544 | 6,961,251 | 96,989 | 27 | 2.7 | \$0.54 |
| 1980/81 | 6,000,000 | 43 | 268 | 1,274,539 | 3,294,106 | 59,560 | 21 | 2.6 | \$0.58 |
| 1981/82 | 4,500,000 | 72 | 365 | 1,815,060 | 4,589,042 | 81,008 | 22 | 2.5 | \$1.05 |
| 1982/83 | 3,000,000 | 82 | 230 | 1,144,096 | 2,863,798 | 70,524 | 16 | 2.5 | \$1.20 |
| 1983/84 | 2,750,000 | 61 | 207 | 775,472 | 1,789,883 | 50,726 | 15 | 2.3 | \$1.04 |
| 1984/85 | 1,930,000 | 52 | 184 | 1,097,182 | 2,549,686 | 47,465 | 23 | 2.3 | \$1.42 |
| 1985/86 | 3,900,000 | 74 | 187 | 1,589,759 | 3,781,950 | 65,078 | 24 | 2.4 | \$1.72 |
| 1986/87 | 2,000,000 | 54 | 106 | 950,300 | 2,400,784 | 37,511 | 25 | 2.5 | \$2.03 |
| 1987/88 | 3,431,000 | 73 | 148 | 1,359,371 | 3,328,809 | 52,516 | 26 | 2.4 | \$2.20 |
| 1988/89 | 700,000 | 65 | 87 | 433,112 | 1,055,082 | 27,958 | 15 | 2.4 | \$2.70 |
| 1989/90 to 1999/00 | | | | | | NO COMMERCIAL FISHERY | | | |
| 2000/01 | 375,000 | 55 | 67 | 107,653 | 258,631 | 4,426 | 24 | 2.4 | \$1.24 |
| 2001/02 to 2003/04 | | | | | | NO COMMERCIAL FISHERY | | | |
| 2004/05 | 300,000 | 43 | 68 | 134,019 | 295,741 | 5,710 | 23 | 2.2 | \$1.63 |
| 2005/06 | 290,000 | 15 | 47 | 126,383 | 287,749 | 3,703 | 34 | 2.3 | \$1.23 |
| 5 year average ^a | | 50 | 83 | 432,108 | 1,045,202 | 18,863 | 25 | 2.3 | \$1.80 |

^a 5 year average is last 5 years of fishery data (1987/88-1988/89, 2000/01, 2004/05-2005/06).

NA = Not available.

Table 8.—Dungeness crab commercial catch, effort, and value for the Kodiak District, 1962 – 2006/07.

| Year/Season | Vessels | | Number | | Pots Lifted | Average Lbs Per Landing | Average CPUE ^b | Average Price Per Pound | Exvessel Value |
|-------------|----------|-------|---------------------|-----------|--------------|-------------------------|---------------------------|-------------------------|----------------|
| | Landings | Crab | Pounds ^a | Crab | | | | | |
| 1962 | NA | 149 | NA | 1,904,567 | NA | 12,782 | NA | \$0.09 | \$171,000 |
| 1963 | NA | 354 | NA | 2,487,512 | NA | 7,026 | NA | \$0.09 | \$224,000 |
| 1964 | 29 | 395 | NA | 4,254,565 | NA | 10,537 | NA | \$0.09 | \$375,000 |
| 1965 | 25 | 351 | NA | 3,311,571 | NA | 9,434 | NA | \$0.12 | \$397,000 |
| 1966 | 12 | 144 | NA | 1,416,174 | NA | 7,976 | NA | \$0.13 | \$149,000 |
| 1967 | 18 | 439 | NA | 6,663,668 | NA | 15,179 | NA | \$0.13 | \$866,000 |
| 1968 | 43 | 536 | NA | 6,829,061 | NA | 12,741 | NA | \$0.14 | \$956,000 |
| 1969 | 29 | 455 | NA | 5,834,628 | 190,967 | 12,823 | 12 | \$0.16 | \$934,000 |
| 1970 | 33 | 318 | NA | 5,741,438 | 249,800 | 18,005 | 9 | \$0.14 | \$804,000 |
| 1971 | 24 | 173 | 515,653 | 1,445,864 | 90,913 | 8,358 | 6 | \$0.18 | \$260,000 |
| 1972 | 34 | 316 | 766,960 | 2,059,536 | 140,921 | 6,517 | 6 | \$0.40 | \$824,000 |
| 1973 | 42 | 487 | 879,484 | 2,000,526 | 251,467 | 4,108 | 3 | \$0.50 | \$1,000,000 |
| 1974 | 23 | 172 | 337,839 | 750,057 | 104,062 | 4,361 | 3 | \$0.47 | \$353,000 |
| 1975 | 15 | 154 | 307,272 | 639,813 | 76,411 | 4,154 | 4 | \$0.61 | \$390,000 |
| 1976 | 4 | 6 | 38,072 | 87,110 | 4,410 | 14,518 | 9 | \$0.15 | \$13,000 |
| 1977 | | | | | Confidential | | | | |
| 1978 | 20 | 173 | 618,357 | 1,362,306 | 93,633 | 7,875 | 6 | \$0.75 | \$1,022,000 |
| 1979 | 28 | 237 | 595,850 | 1,311,275 | 137,951 | 5,543 | 4 | \$0.75 | \$943,000 |
| 1980 | 21 | 197 | 968,829 | 2,011,736 | 107,261 | 10,212 | 9 | \$0.45 | \$905,000 |
| 1981/82 | 50 | 466 | 2,614,545 | 5,566,463 | 295,138 | 11,945 | 9 | \$0.70 | \$3,897,000 |
| 1982/83 | 111 | 991 | 2,004,075 | 4,546,311 | 481,542 | 4,588 | 4 | \$0.75 | \$3,410,000 |
| 1983/84 | 103 | 1,079 | 2,044,505 | 4,752,148 | 503,464 | 4,408 | 4 | \$1.05 | \$4,989,000 |
| 1984/85 | 106 | 1,163 | 2,393,974 | 5,303,052 | 627,441 | 4,564 | 4 | \$1.45 | \$7,689,000 |
| 1985/86 | 125 | 1,243 | 1,791,446 | 4,160,435 | 599,291 | 3,347 | 3 | \$1.20 | \$4,992,522 |
| 1986/87 | 81 | 577 | 439,738 | 967,423 | 199,881 | 1,667 | 2 | \$1.15 | \$1,112,500 |
| 1987/88 | 45 | 379 | 747,117 | 1,450,983 | 150,067 | 3,828 | 5 | \$1.26 | \$1,828,000 |

-continued-

Table 8.—Page 2 of 2.

| Year/Season | Number | | Pots Lifted | Average Lbs Per Landing | Average CPUE ^b | Average Price/Pound | Exvessel Value | |
|----------------|---------|----------|-------------|-------------------------|---------------------------|---------------------|----------------|-------------|
| | Vessels | Landings | | | | | | Crab |
| 1988/89 | 50 | 363 | 1,064,387 | 2,125,114 | 203,217 | 5,854 | \$1.06 | \$2,253,000 |
| 1989/90 | 47 | 359 | 1,428,973 | 3,077,937 | 185,242 | 8,574 | \$1.10 | \$3,385,730 |
| 1990/91 | 62 | 519 | 1,301,465 | 2,937,433 | 296,168 | 5,660 | \$1.54 | \$4,435,000 |
| 1991/92 | 62 | 732 | 695,470 | 1,414,499 | 279,872 | 1,932 | \$1.37 | \$1,938,000 |
| 1992/93 | 46 | 501 | 805,215 | 1,656,793 | 218,602 | 3,306 | \$0.86 | \$1,425,000 |
| 1993/94 | 42 | 263 | 647,736 | 1,369,889 | 180,534 | 5,209 | \$0.92 | \$1,260,000 |
| 1994/95 | 31 | 162 | 426,848 | 948,461 | 151,888 | 5,855 | \$1.20 | \$1,138,000 |
| 1995/96 | 24 | 106 | 257,677 | 527,434 | 107,506 | 4,976 | \$1.72 | \$907,000 |
| 1996/97 | 21 | 113 | 334,237 | 668,772 | 88,682 | 4,223 | \$1.01 | \$675,460 |
| 1997/98 | 21 | 123 | 257,697 | 529,550 | 95,066 | 4,305 | \$2.04 | \$1,080,282 |
| 1998/99 | 12 | 60 | 185,249 | 371,241 | 63,926 | 6,187 | \$1.45 | \$538,299 |
| 1999/00 | 13 | 72 | 269,277 | 551,183 | 65,721 | 7,655 | \$1.57 | \$849,555 |
| 2000/01 | 12 | 69 | 114,038 | 238,955 | 57,037 | 3,463 | \$1.65 | \$394,276 |
| 2001/02 | 21 | 57 | 101,371 | 208,265 | 41,760 | 3,654 | \$1.95 | \$392,080 |
| 2002/03 | 18 | 74 | 181,698 | 353,849 | 71,096 | 4,782 | \$1.46 | \$520,493 |
| 2003/04 | 17 | 89 | 228,309 | 467,623 | 48,715 | 5,254 | \$1.50 | \$695,000 |
| 2004/05 | 11 | 59 | 169,807 | 351,986 | 42,136 | 5,966 | \$1.48 | \$518,000 |
| 2005/06 | 14 | 75 | 185,165 | 390,547 | 63,170 | 5,207 | \$1.25 | \$485,519 |
| 2006/07 | 12 | 62 | 74,033 | 148,502 | 31,570 | 2,395 | \$1.45 | \$215,328 |
| 5 year average | 16 | 72 | 167,802 | 342,501 | 51,337 | 4,721 | \$1.43 | \$486,868 |

NOTE: The western boundary of the Kodiak District for Dungeness crab fishing is the longitude located at Kilokak Rocks, (156° 19' W long.).

Prior to 2001, the western boundary was located at the longitude located at Cape Kumlik, (157° 27' W long.).

^a Includes deadloss.

^b Average CPUE is number of crab per pot.

NA= Not available.

Table 9.—Harvest, vessels, and landings by statistical area from the Kodiak District Dungeness crab fisheries, 2003/04 – 2006/07.

| Statistical Area | 2003/04 | | | 2004/05 | | | 2005/06 | | | 2006/07 | | |
|-----------------------|---------|------------------------------|---------------------|---------|------------------------------|---------------------|---------|------------------------------|---------------------|---------|------------------------------|---------------------|
| | Vessels | Landings Pounds ^a | Pounds ^a | Vessels | Landings Pounds ^a | Pounds ^a | Vessels | Landings Pounds ^a | Pounds ^a | Vessels | Landings Pounds ^a | Pounds ^a |
| 525701 | 11 | 46 | 127,049 | 4 | 27 | 70,299 | 5 | 33 | 69,346 | 5 | 18 | 33,850 |
| 525703 | 3 | 22 | 48,026 | 3 | 14 | 23,979 | 3 | 18 | 39,331 | 4 | 12 | 12,828 |
| 525733 | 7 | 32 | 59,952 | 4 | 7 | 6,641 | 9 | 43 | 17,743 | 7 | 30 | 7,339 |
| 535705 | | | 42,582 | 3 | 15 | 27,425 | | Confidential | | | Confidential | |
| 545601 | 3 | 20 | 138,021 | 4 | 17 | 159,253 | 3 | 10 | 187,078 | | Confidential | |
| 545602 | 0 | 0 | 0 | | Confidential | | 0 | 0 | 0 | 0 | 0 | 0 |
| 545632 | | Confidential | | 3 | 10 | 13,285 | 4 | 13 | 15,576 | | Confidential | |
| Other | 11 | 23 | 20,825 ^b | 5 | 18 | 51,104 ^c | 10 | 37 | 61,473 ^d | 5 | 37 | 28,156 ^e |
| Total ^{f, g} | 21 | 89 | 436,455 | 16 | 59 | 351,986 | 23 | 79 | 390,547 | 12 | 62 | 82,173 |

^a Includes deadloss.

^b Total of 8 statistical areas.

^c Total of 7 statistical areas.

^d Total of 9 statistical areas.

^e Total of 9 statistical areas.

^f Some vessels made landings in more than one statistical area, and some landings had multiple statistical areas.

^g Total does not include confidential data.

Confidential = less than 3 vessels made landings or less than 3 processors purchased product.

Table 10.—Dungeness crab commercial catch, effort, and value for the Alaska Peninsula and Chignik districts combined, 1968 – 2006/07.

| Year/Season | Number | | | | Pots Lifted | Average CPUE | Average Weight | Average Price Per Pound |
|------------------------------|------------------------------|----------|-------------------|---------------------|----------------|-----------------|-------------------|----------------------------|
| | Vessels | Landings | Crab ^a | Pounds ^a | | | | |
| 1968 | NA | NA | 434,142 | 1,259,013 | NA | NA | 2.9 | NA |
| 1969 | NA | NA | 411,000 | 1,056,000 | NA | NA | NA | NA |
| 1970 | NA | NA | 4,200 | 13,000 | NA | NA | NA | NA |
| 1971 | NA | NA | 3,900 | 11,000 | NA | NA | NA | NA |
| 1972 | NA | NA | 29,400 | 65,000 | NA | NA | NA | NA |
| 1973 | Confidential | | | | | | | |
| 1974 to 1978 | No Commercial Fishing Effort | | | | | | | |
| 1979 | Confidential | | | | | | | |
| 1980 | No Commercial Fishing Effort | | | | | | | |
| 1981/82 | Confidential | | | | | | | |
| 1982/83 | 16 | 79 | 357,955 | 779,600 | 59,265 | 6 | 2.2 | \$0.75 |
| 1983/84 | 18 | 132 | 565,430 | 1,207,128 | 113,061 | 5 | 2.1 | \$0.97 |
| 1984/85 | 13 | 99 | 294,191 | 647,497 | 106,056 | 3 | 2.1 | \$1.38 |
| 1985/86 | 7 | 31 | 239,202 | 488,107 | 52,117 | 5 | 2.0 | \$1.26 |
| 1986/87 | 6 | 28 | 87,925 | 180,261 | 30,280 | 3 | 2.0 | \$1.05 |
| 1987/88 | Confidential | | | | | | | |
| 1988/89 | Confidential | | | | | | | |
| 1989/90 | 4 | 10 | 31,074 | 65,806 | 5,225 | 6 | 2.1 | \$1.53 |
| 1990/91 | 7 | 18 | 39,069 | 80,248 | 12,813 | 3 | 2.1 | \$1.24 |
| 1991/92 | Confidential | | | | | | | |
| 1992/93 | 3 | 15 | 127,979 | 273,811 | 15,675 | 8 | 2.1 | \$0.79 |
| 1993/94 | 4 | 24 | 134,429 | 277,639 | 27,950 | 5 | 2.1 | \$1.01 |
| 1994/95 | Confidential | | | | | | | |
| 1995/96 | 4 | 9 | 52,694 | 112,438 | 16,557 | 3 | 2.1 | \$1.01 |
| 1996/97 | 8 | 18 | 121,085 | 240,427 | 43,103 | 3 | 2.0 | \$2.06 |
| 1997/98 | 3 | 8 | 60,049 | 116,757 | 19,800 | 3 | 2.0 | \$1.50 |
| 1998/99-2004/05 ^b | 8 | 132 | 409,202 | 839,210 | 61,442 | 7 | 2.0 | \$1.42 |
| 2005/06 | 6 | 34 | 156,045 | 314,938 | 16,398 | 10 | 2.0 | \$1.21 |
| 2006/07 | 4 | 26 | 140,926 | 261,798 | 15,850 | 9 | 2.0 | \$1.43 |

^a Includes deadloss.

^b Harvest combined to maintain confidentiality.

NA = Not available

Confidential = Less than three vessels participated or less than three processors purchased product.

Note: In 2001 the Alaska Peninsula District was divided by a line extending 135° from Kupreanof Point with waters to the east becoming the Chignik District.

Table 11.—Red king crab commercial catch, effort, and value for the Kodiak Area, 1960/61 – 2006/07.

| Fishing Year ^a | Vessels | Landings | Number of Crab ^b | Number of Pounds ^b | Pots Lifted | Average | | |
|---------------------------|---------|----------|-----------------------------|-------------------------------|-------------|---------|-----------------|-----------------|
| | | | | | | CPUE | Weight Per Crab | Price Per Pound |
| 1960/61 | 143 | NA | 2,116,375 | 21,064,871 | NA | NA | NA | \$ 0.09 |
| 1961/62 | 148 | NA | 3,181,554 | 28,962,900 | NA | NA | NA | \$0.10 |
| 1962/63 | 195 | NA | 4,146,143 | 37,626,703 | NA | NA | NA | \$0.10 |
| 1963/64 | 181 | NA | 4,158,988 | 37,716,223 | NA | NA | NA | \$0.10 |
| 1964/65 | 189 | NA | 4,923,309 | 41,596,518 | 95,951 | 51 | NA | \$0.10 |
| 1965/66 | 175 | NA | 11,061,709 | 94,431,026 | 173,083 | 64 | NA | \$0.13 |
| 1966/67 ^c | 213 | NA | 8,476,299 | 73,817,779 | 223,174 | 38 | NA | \$0.11 |
| 1967/68 | 227 | 3,847 | 5,147,321 | 43,448,492 | 207,392 | 25 | NA | \$0.26 |
| 1968/69 | 178 | 1,839 | 2,348,950 | 18,211,485 | 119,146 | 20 | NA | \$0.26 |
| 1969/70 ^d | 136 | 978 | 1,606,181 | 12,200,571 | 96,841 | 17 | NA | \$0.28 |
| 1970/71 | 100 | 830 | 1,561,318 | 11,719,970 | 119,192 | 13 | NA | \$0.30 |
| 1971/72 | 89 | 507 | 1,539,157 | 10,884,152 | 66,166 | 23 | NA | \$0.39 |
| 1972/73 | 88 | 683 | 2,029,670 | 15,479,916 | 70,806 | 29 | NA | \$0.55 |
| 1973/74 | 129 | 837 | 1,847,679 | 14,397,287 | 77,826 | 24 | NA | \$0.45 |
| 1974/75 | 158 | 1,195 | 2,910,201 | 23,582,720 | 110,297 | 26 | NA | \$0.45 |
| 1975/76 | 169 | 1,569 | 2,976,909 | 24,061,651 | 113,795 | 26 | 8.1 | \$0.66 |
| 1976/77 | 195 | 1,165 | 2,177,956 | 17,966,846 | 130,777 | 17 | 8.2 | \$1.37 |
| 1977/78 | 179 | 1,186 | 1,590,477 | 13,503,666 | 145,867 | 11 | 8.5 | \$1.34 |
| 1978/79 | 194 | 1,077 | 1,464,021 | 12,021,850 | 177,261 | 8 | 8.2 | \$1.60 |
| 1979/80 | 247 | 1,346 | 1,979,394 | 14,608,900 | 207,991 | 9 | 7.3 | \$0.95 |
| 1980/81 | 164 | 1,175 | 2,787,199 | 20,448,654 | 201,531 | 14 | 7.3 | \$1.05 |
| 1981/82 | 246 | 2,214 | 3,035,674 | 24,237,601 | 388,751 | 8 | 8.0 | \$2.00 |
| 1982/83 | 309 | 1,373 | 1,011,109 | 8,729,761 | 283,795 | 4 | 8.6 | \$3.75 |

No commercial fishery has occurred since the 1982/83 season.

| | | | | | | | | |
|---------|-----|-------|-----------|------------|---------|----|--|--|
| AVERAGE | 176 | 1,364 | 3,220,765 | 26,987,806 | 158,402 | 22 | | |
|---------|-----|-------|-----------|------------|---------|----|--|--|

^a Fishing year defined as May 1 - April 30.

^b Includes deadloss.

^c July 1 - April 30 season established.

^d August 15 - January 15 season established.

NA = Not available.

Table 12.—Kodiak red king crab harvest composition and seasons, 1960/61 – 2006/07.

| Season | Open | Closed | Catch Million Pounds ^a | Percent Recruits ^b | Percent Post -Recruits | Size Limit (Inches) |
|---------|--------|--------|-----------------------------------|-------------------------------|------------------------|-----------------------|
| 1960/61 | 1-Jul | 30-Jun | 21.1 | 8 | 92 | 6.5 |
| 1961/62 | 1-Jul | 30-Jun | 29.0 | 36 | 64 | 6.5 |
| 1962/63 | 1-Jul | 30-Jun | 37.6 | 26 | 74 | 6.5 |
| 1963/64 | 1-Jul | 30-Jun | 37.7 | 33 | 67 | 7.0 |
| 1964/65 | 1-Jul | 30-Jun | 41.6 | 48 | 52 | 7.0 |
| 1965/66 | 1-Jul | 30-Apr | 94.4 | 35 | 65 | 7.0 |
| 1966/67 | 1-Jul | 30-Apr | 73.8 | 28 | 72 | 7.0 |
| 1967/68 | 1-Jul | 30-Apr | 43.4 | 27 | 73 | 7.0 |
| 1968/69 | 15-Jun | 31-Mar | 18.2 | 61 | 39 | 7.0 |
| 1969/70 | 15-Aug | 15-Jan | 12.2 | 59 | 41 | 7.0 |
| 1970/71 | 15-Aug | 15-Jan | 11.7 | 38 | 62 | 7.0 |
| 1971/72 | 15-Aug | 29-Oct | 10.9 | 75 | 25 | 7.0 |
| 1972/73 | 15-Aug | 13-Oct | 15.5 | 47 | 53 | 7.0 |
| 1973/74 | 15-Aug | 25-Oct | 14.4 | 49 | 51 | 7.0 |
| 1974/75 | 15-Aug | 21-Sep | 20.9 | 52 | 48 | 7.0 |
| | 15-Oct | 15-Jan | 2.6 | 3 | 97 | 8.0 |
| 1975/76 | 15-Aug | 20-Oct | 21.6 | 48 | 52 | 7.0 |
| | 20-Oct | 1-Dec | 2.5 | 3 | 97 | 8.0 |
| 1976/77 | 1-Sep | 16-Oct | 14.9 | 33 | 67 | 7.0 |
| | 1-Dec | 15-Jan | 3.1 | 1 | 100 | 8.0 |
| 1977/78 | 15-Sep | 30-Nov | 11.7 | 37 | 63 | 7.0 |
| | 1-Dec | 15-Jan | 1.8 | 1 | 99 | 8.0 |
| 1978/79 | 10-Sep | 30-Nov | 10.3 | 44 | 56 | 7.0 |
| | 1-Dec | 15-Jan | 1.7 | 15 | 85 | 7.5 |
| 1979/80 | 10-Sep | 30-Nov | 13.4 | 70 | 30 | 7.0 |
| | 1-Dec | 15-Jan | 1.2 | 30 | 70 | 7.5 |
| 1980/81 | 15-Sep | 30-Nov | 18.4 | 69 | 31 | 7.0 |
| | 1-Dec | 15-Jan | 2.1 | 22 | 78 | 7.5 |
| 1981/82 | 15-Sep | 15-Dec | 20.3 | 61 | 39 | 7.0 |
| | 15-Dec | 15-Jan | 3.9 | 7 | 93 | 7.5 |
| 1982/83 | 1-Sep | 10-Dec | 7.5 | 46 | 54 | 7.0 |
| | 10-Dec | 19-Dec | 1.2 | 19 | 81 | 7.5 |

No commercial fishery has occurred since the 1982/83 season.

^a Including deadloss.

^b Recruitment after 1963 based on 7" size limit.

Table 13.—Golden king crab commercial catch, effort, and value for the Kodiak Area, 1983-2006.

| Year | Vessels | Landings | No. of Crabs ^a | No. of Pounds ^a | Pots Lifted | Average | | Exvessel Value (Millions) | |
|------|---------|----------|---------------------------|----------------------------|-------------|--------------|--------------------------------|---------------------------|-------|
| | | | | | | CPUE | Weight of Crab Price Per Pound | | |
| 1983 | 12 | 36 | 16,349 | 111,398 | 8,490 | 2.0 | 6.8 | \$3.00 | \$0.3 |
| 1984 | 6 | 8 | 3,513 | 22,066 | 1,950 | 2.0 | 6.3 | \$2.50 | \$0.1 |
| 1985 | 4 | 19 | 10,005 | 63,641 | 2,693 | 4.0 | 6.4 | \$1.95 | \$0.1 |
| 1986 | 4 | 31 | 21,862 | 146,478 | 5,463 | 4.0 | 6.7 | \$3.00 | \$0.4 |
| 1987 | 5 | 38 | 9,484 | 67,191 | 3,187 | 3.0 | 7.1 | \$3.44 | \$0.2 |
| 1988 | | | | | | Confidential | | | |
| 1989 | | | | | | Confidential | | | |
| 1990 | 6 | 6 | 1,214 | 7,314 | 1,090 | 1.0 | 6.0 | \$3.00 | \$0.2 |
| 1991 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 1992 | | | | | | Confidential | | | |
| 1993 | | | | | | Confidential | | | |
| 1994 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 1995 | | | | | | Confidential | | | |
| 1996 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 1997 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 1998 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 1999 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 2000 | | | | | | Confidential | | | |
| 2001 | | | | | | Confidential | | | |
| 2002 | | | | | | Confidential | | | |
| 2003 | | | | | | Confidential | | | |
| 2004 | | | | | | Confidential | | | |
| 2005 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| 2006 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |

^a includes deadloss.

NA = Not Available.

Confidential = less than three vessels participated or less than three processor purchased product.

Table 14.—Red king crab commercial catch, effort, and value for the Alaska Peninsula Area, 1947 – 2006/07.

| Year/Season | | | Number | | Pots Lifted | Average CPUE | Average Weight | Average Price Per Pound |
|----------------------|--|----------|-------------------|----------------------|----------------|-----------------|-------------------|----------------------------|
| | Vessels | Landings | Crab ^a | Pounds ^a | | | | |
| 1947 | NA | NA | 18,800 | 141,000 | NA | NA | 7.5 | NA |
| 1948 | NA | NA | 518,500 | 3,363,000 | NA | NA | 6.5 | NA |
| 1949 | NA | NA | 205,500 | 3,476,000 | NA | NA | 12.0 | NA |
| 1950 | NA | NA | 270,000 | 2,124,000 | NA | NA | 7.9 | NA |
| 1951 | NA | NA | 86,500 | 599,000 | NA | NA | 6.9 | NA |
| 1952 | NA | NA | 32,400 | 298,000 | NA | NA | 7.6 | NA |
| 1953 | NA | NA | 38,400 | 380,000 | NA | NA | 10.0 | NA |
| 1954 | NA | NA | 31,666 | 316,660 | NA | NA | 10.0 | NA |
| 1955 | NA | NA | 164,069 | 1,640,688 | NA | NA | 10.0 | NA |
| 1956 | NA | NA | 421,651 | 4,221,496 | NA | NA | 10.0 | NA |
| 1957 | NA | NA | 668,709 | 6,687,092 | NA | NA | 10.0 | NA |
| 1958 | NA | NA | 724,595 | 7,245,947 | NA | NA | 10.0 | NA |
| 1959 | NA | NA | 568,303 | 6,166,974 | NA | NA | 10.0 | NA |
| 1960 | NA | 1,496 | 677,100 | 6,700,000 | NA | NA | 9.9 | NA |
| 1961 | NA | 959 | 419,354 | 3,900,000 | NA | NA | 9.3 | NA |
| 1962 | NA | 657 | 287,624 | 2,273,013 | NA | NA | 7.9 | NA |
| 1963 | 27 | 1,037 | 970,739 | 6,539,129 | NA | NA | 6.7 | \$0.09 |
| 1964 | 40 | 1,297 | 1,906,018 | 14,354,060 | NA | NA | 7.5 | \$0.10 |
| 1965 | 36 | 1,081 | 1,813,728 | 14,713,501 | NA | NA | 8.1 | \$0.10 |
| 1966 | 37 | 1,255 | 2,494,949 | 22,577,587 | NA | NA | 9.0 | \$0.10 |
| 1967 | 39 | 1,062 | 1,943,463 | 17,252,307 | NA | NA | 8.9 | \$0.19 |
| 1968/69 | 34 | 885 | 1,273,567 | 10,944,472 | NA | NA | 8.6 | \$0.34 |
| 1969/70 | 33 | 415 | 558,800 | 4,137,000 | 51,300 | 11 | 7.7 | \$0.25 |
| 1970/71 | 25 | 339 | 446,042 | 3,425,760 | 38,995 | 11 | 7.7 | \$0.25 |
| 1971/72 | 26 | 364 | 597,394 | 4,123,130 | 41,759 | 14 | 6.9 | \$0.28 |
| 1972/73 | 29 | 301 | 610,300 | 4,069,362 | 34,408 | 18 | 6.7 | NA |
| 1973/74 | 36 | 389 | 658,632 | 4,260,674 | 53,642 | 12 | 6.9 | \$0.72 |
| 1974/75 | 36 | 318 | 644,054 | 4,572,101 | 44,951 | 14 | 7.1 | \$0.43 |
| 1975/76 | 37 | 248 | 367,221 | 2,605,310 | 35,104 | 11 | 7.2 | \$0.41 |
| 1976/77 | 26 | 122 | 125,778 | 958,069 ^a | 17,748 | 7 | 7.7 | \$0.61 |
| 1977/78 | 15 | 73 | 119,641 | 726,382 | 10,551 | 11 | 6.1 | \$1.00 |
| 1978/79 | 33 | 226 | 520,168 | 3,093,859 | 31,142 | 17 | 5.9 | \$1.27 |
| 1979/80 | 68 | 288 | 738,859 | 4,453,557 | 41,753 | 18 | 6.0 | \$0.92 |
| 1980/81 ^b | 51 | 358 | 821,071 | 5,080,632 | 54,114 | 15 | 6.2 | \$0.96 |
| 1981/82 | 56 | 341 | 515,882 | 3,168,689 | 51,776 | 10 | 6.1 | \$1.40 |
| 1982/83 | 63 | 157 | 271,237 | 1,683,654 | 30,894 | 9 | 6.2 | \$3.20 |
| 1983/84 - 2006/07 | No commercial fishery has occurred since the 1982/83 season. | | | | | | | |

^a Includes deadloss

^b Combined 6.5 inch and 7.5 inch seasons.

NA=Not Available.

Table 15.—Shrimp trawl fishery catch, effort, and value for the Kodiak District, 1958–2005/06.

| Year/Season | Vessels | Landings | Harvest in Pounds | Average Price Per Pound |
|-------------|---------|----------|-------------------|-------------------------|
| 1958 | NA | NA | 31,886 | \$0.04 |
| 1959 | NA | NA | 2,861,900 | \$0.04 |
| 1960 | 11 | 94 | 3,197,985 | \$0.04 |
| 1961 | 12 | 203 | 11,083,500 | \$0.04 |
| 1962 | 11 | 204 | 12,654,027 | \$0.04 |
| 1963 | NA | NA | 10,118,472 | \$0.04 |
| 1964 | 6 | NA | 4,339,114 | \$0.04 |
| 1965 | 11 | 320 | 13,823,061 | \$0.04 |
| 1966 | 17 | 551 | 24,097,141 | \$0.05 |
| 1967 | 23 | NA | 38,267,856 | \$0.05 |
| 1968 | 16 | NA | 34,468,713 | \$0.04 |
| 1969 | 26 | 935 | 41,353,461 | \$0.06 |
| 1970 | 18 | 1,024 | 62,181,204 | \$0.04 |
| 1971 | 49 | 1,746 | 82,153,724 | \$0.04 |
| 1972 | 63 | 1,398 | 58,352,319 | \$0.04 |
| 1973 | 50 | 1,283 | 70,511,477 | \$0.06 |
| 1973/74 | 63 | 1,029 | 56,203,992 | \$0.08 |
| 1974/75 | 75 | 1,100 | 58,235,982 | \$0.08 |
| 1975/76 | 58 | 884 | 49,086,591 | \$0.08 |
| 1976/77 | 62 | 762 | 46,712,083 | \$0.10 |
| 1977/78 | 58 | 653 | 26,409,366 | \$0.13 |
| 1978/79 | 50 | 328 | 20,506,021 | \$0.17 |
| 1979/80 | 37 | 242 | 12,863,536 | \$0.23 |
| 1980/81 | 67 | 462 | 27,101,218 | \$0.29 |
| 1981/82 | 55 | 298 | 19,112,367 | \$0.27 |
| 1982/83 | 40 | 224 | 10,391,207 | \$0.27 |
| 1983/84 | 14 | 63 | 2,779,030 | \$0.35 |
| 1984/85 | 13 | 59 | 2,942,922 | \$0.33 |
| 1985/86 | | | Confidential | |
| 1986/87 | | | Confidential | |
| 1987/88 | | | Confidential | |
| 1988/89 | 0 | 0 | 0 | 0 |
| 1989/90 | 0 | 0 | 0 | 0 |

-continued-

Table 15.—Page 2 of 2.

| Year/Season | Vessels | Landings | Harvest in Pounds | Average Price Per Pound |
|----------------------------|-----------|------------|-------------------|-------------------------|
| 1990/91 | 0 | 0 | 0 | 0 |
| 1991/92 | 0 | 0 | 0 | 0 |
| 1992/93 | 0 | 0 | 0 | 0 |
| 1993/94 | 3 | 3 | 1,704 | NA |
| 1994/95 | 0 | 0 | 0 | 0 |
| 1995/96 | 0 | 0 | 0 | 0 |
| 1996/97 | | | Confidential | |
| 1997/98 | | | Confidential | |
| 1998/99 | 5 | 8 | 12,724 | NA |
| 1999/00 | 3 | 4 | 4,325 | NA |
| 2000/01 | | | Confidential | |
| 2001/02 | | | Confidential | |
| 2002/03 | | | Confidential | |
| 2003/04 | | | Confidential | |
| 2004/05 | 0 | 0 | 0 | 0 |
| 2005/06 | 0 | 0 | 0 | 0 |
| Average^a | 36 | 630 | 30,728,707 | \$0.11 |

^a Average calculated from years 1960 - 1984/85.

Confidential = Less than three vessels made landings or less than three processors purchased product.

NA = Not Available

Table 16.—Shrimp pot fishery catch and effort for the Kodiak District, 1969 - 2006.

| Year | Vessels | Landings | Pounds ^a |
|--------------------------|---------|--------------|---------------------|
| 1969 | | Confidential | |
| 1970 | NA | 20 | 12,302 |
| 1971 | 0 | 0 | 0 |
| 1972 | | Confidential | |
| 1973 | | Confidential | |
| 1974 | 6 | 73 | 10,336 |
| 1975 | 7 | 77 | 12,782 |
| 1976 | | Confidential | |
| 1977 | 3 | 26 | 2,565 |
| 1978 | | Confidential | |
| 1979 | | Confidential | |
| 1980 | 4 | 25 | 4,700 |
| 1981 | 4 | 6 | 2,511 |
| 1982 | 6 | 18 | 9,754 |
| 1983 | 12 | 31 | 18,686 |
| 1984 | 6 | 21 | 4,361 |
| 1985 | | Confidential | |
| 1986 | | Confidential | |
| 1987 | 0 | 0 | 0 |
| 1988 | | Confidential | |
| 1989 | | Confidential | |
| 1990 | | Confidential | |
| 1991 | 0 | 0 | 0 |
| 1992 | 0 | 0 | 0 |
| 1993 | 0 | 0 | 0 |
| 1994 | | Confidential | |
| 1995 | 0 | 0 | 0 |
| 1996 | 0 | 0 | 0 |
| 1997 | | Confidential | |
| 1998 | | Confidential | |
| 1999 | 0 | 0 | 0 |
| 2000 | 0 | 0 | 0 |
| 2001 | | Confidential | |
| 2002 | 0 | 0 | 0 |
| 2003 | 0 | 0 | 0 |
| 2004 | 0 | 0 | 0 |
| 2005 | 0 | 0 | 0 |
| 2006 | 0 | 0 | 0 |
| Total^b | | | 77,997 |

^a Pounds are weight of shrimp tails.

^b Does not include confidential pounds.

NA = Not Available

Table 17.—Shrimp minimum acceptable biomass indices (MABI) and population estimates in millions of pounds from surveyed districts and sections, 2002 - 2006.

| District | Section | MABI ^a | 2006 | 2005 | 2004 | 2003 | 2002 |
|-----------------|------------------------|-------------------|-------|-------|-------|-------|------------|
| Kodiak | Inner Marmot Bay | 1,652 | 714 | 445 | 498 | 423 | 604 |
| | Marmot Island | 11,615 | 1,631 | 1,182 | 809 | 1,407 | 1,315 |
| | Chiniak Bay | 658 | - | 31 | 14 | 84 | 52 |
| | Ugak Bay | 1,815 | - | 10 | - | 2 | - |
| | Kiliuda Bay | 2,405 | - | 19 | - | 146 | 198 |
| | Two Headed Island | 3,312 | - | 81 | - | 4 | - |
| | Alitak Bay | 1,942 | - | 120 | - | 130 | - |
| | Uyak Bay | 1,447 | - | 326 | - | 439 | - |
| | Uganik Bay | 1,175 | - | 297 | - | 403 | - |
| | Kukak Bay ^b | NA | - | 41 | - | 68 | - |
| | Wide Bay ^b | 476 | 168 | 217 | 365 | 384 | 880 |
| | Puale Bay ^b | 540 | - | 22 | - | 40 | - |
| | Shelikof Strait | NA | 1,065 | 7,732 | 1,362 | 8,527 | - |
| | Alitak Flats | 577 | - | - | - | 30 | - |
| Chignik | Kujulik Bay | 1,715 | 143 | - | - | - | 11 |
| | Chignik Bay | 2,064 | 911 | - | 580 | - | 506 |
| | Chiginagak Bay | 314 | - | - | 44 | - | - |
| | Nakalilok Bay | 373 | - | - | 40 | - | - |
| | Kuiukta Bay | 862 | 180 | - | 226 | - | 167 |
| | Mitrofanina Island | 2,341 | - | - | 3 | - | 97 |
| | Ivanof Bay | 2,586 | - | - | - | - | 8 |
| South Peninsula | Stepovak Bay | 10,526 | 1,095 | - | 101 | - | 370 |
| | Unga Strait | 3,412 | 944 | - | 272 | - | 115 |
| Peninsula | Beaver Bay | 1,978 | - | - | 1 | - | 10 |
| | Pavlof Bay | 8,221 | 10 | 61 | 64 | 8 | 38 |
| | Morzhovoi Bay | NA | 19 | - | - | - | - |

^a Minimum acceptable biomass index

^b Kukak, Wide, and Puale bays are part of the Mainland Section; MABIs are established for Wide and Puale bays.

NA = no MABI established for survey area.

- = Not surveyed

Bold indicates population estimate above established MABI.

Confidential = Less than three vessels made landings or less than three processors purchased product.

Table 18.—Trawl shrimp fishery catch, effort, and value for the South Peninsula and Chignik districts, 1968 – 2005/06.

| Year | SOUTH PENINSULA | | | | CHIGNIK | | | |
|----------------------|-----------------|----------|--------------|----------------------------|---------|----------|--------------|----------------------------|
| | Number | | | Average Price Per Pound | Number | | | Average Price Per Pound |
| | Vessels | Landings | Pounds | | Vessels | Landings | Pounds | |
| 1968 | | | Confidential | | | | Confidential | |
| 1969 | | | Confidential | | | | Confidential | |
| 1970 | 4 | 173 | 4,398,800 | \$0.04 | NA | NA | 890,705 | NA |
| 1971 | | | Confidential | | | | Confidential | |
| 1972/73 | NA | NA | 14,740,801 | \$0.07 | NA | NA | 4,829,117 | NA |
| 1973/74 | 12 | 347 | 19,987,246 | \$0.07 | 33 | 277 | 51,673,788 | \$0.08 |
| 1974/75 | 22 | 387 | 26,145,720 | \$0.08 | 37 | 323 | 23,392,352 | \$0.08 |
| 1975/76 | 24 | 326 | 20,044,112 | \$0.09 | 50 | 334 | 24,435,480 | \$0.08 |
| 1976/77 | 19 | 424 | 37,148,932 | \$0.09 | 48 | 303 | 27,232,630 | \$0.10 |
| 1977/78 | 48 | 409 | 45,003,794 | \$0.13 | 50 | 271 | 26,512,791 | \$0.13 |
| 1978/79 | 23 | 108 | 9,418,276 | \$0.16 | 40 | 201 | 23,257,869 | \$0.17 |
| 1979/80 | 10 | 41 | 3,134,367 | \$0.21 | 35 | 195 | 23,722,330 | \$0.23 |
| 1980/81 ^a | | | Closed | | 54 | 148 | 12,843,270 | \$0.29 |
| 1981/82 | | | Closed | | 3 | 4 | 70,948 | \$0.27 |

No commercial fishing activity has occurred in these districts after 1981/82.

^a South Peninsula District closed to trawl gear after the 1979/80 fishery.

NA = Not available.

Confidential = Less than three vessels made landings or less than four processors purchased product.

Table 19.—Red sea cucumber commercial catch, effort, and value for the Kodiak and Chignik districts, 1991 – 2006/07.

| Year/Season | Number of | | Pounds Harvested ^a | Average Price Per Pound |
|-------------|--------------|----------|-------------------------------|-------------------------|
| | Dive Permits | Landings | | |
| 1991 | | | Confidential | |
| 1992 | | | Confidential | |
| 1993/94 | 50 | 487 | 564,516 | \$0.93 |
| 1994/95 | 86 | 269 | 413,576 | \$1.20 |
| 1995/96 | 21 | 60 | 145,092 | \$1.25 |
| 1996/97 | 31 | 93 | 162,451 | \$1.25 |
| 1997/98 | 26 | 65 | 132,337 | \$1.16 |
| 1998/99 | 16 | 55 | 142,313 | \$1.20 |
| 1999/2000 | 19 | 36 | 116,134 | \$1.20 |
| 2000/01 | 20 | 56 | 116,152 | \$1.50 |
| 2001/02 | 18 | 67 | 152,613 | \$1.25 |
| 2002/03 | 24 | 102 | 177,597 | \$1.25 |
| 2003/04 | 25 | | Confidential | |
| 2004/05 | 13 | | Confidential | |
| 2005/06 | 18 | | Confidential | |
| 2006/07 | 21 | | Confidential | |

^a Pounds of eviscerated product.

Confidential = Less than three processors purchased product.

Table 20.—Red sea cucumber and green sea urchin guideline harvest levels (GHL), 2006/07.

| Area | Sea Cucumber GHL (pounds) ^a | Sea Urchin GHL (pounds) ^b |
|-------------------------------|---|---|
| Kodiak District | | |
| Northeast Section | 5,000 | 10,000 |
| Eastside Section | 40,000 | 10,000 |
| Southeast Section | 30,000 | 10,000 |
| Southwest Section | 20,000 | 10,000 |
| Westside Section | | 10,000 |
| Uganik Bay | 5,000 | |
| Remainder of Westside Section | 30,000 | |
| North Mainland Section | 5,000 | 5,000 |
| South Mainland Section | 5,000 | 5,000 |
| Semidi Island Section | 5,000 | 5,000 |
| Total Kodiak District | 145,000 | 65,000 |
| Chignik District | 25,000 | 5,000 |
| Alaska Peninsula | 5,000 | 5,000 |
| Totals | 175,000 | 75,000 |

^a Pounds of eviscerated product.

^b Pounds of whole product.

Table 21.—Green sea urchin commercial catch, effort, and value for the Kodiak District, 1980 – 2006/07.

| Year | Number | | Pounds Harvested (Live Weight) | Average Price Per Pound |
|------------------------|---------|--------------|-----------------------------------|----------------------------|
| | Permits | Landings | | |
| 1980 | | Confidential | | |
| 1981 | 0 | 0 | 0 | 0 |
| 1982 | 0 | 0 | 0 | 0 |
| 1983 | 0 | 0 | 0 | 0 |
| 1984 | 0 | 0 | 0 | 0 |
| 1985-1986 ^a | NA | 26 | 45,560 | \$0.35 |
| 1987 | 12 | 78 | 104,139 | \$0.69 |
| 1988 | 28 | 260 | 190,509 | \$0.80 |
| 1989 | 29 | 81 | 44 862 | \$0.82 |
| 1990 | 25 | 83 | 84,004 | \$0.84 |
| 1991 | 6 | 24 | 29,947 | \$0.92 |
| 1992-1994 ^a | 22 | 95 | 73,399 | \$1.15 |
| 1995 | 8 | 50 | 38,437 | \$1.34 |
| 1996 | 7 | 31 | 36,147 | \$1.10 |
| 1997-2000 ^a | 11 | 21 | 22,850 | \$1.00 |
| 2001/02 | | | Confidential | |
| 2002/03 | 0 | 0 | 0 | 0 |
| 2003/04 | 0 | 0 | 0 | 0 |
| 2004/05 | 0 | 0 | 0 | 0 |
| 2005/06 | 0 | 0 | 0 | 0 |
| 2006/07 | 0 | 0 | 0 | 0 |

^a Years combined because less than three divers participated or less than three processor purchased product.
Confidential = less than three divers participated or less than three processors purchased product.

Table 22.—Octopus commercial catch, effort, and value for the Kodiak District, 1985 - 2006.

| Year | State waters | | | | | Federal waters | | | | | Combined | | Ave. Price per Pound | Fishery Value | |
|------|--------------|--------------|---------------------|--------------|----------|---------------------|----------------------|----------|---------------------|----------|---------------------|--|----------------------|---------------|-----------|
| | Vessels | Landings | Pounds ^a | Vessels | Landings | Pounds ^a | Vessels ^b | Landings | Pounds ^a | Landings | Pounds ^a | | | | |
| 1985 | | Confidential | | Confidential | | Confidential | | | | | Confidential | | | | |
| 1986 | | Confidential | | Confidential | | Confidential | 4 | 8 | 643 | | | | | \$0.87 | \$559 |
| 1987 | | Confidential | | Confidential | | Confidential | 8 | 15 | 14,151 | | | | | \$1.07 | \$15,142 |
| 1988 | | Confidential | | Confidential | | Confidential | | | | | Confidential | | | | |
| 1989 | | Confidential | | Confidential | | Confidential | | | | | Confidential | | | | |
| 1990 | 25 | 95 | 56,052 | 15 | 51 | 20,127 | 31 | 140 | 76,179 | | | | | \$1.13 | \$76,180 |
| 1991 | 56 | 260 | 106,748 | 29 | 85 | 22,607 | 70 | 342 | 129,355 | | | | | \$1.07 | \$138,410 |
| 1992 | 64 | 252 | 103,230 | 34 | 153 | 44,551 | 75 | 394 | 147,781 | | | | | \$0.94 | \$139,000 |
| 1993 | 16 | 51 | 95,889 | 24 | 42 | 8,453 | 33 | 89 | 104,342 | | | | | \$0.71 | \$73,379 |
| 1994 | 5 | 7 | 4,504 | 4 | 9 | 613 | 8 | 15 | 5,117 | | | | | NA | NA |
| 1995 | 38 | 293 | 66,855 | 21 | 90 | 3,673 | 46 | 327 | 70,528 | | | | | \$0.49 | \$31,489 |
| 1996 | 35 | 194 | 67,898 | 27 | 143 | 20,670 | 44 | 257 | 88,568 | | | | | \$0.45 | \$36,943 |
| 1997 | 63 | 526 | 230,606 | 58 | 279 | 46,296 | 87 | 658 | 276,902 | | | | | \$0.46 | \$125,702 |
| 1998 | 54 | 407 | 258,047 | 57 | 291 | 117,332 | 76 | 670 | 375,379 | | | | | \$0.43 | \$144,908 |
| 1999 | 50 | 307 | 198,116 | 32 | 149 | 54,889 | 67 | 440 | 253,005 | | | | | \$0.33 | \$73,718 |
| 2000 | 49 | 292 | 98,833 | 46 | 239 | 61,551 | 71 | 482 | 160,384 | | | | | \$0.39 | \$51,113 |
| 2001 | 28 | 206 | 99,665 | 31 | 80 | 12,712 | 45 | 252 | 112,377 | | | | | \$0.38 | \$39,951 |
| 2002 | 31 | 213 | 206,748 | 29 | 97 | 23,078 | 46 | 278 | 229,826 | | | | | \$0.48 | \$100,072 |
| 2003 | 40 | 119 | 55,918 | 29 | 58 | 17,019 | 66 | 165 | 72,937 | | | | | \$0.35 | \$23,198 |
| 2004 | 14 | 41 | 11,816 | 21 | 64 | 32,291 | 34 | 105 | 44,107 | | | | | \$0.35 | \$15,437 |
| 2005 | 39 | 111 | 37,210 | 37 | 207 | 99,335 | 61 | 318 | 136,545 | | | | | \$0.42 | \$57,349 |
| 2006 | 42 | 185 | 69,086 | 46 | 245 | 168,808 | 66 | 398 | 237,894 | | | | | \$0.57 | \$135,600 |

^a Includes discards.

^b Some vessels made landings from both state and federal waters.

NA=Not Available

Confidential=Less than three vessels made landings or less than three processors purchased product.

Table 23.—Octopus commercial catch, effort, and value for the Chignik and South Peninsula districts combined, 1980-2006.

| Year | State waters | | | Federal waters | | | Combined | | | Fishery Value | |
|-----------|--------------|----------|---------------------|----------------|----------|---------------------|----------------------|----------|---------------------|---------------|----------------------|
| | Vessels | Landings | Pounds ^a | Vessels | Landings | Pounds ^a | Vessels ^b | Landings | Pounds ^a | | Ave. Price per Pound |
| 1980-1985 | | | Confidential | | | Confidential | | | Confidential | | |
| 1986-1987 | | | No fishing | | | No fishing | | | No fishing | | |
| 1988 | 22 | 58 | 9,946 | 16 | 132 | 34,622 | 31 | 190 | 44,568 | \$0.92 | \$41,003 |
| 1989 | 12 | 41 | 5,309 | 15 | 82 | 9,581 | 23 | 123 | 14,890 | \$1.00 | \$14,890 |
| 1990 | 7 | 45 | 6,746 | 14 | 33 | 2,393 | 19 | 78 | 9,139 | \$1.00 | \$9,139 |
| 1991 | 18 | 72 | 15,103 | 14 | 36 | 4,392 | 29 | 108 | 19,495 | \$1.00 | \$19,495 |
| 1992 | 38 | 183 | 38,651 | 39 | 100 | 6,579 | 72 | 283 | 45,230 | \$1.00 | \$45,230 |
| 1993 | 9 | 23 | 9,017 | 28 | 59 | 3,007 | 35 | 82 | 12,024 | \$1.00 | \$12,024 |
| 1994 | 16 | 36 | 15,621 | 8 | 14 | 1,171 | 23 | 50 | 16,792 | \$0.59 | \$9,907 |
| 1995 | 15 | 49 | 5,939 | 15 | 18 | 2,140 | 24 | 67 | 8,079 | \$0.45 | \$3,636 |
| 1996 | 20 | 52 | 11,258 | 18 | 22 | 4,667 | 26 | 74 | 15,925 | \$0.49 | \$7,803 |
| 1997 | 27 | 143 | 48,286 | 15 | 20 | 3,826 | 34 | 163 | 52,112 | \$0.49 | \$25,535 |
| 1998 | 13 | 15 | 4,554 | 13 | 22 | 4,638 | 15 | 37 | 9,192 | \$0.53 | \$4,872 |
| 1999 | 9 | 10 | 2,051 | 10 | 19 | 1,710 | 18 | 29 | 3,761 | \$0.50 | \$1,881 |
| 2000 | 18 | 17 | 1,507 | 19 | 19 | 5,235 | 30 | 36 | 6,742 | NA | NA |
| 2001 | 3 | 5 | 345 | 7 | 17 | 2,221 | 7 | 22 | 2,566 | NA | NA |
| 2002 | 6 | 15 | 3,132 | 19 | 50 | 13,454 | 20 | 65 | 16,586 | NA | NA |
| 2003 | 26 | 55 | 18,333 | 28 | 88 | 46,090 | 41 | 119 | 64,423 | \$0.61 | \$39,298 |
| 2004 | 69 | 342 | 138,521 | 44 | 168 | 191,671 | 85 | 495 | 330,192 | \$0.52 | \$171,700 |
| 2005 | 43 | 110 | 33,332 | 23 | 98 | 83,347 | 58 | 208 | 116,679 | \$0.41 | \$47,838 |
| 2006 | 44 | 167 | 52,663 | 21 | 61 | 22,941 | 53 | 217 | 75,604 | \$0.51 | \$38,558 |

^a Includes discards.

^b Some vessels made landings in both state and federal waters.

NA = Not Available.

Confidential = Less than three vessels made landings or less than three processors purchased product.

Table 24.—Razor clam commercial catch, effort, and value for the Kodiak District, 1960 - 2006.

| Year | Number | | Pounds | | Ave. Price Per Pound | Est. Fishery Value |
|------|---------------------------------|----------|------------------|---------------------|-------------------------|-----------------------|
| | Registered Diggers ^a | Landings | Ave. per landing | Total | | |
| 1960 | 76 | NA | NA | 420,636 | \$0.11 | \$44,000 |
| 1961 | 95 | NA | NA | 381,971 | \$0.11 | \$40,000 |
| 1962 | 66 | NA | NA | 297,516 | \$0.11 | \$31,000 |
| 1963 | 39 | NA | NA | 323,757 | \$0.11 | \$35,600 |
| 1964 | 2 | NA | NA | 0 | \$0.00 | \$0 |
| 1965 | 4 | NA | NA | 20,000 | \$0.25 | \$5,000 |
| 1966 | 29 | NA | NA | 15,429 | \$0.38 | \$6,000 |
| 1967 | 9 | NA | NA | 2,155 | \$0.40 | \$900 |
| 1968 | 19 | NA | NA | 6,384 | \$0.40 | \$2,600 |
| 1969 | 5 | 6 | 2,005 | 12,029 | \$0.40 | \$4,812 |
| 1970 | 6 | 32 | 4,133 | 132,261 | \$0.40 | \$53,000 |
| 1971 | 73 | 82 | 2,322 | 190,394 | \$0.30 | \$57,000 |
| 1972 | 95 | 128 | 1,188 | 152,116 | \$0.35 | \$53,000 |
| 1973 | 64 | 140 | 1,181 | 165,282 | \$0.40 | \$66,000 |
| 1974 | 58 | 74 | 2,681 | 198,381 | \$0.50 | \$99,000 |
| 1975 | 18 | 5 | 1,238 | 6,188 | \$0.50 | \$3,000 |
| 1976 | 9 | 0 | 0 | 0 | \$0.00 | \$0 |
| 1977 | | | | Confidential | | |
| 1978 | | | | Confidential | | |
| 1979 | 0 | 0 | 0 | 0 | \$0.00 | \$0 |
| 1980 | NA | 8 | 1,001 | 8,006 | \$0.79 | \$6,325 |
| 1981 | NA | 5 | 1,637 | 8,186 ^b | \$1.00 | \$8,186 |
| 1982 | NA | 11 | 1,055 | 11,608 ^c | \$1.00 | \$11,608 |
| 1983 | NA | 7 | 1,131 | 7,920 | \$1.00 | \$7,920 |
| 1984 | NA | 21 | 1,613 | 33,972 | \$1.00 | \$33,972 |
| 1985 | NA | 11 | 1,540 | 16,945 ^d | \$1.00 | \$16,945 |
| 1986 | NA | 4 | 998 | 3,993 | \$1.00 | \$3,993 |

No commercial harvest has occurred from 1986 - 2006.

^a Represents registered diggers, not actual diggers. No data available after 1977 due to statewide use of Interim Use Permits.

^b Additional 1,985 pounds of hardshell clams harvested.

^c Additional 1,506 pounds of hardshell clams harvested.

^d Additional 1,496 pounds of hardshell clams harvested.

NA = Not available.

Confidential = Less than three diggers made landings or less than three processors purchased product.

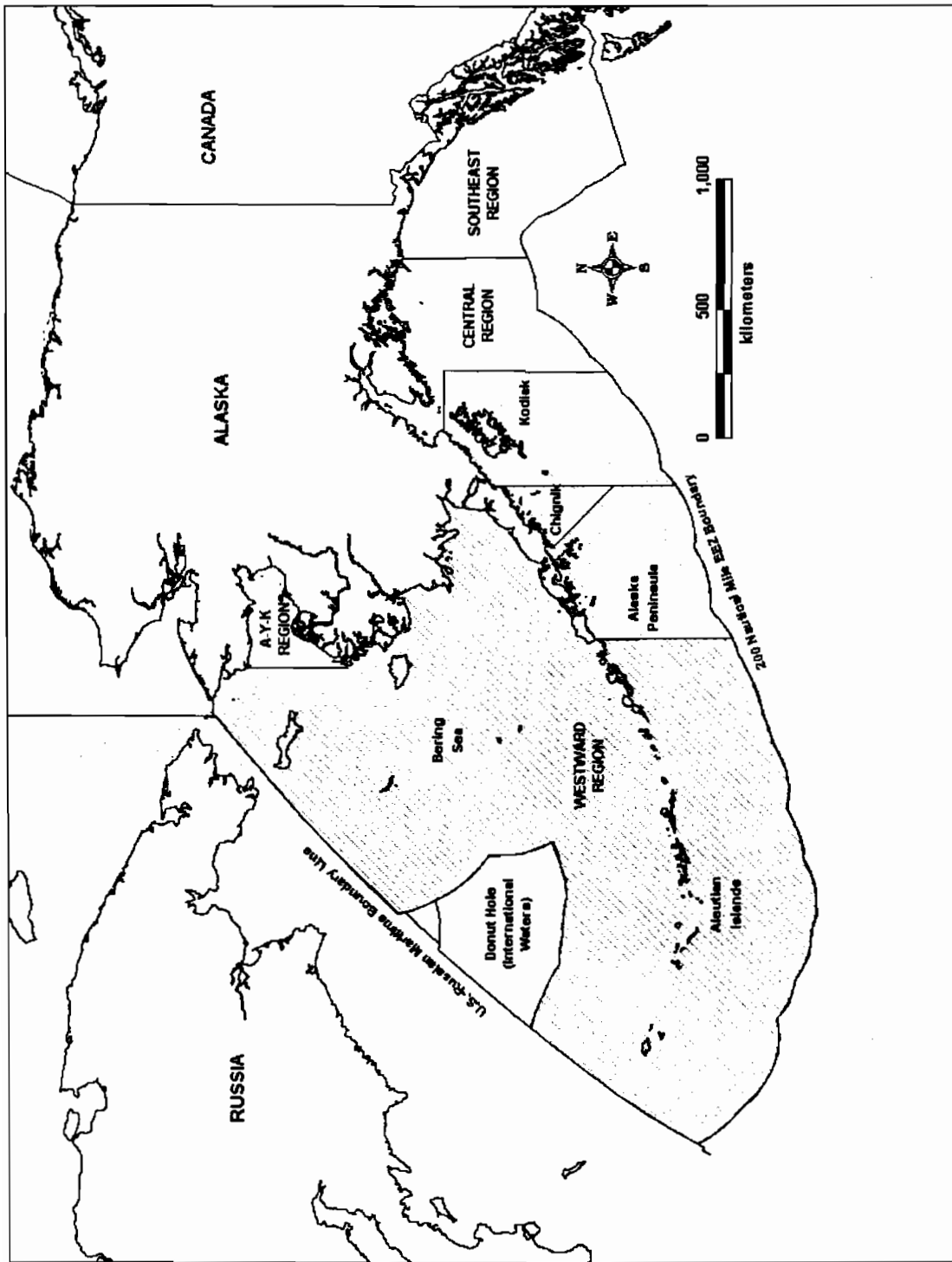


Figure 1.—Alaska Department of Fish and Game shellfish management regions, 2006.

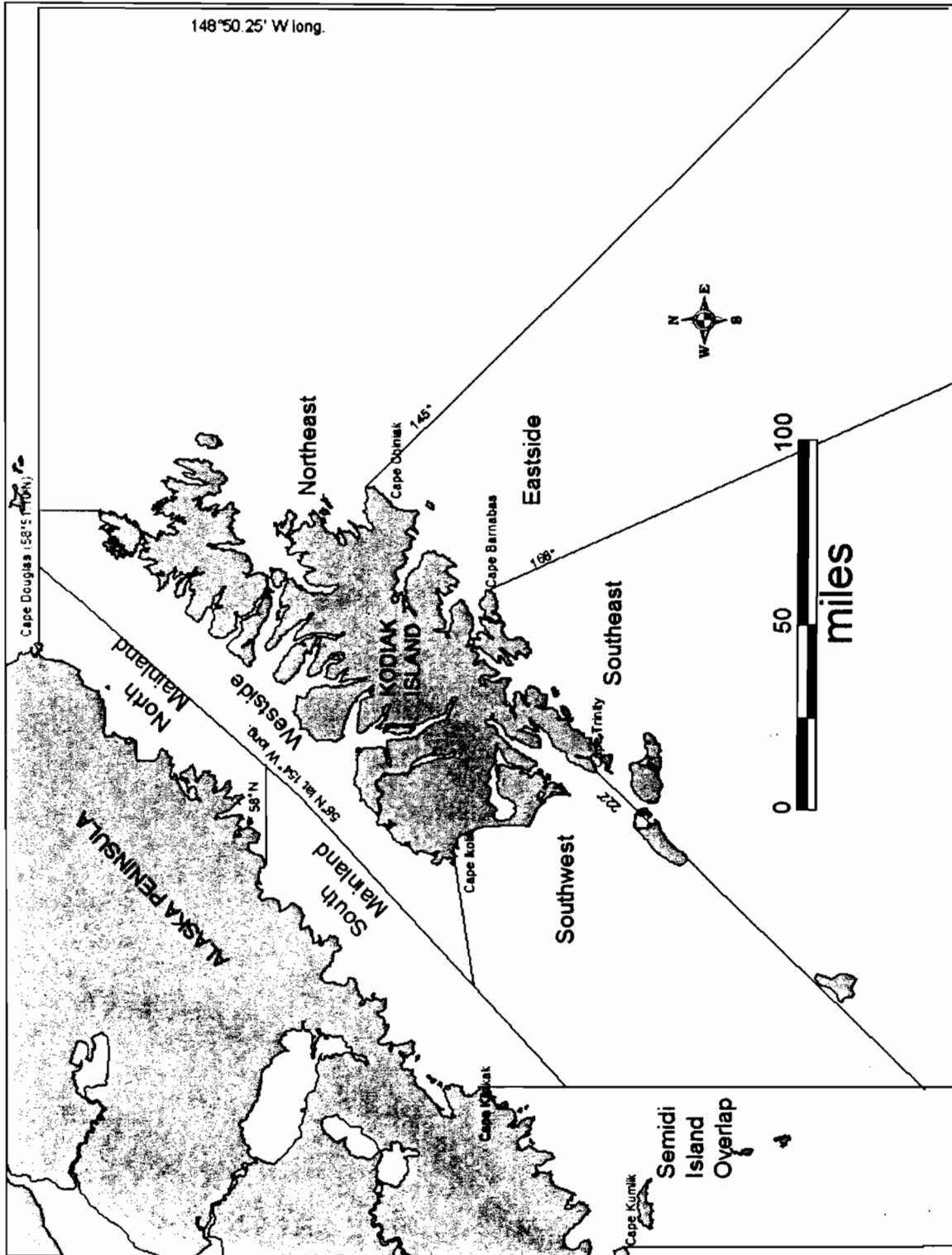


Figure 2.—Kodiak District and sections for Tanner crabs and sea cucumber fishery management, 2006.

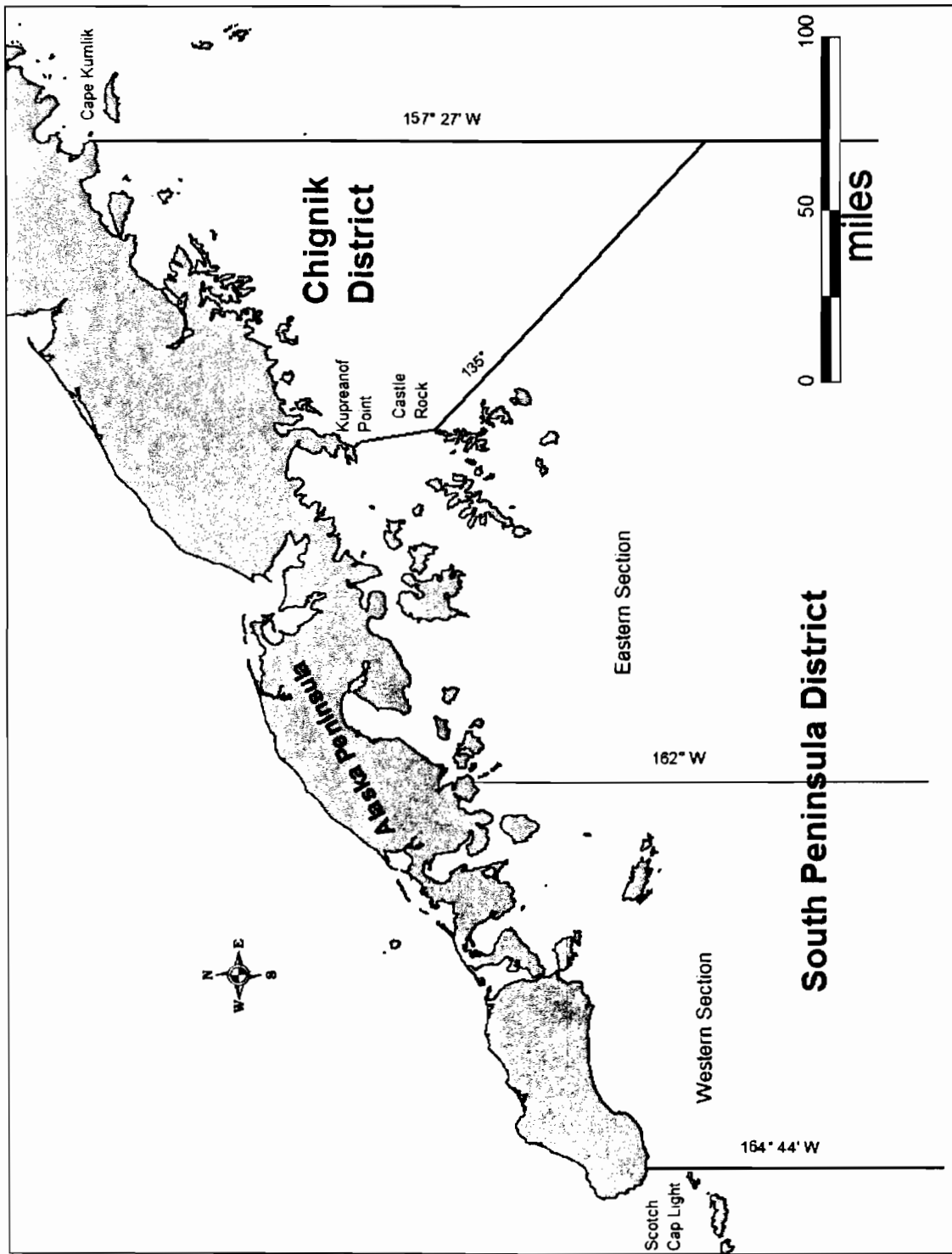


Figure 3.—Chignik and South Peninsula districts for Tanner crab and sea cucumber fishery management, 2006.

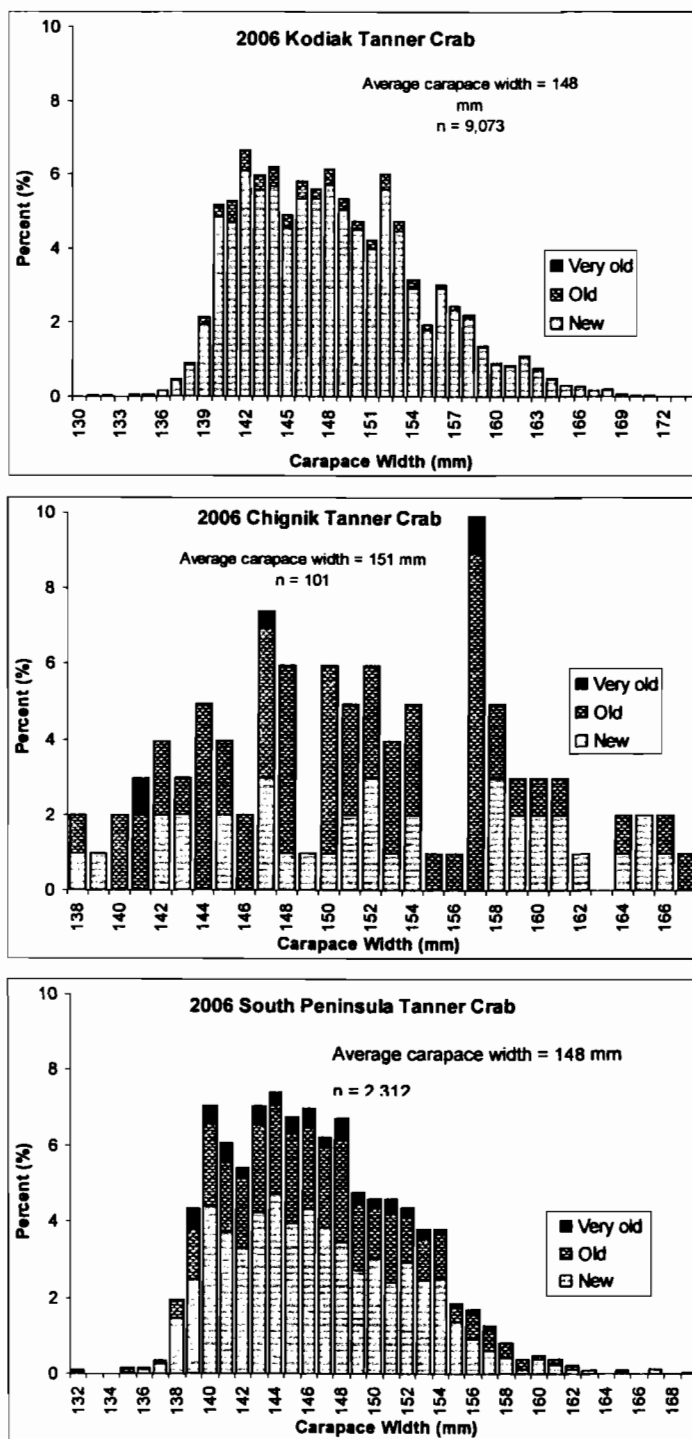


Figure 4.—Carapace width and shell condition of the harvest from the Kodiak, Chignik and South Alaska Peninsula districts Tanner crab fishery, 2006.

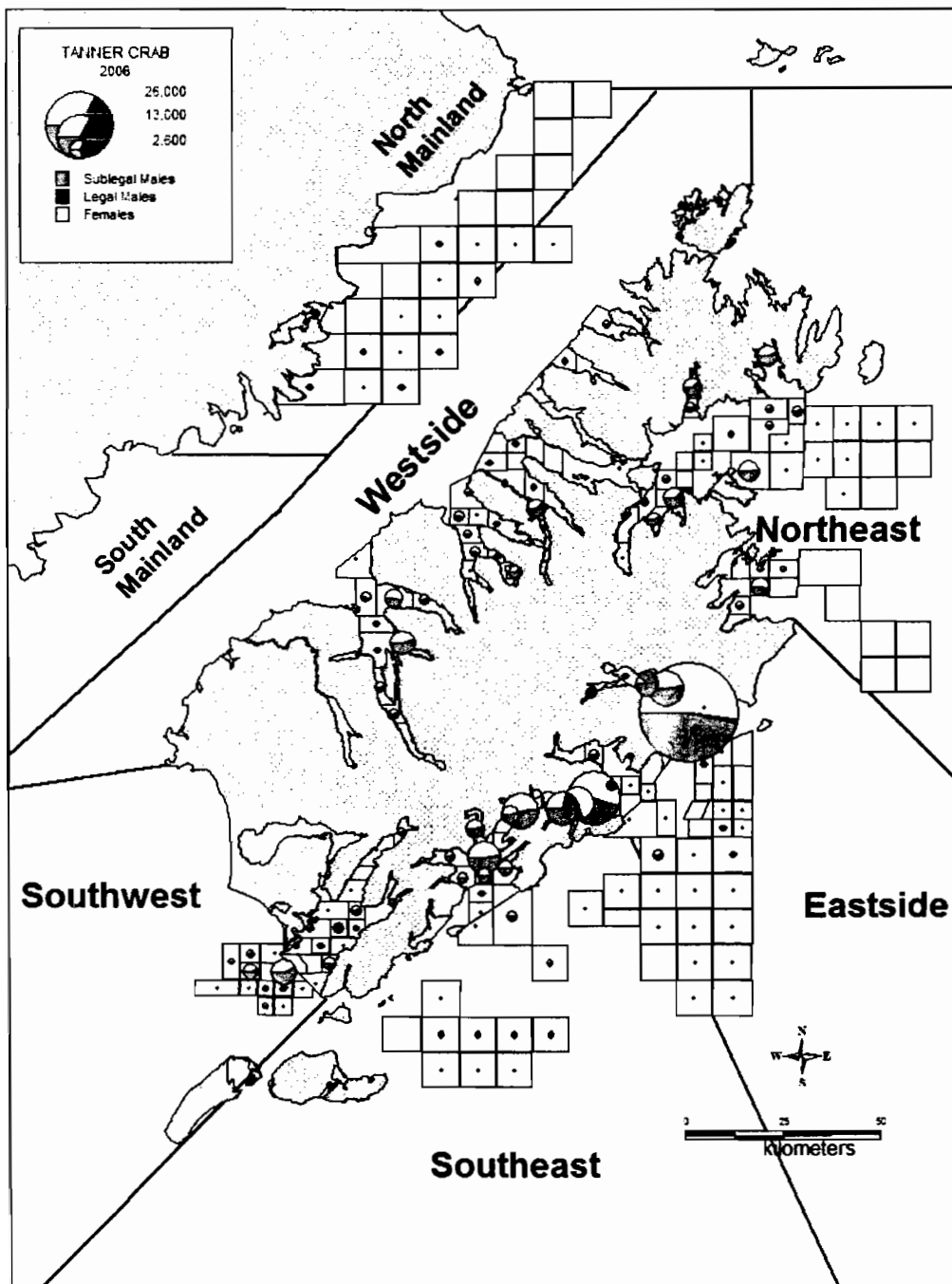


Figure 5.—Number of Tanner crabs per kilometer towed in the 2006 Kodiak District trawl survey.

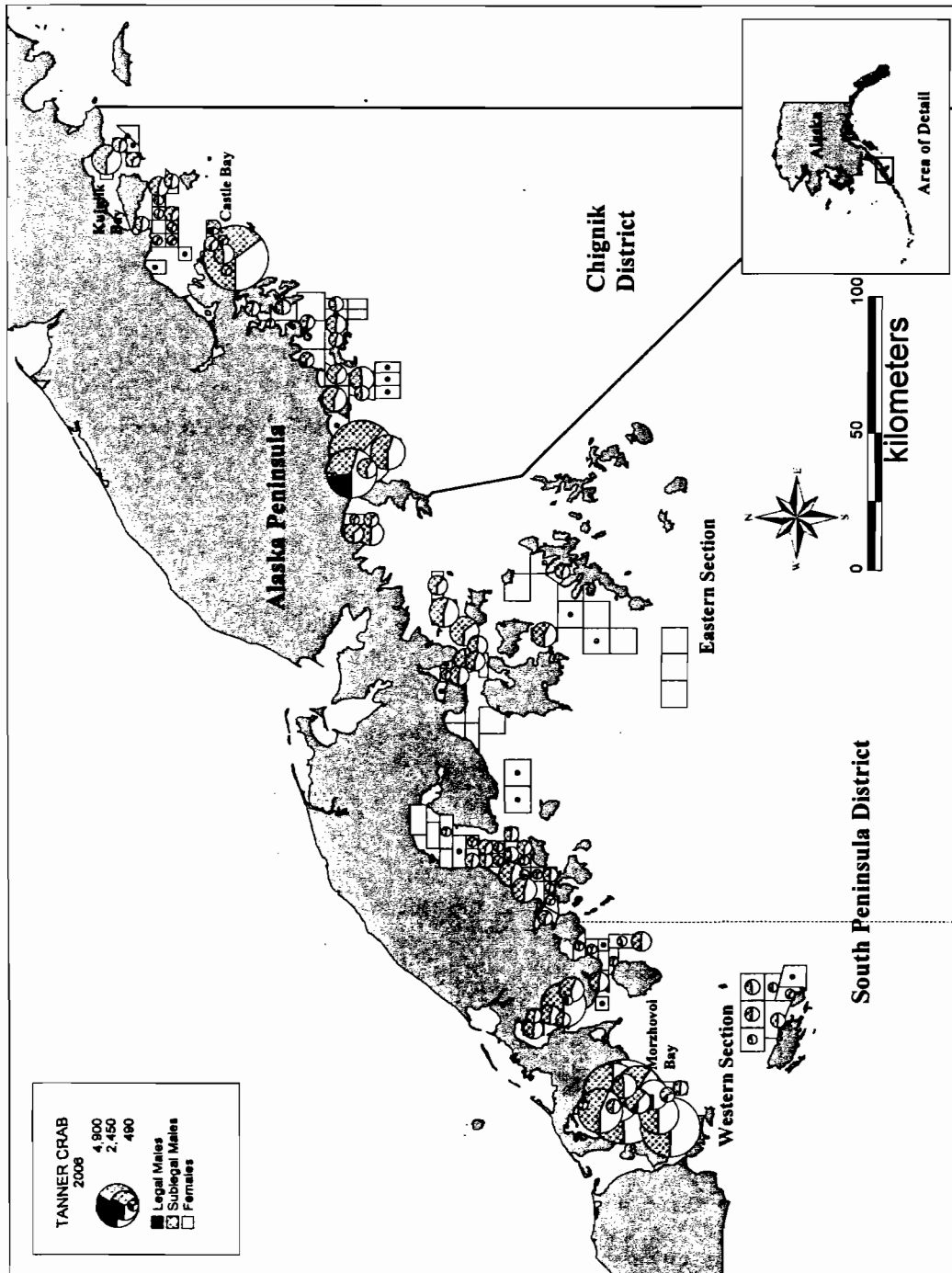


Figure 6.—Number of Tanner crabs per kilometer towed in the 2006 Chignik and South Peninsula districts trawl survey.

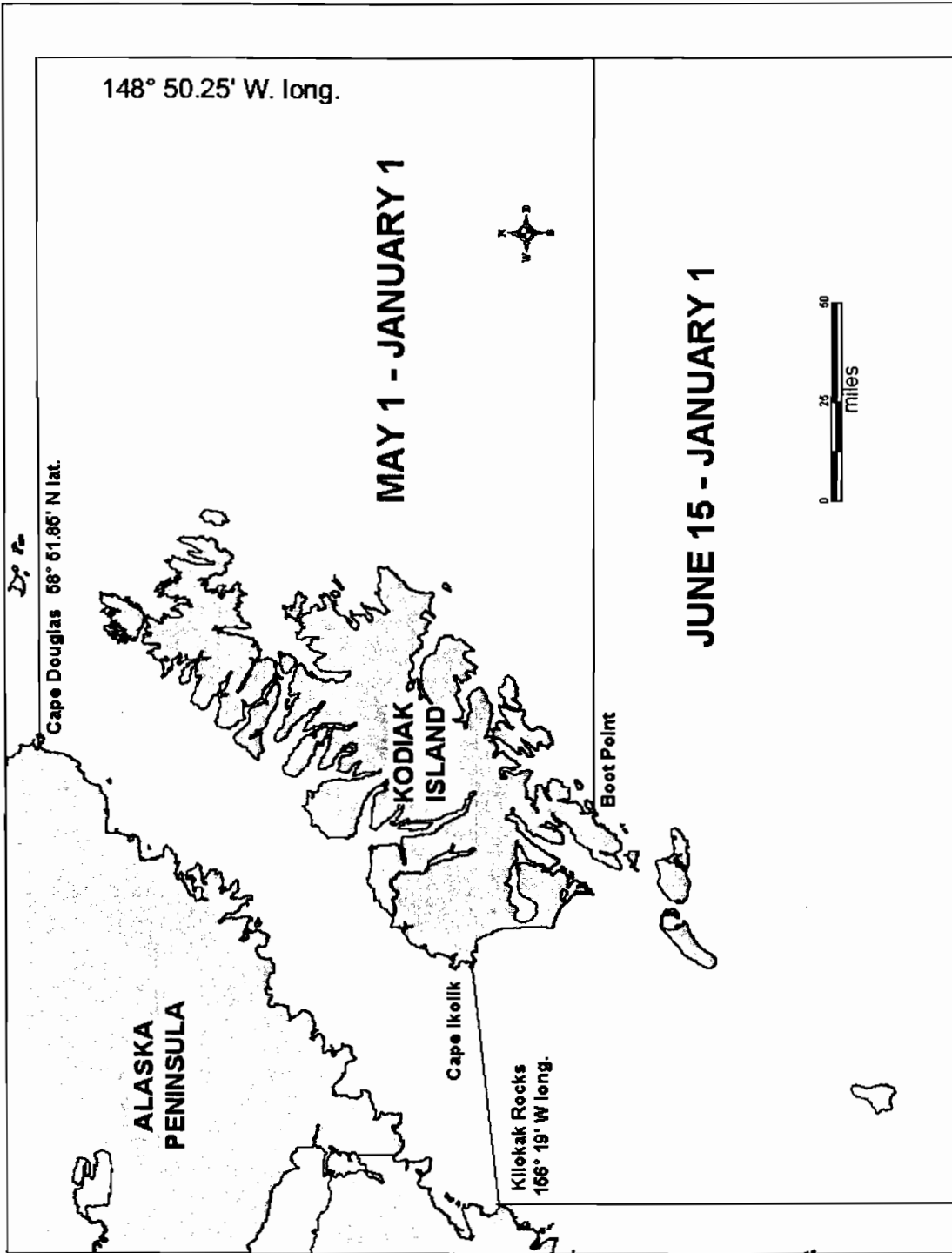


Figure 7.--Kodiak District for the Dungeness crab fishery and fishing seasons, 2006.

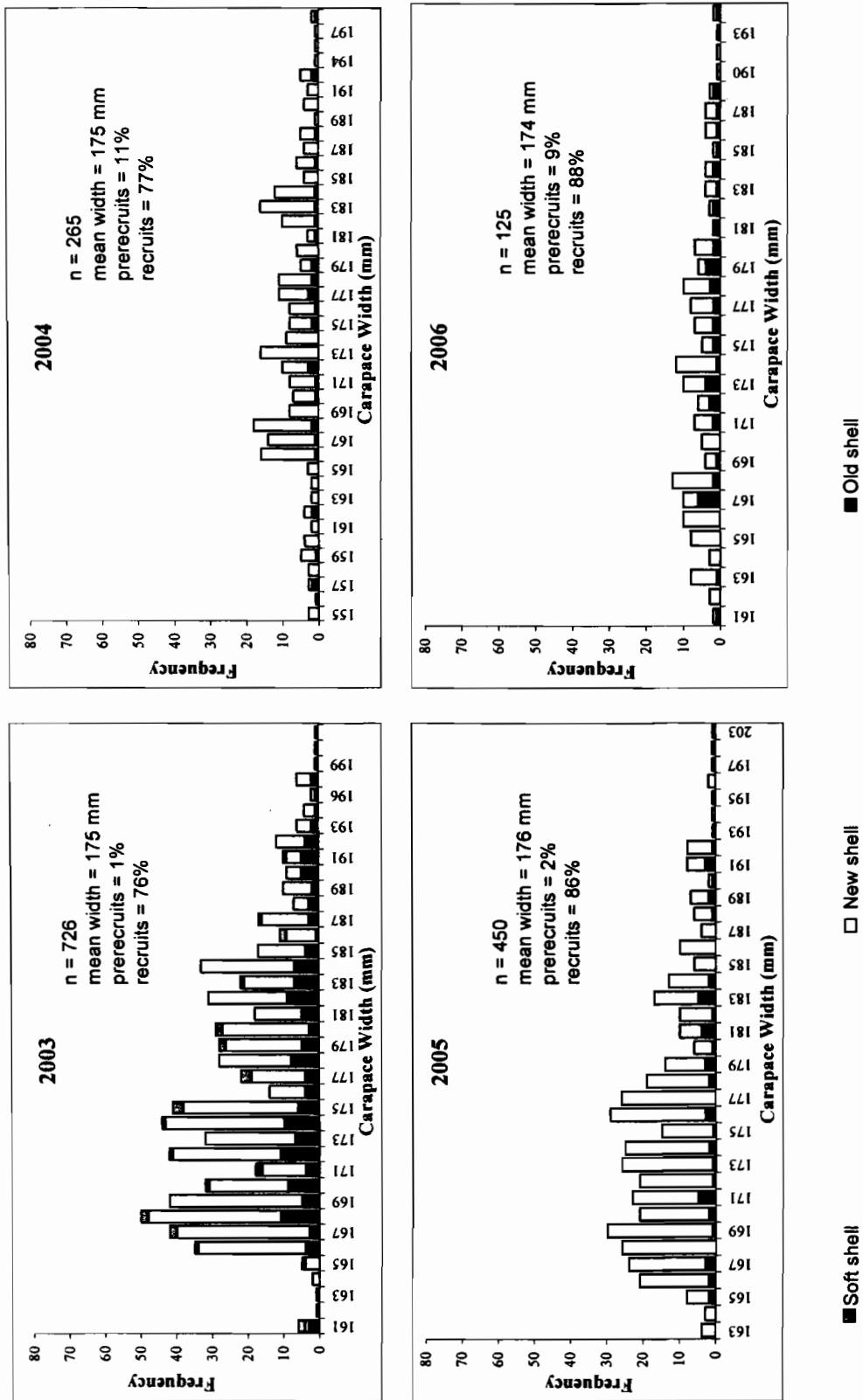


Figure 8.—Kodiak District Dungeness crab carapace width frequencies and shell condition from dockside samples, 2003-2006.

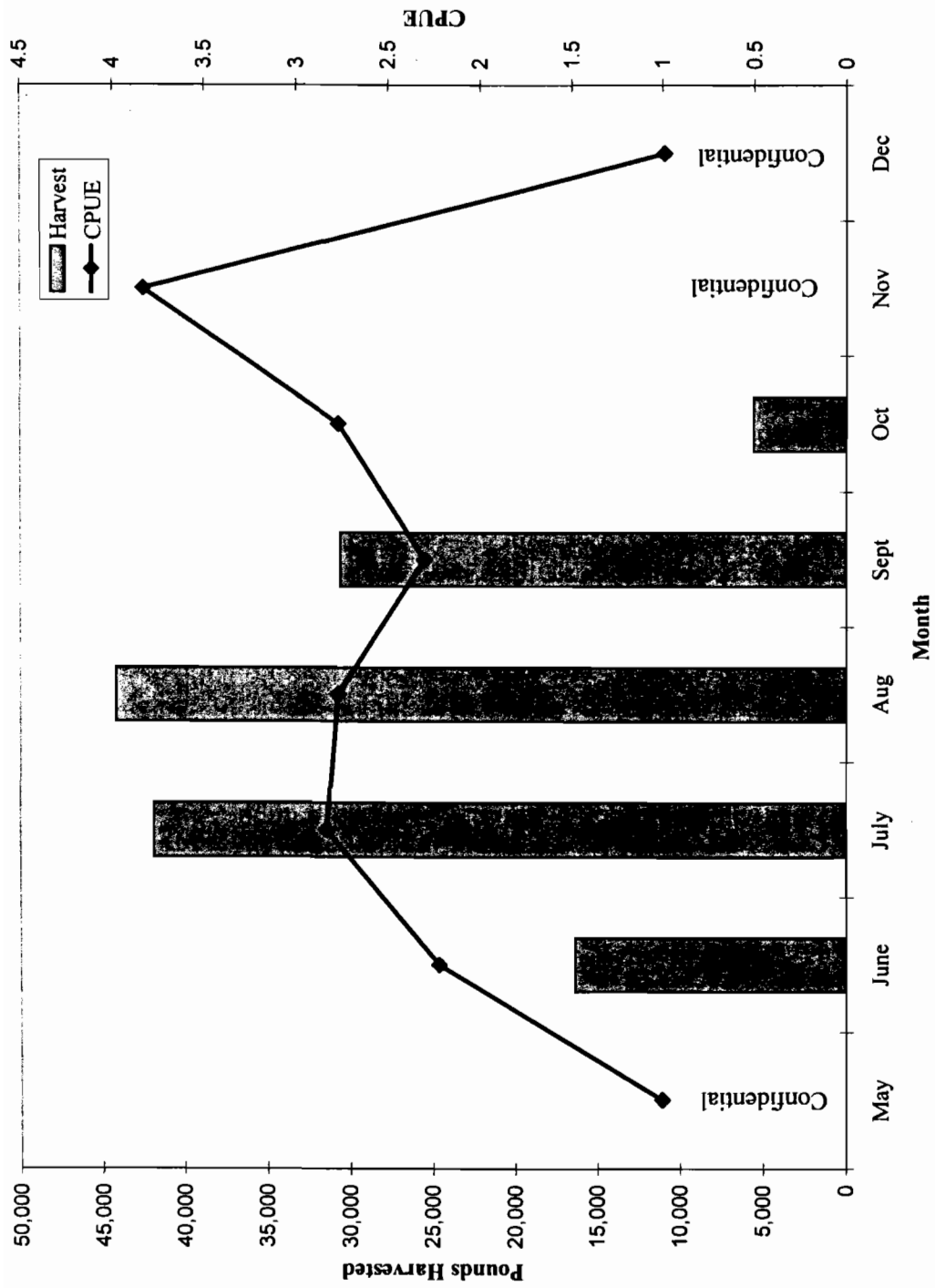


Figure 9.—Kodiak District Dungeness crab harvest, in pounds and CPUE (legal crab per pot), by month, for the 2006 fishery.

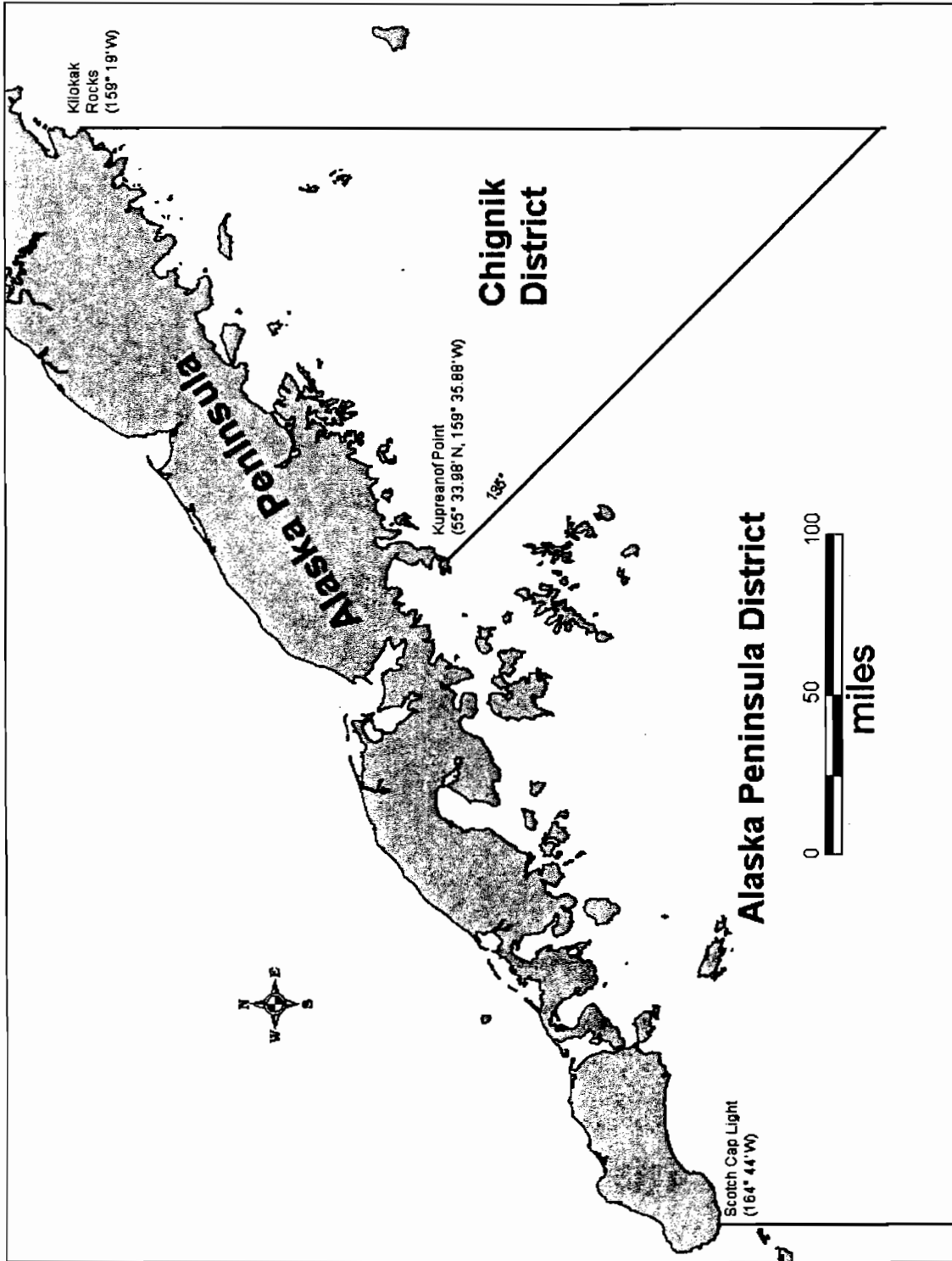


Figure 10.—Chignik and Alaska Peninsula districts for Dungeness crab fishery management, 2006/07.

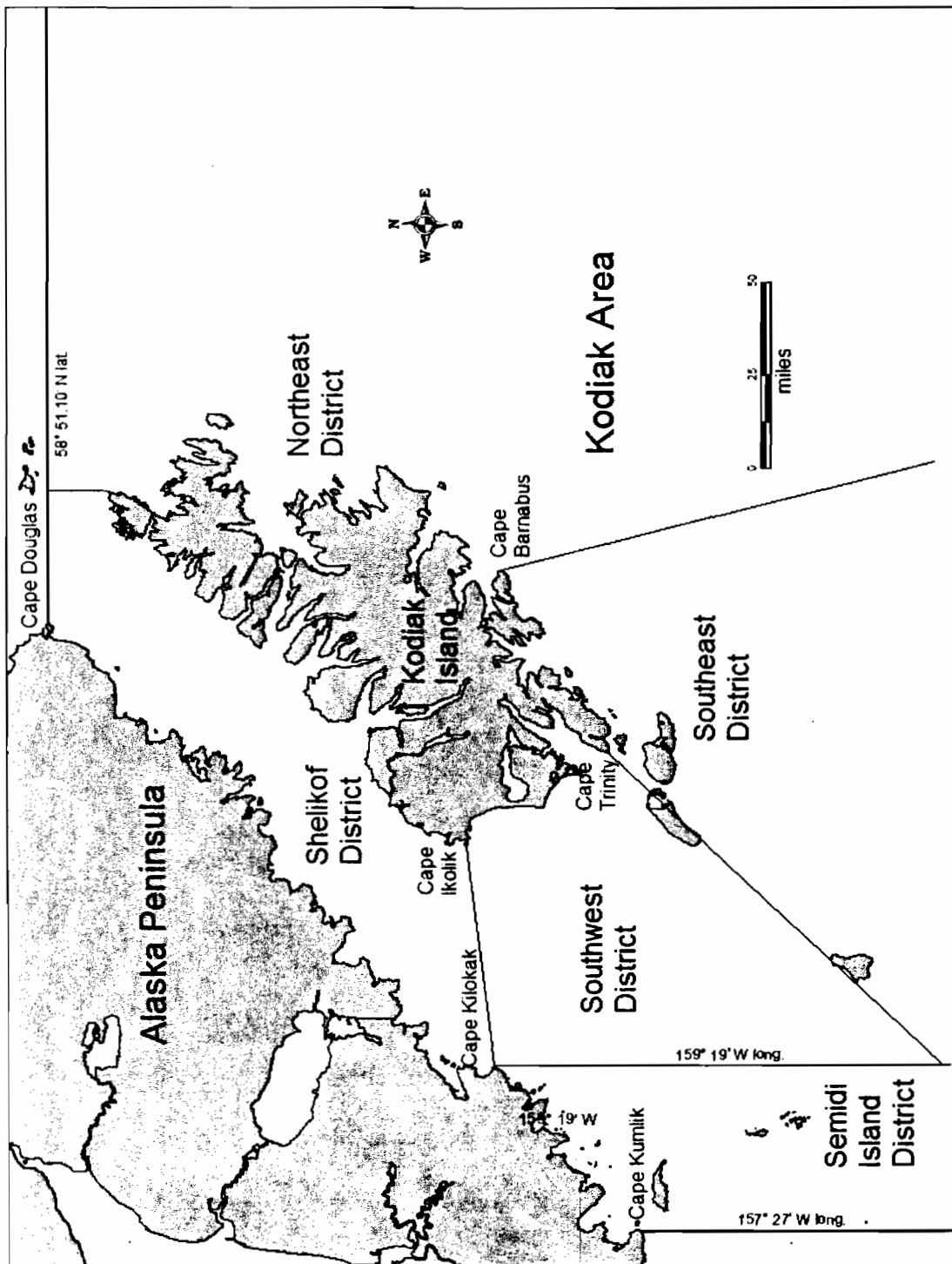


Figure 11.--Kodiak Area districts for king crab fishery management, 2006.

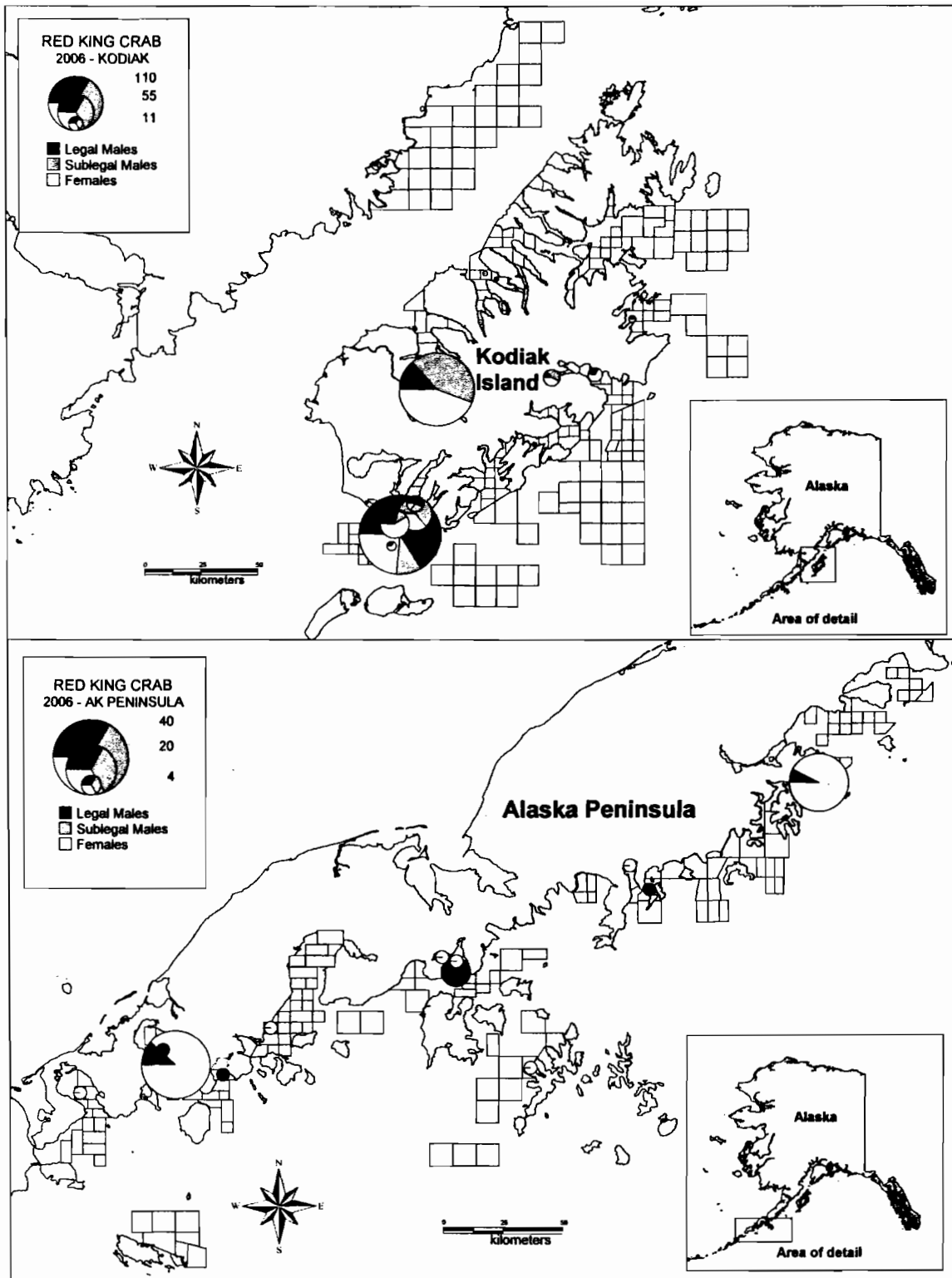


Figure 12.—Number of red king crabs per kilometer towed from the 2006 Kodiak and Alaska Peninsula areas trawl survey.

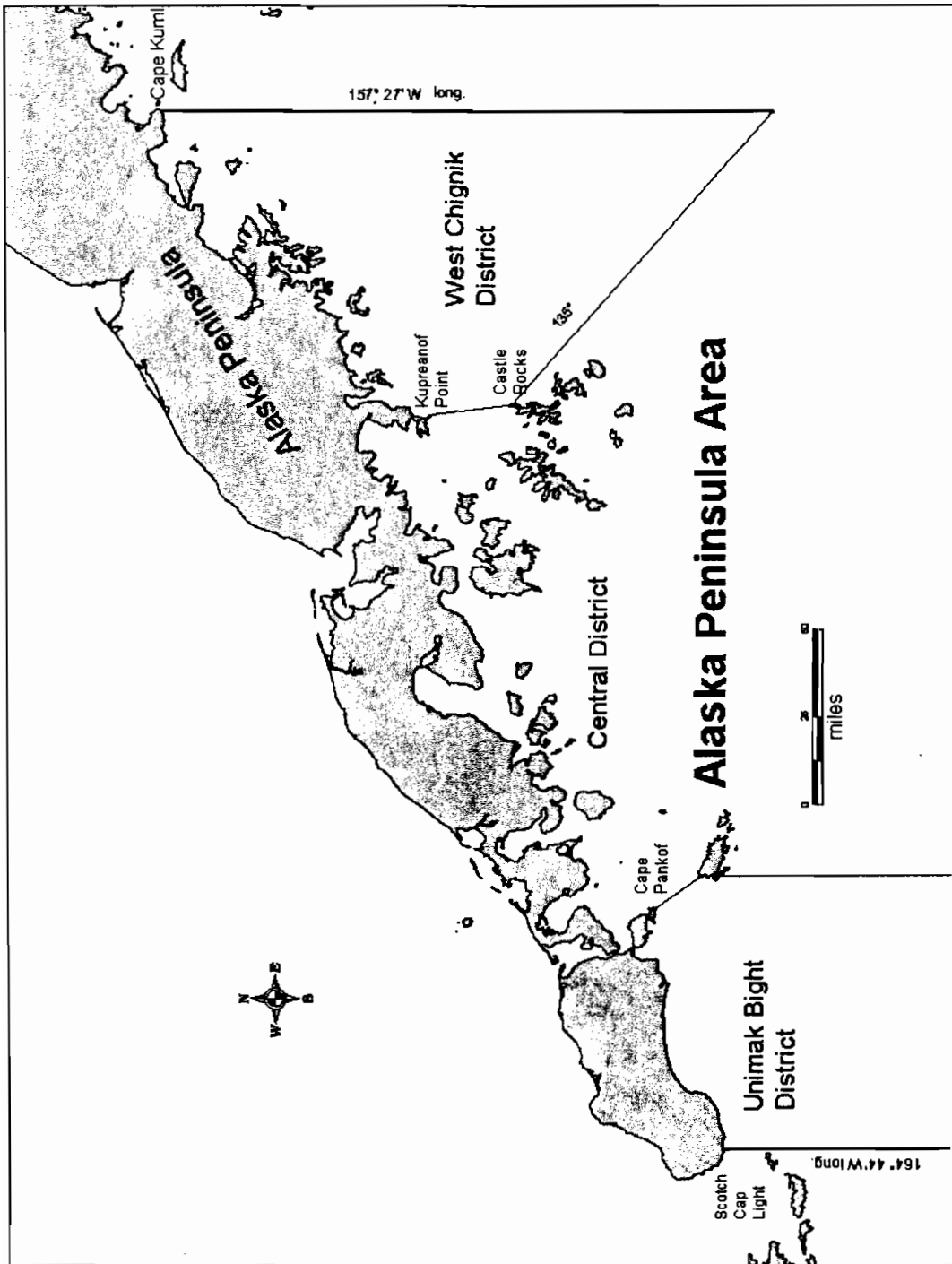


Figure 13.--Alaska Peninsula Area and districts for king crab fishery management, 2006.

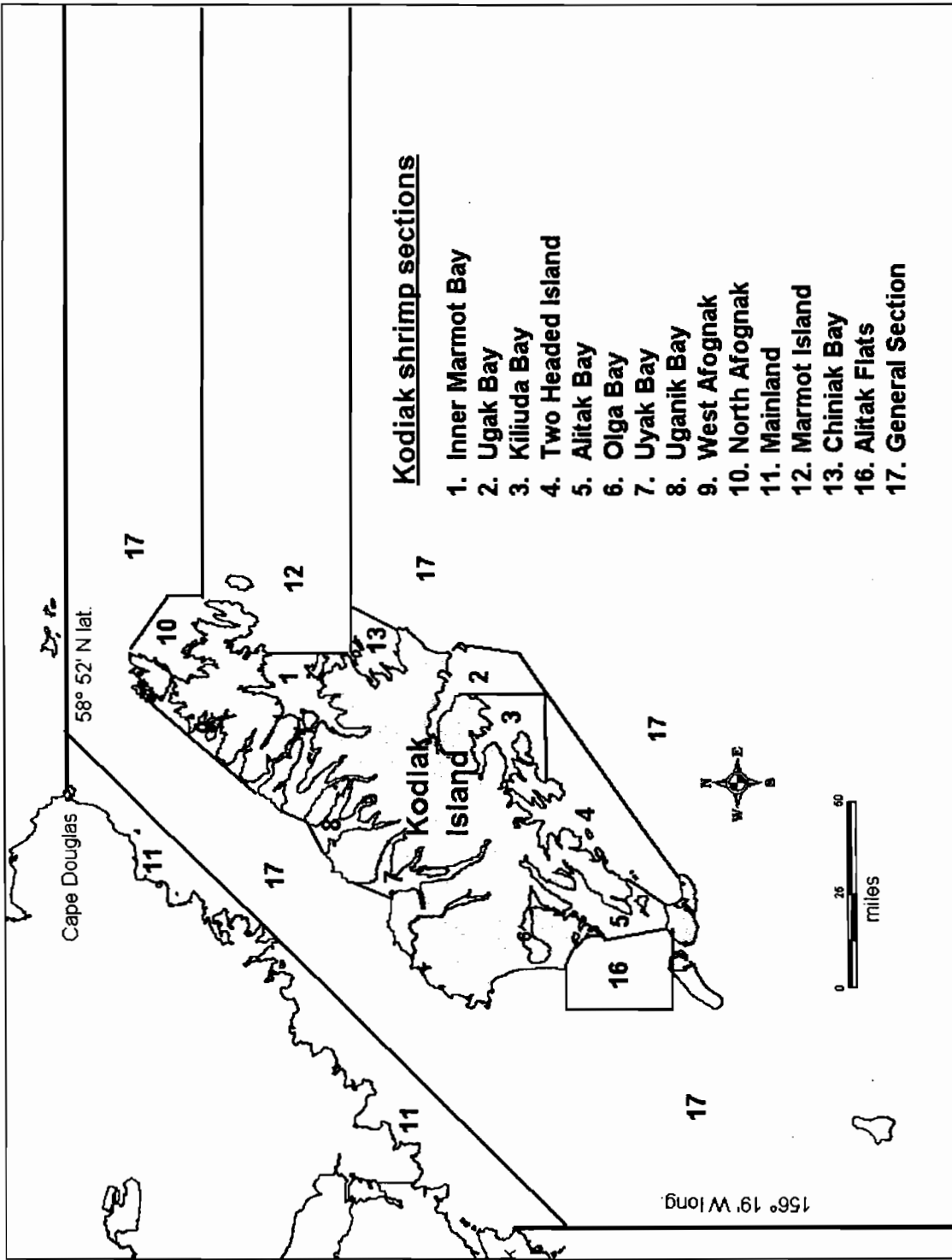


Figure 14.—Kodiak District and sections for shrimp fishery management, 2006.

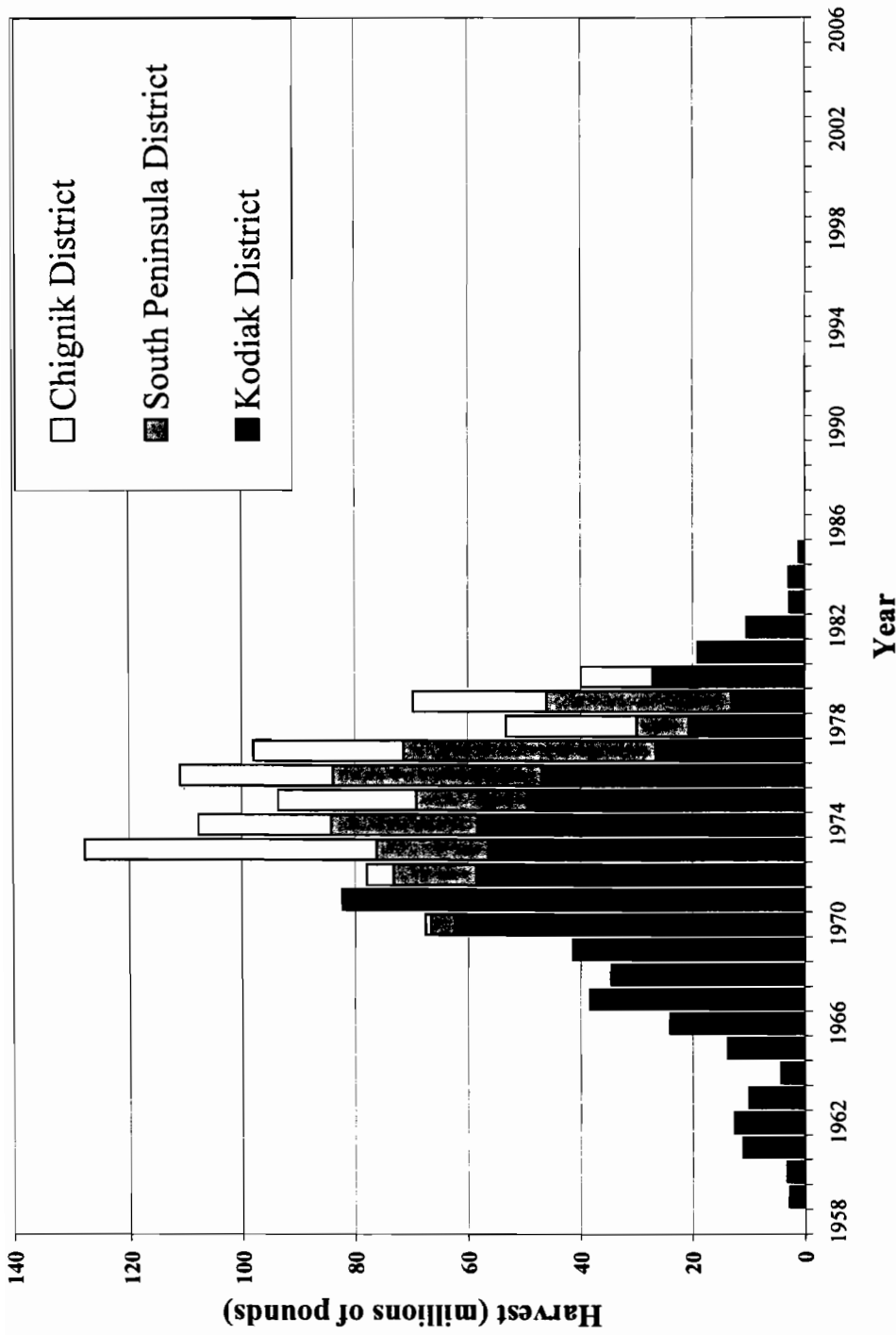


Figure 15.—Shrimp harvests from the Kodiak, Chignik, and South Peninsula districts, 1958-2006.

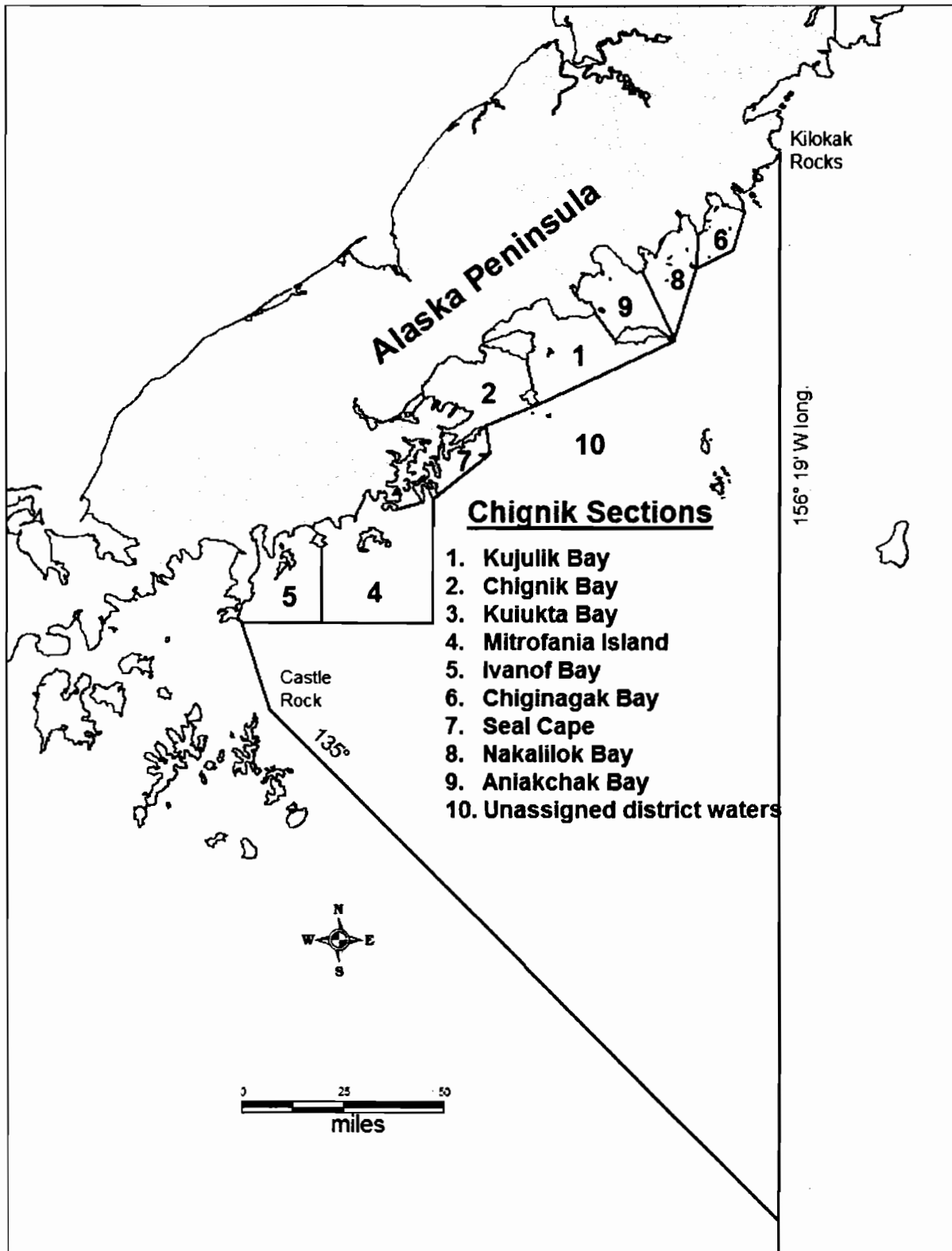


Figure 16.—Chignik District and sections for shrimp fishery management, 2006.

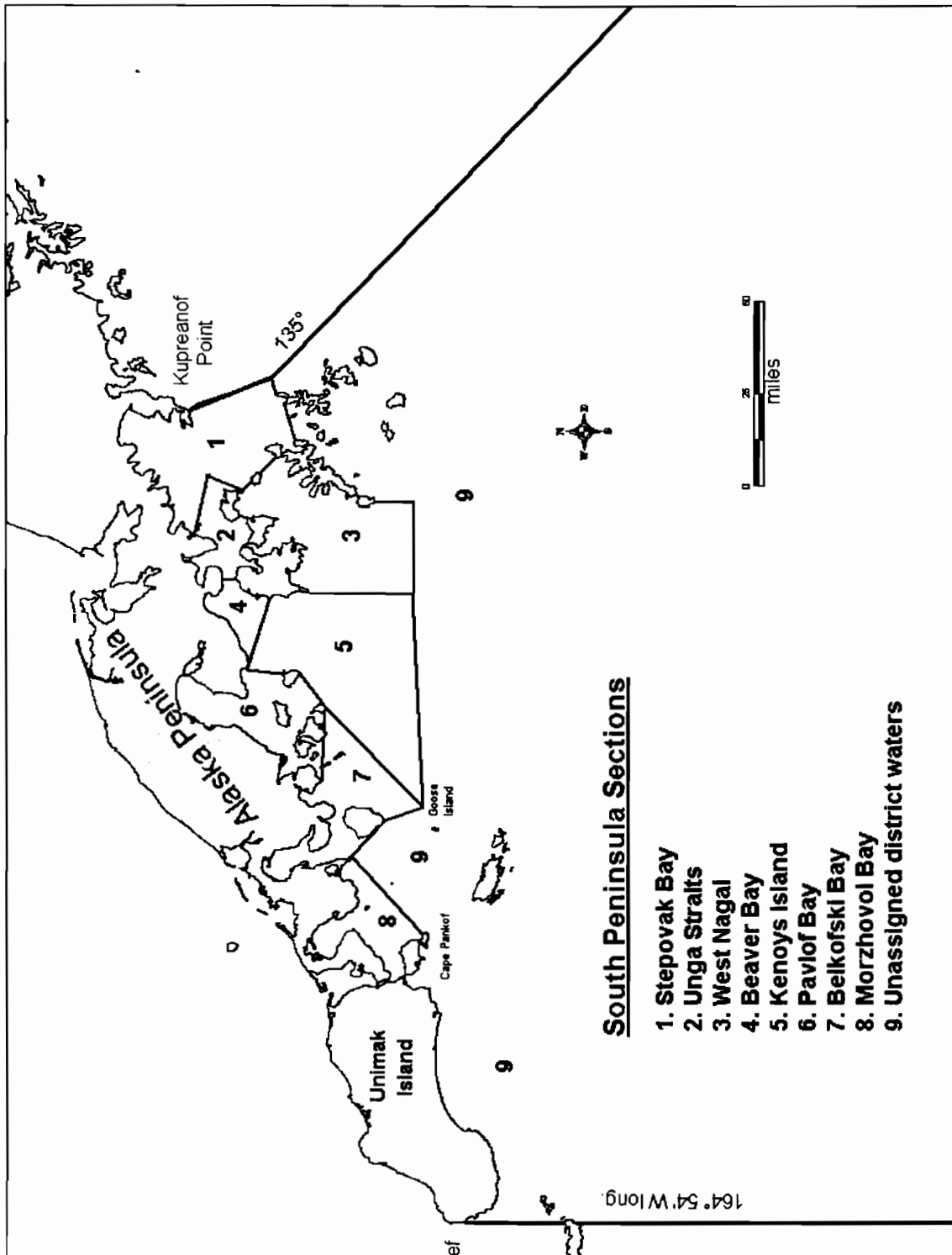


Figure 17.-South Peninsula District and sections for shrimp fishery management, 2006.

Fishery Management Report No. 07-68

**Norton Sound Section Shellfish, 2007; a Report to the
Alaska Board of Fisheries**

by

Scott Kent

and

Joyce Soong

December 2007

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|---|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | at | @ | standard length | SL |
| kilogram | kg | compass directions: | | total length | TL |
| kilometer | km | east | E | | |
| liter | L | north | N | Mathematics, statistics | |
| meter | m | south | S | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | west | W | alternate hypothesis | H _A |
| millimeter | mm | copyright | © | base of natural logarithm | e |
| | | corporate suffixes: | | catch per unit effort | CPUE |
| Weights and measures (English) | | Company | Co. | coefficient of variation | CV |
| cubic feet per second | ft ³ /s | Corporation | Corp. | common test statistics | (F, t, χ^2 , etc.) |
| foot | ft | Incorporated | Inc. | confidence interval | CI |
| gallon | gal | Limited | Ltd. | correlation coefficient (multiple) | R |
| inch | in | District of Columbia et alii (and others) | D.C. et al. | correlation coefficient (simple) | r |
| mile | mi | et cetera (and so forth) exempli gratia (for example) | etc. e.g. | covariance | cov |
| nautical mile | nmi | Federal Information Code | FIC | degree (angular) | ° |
| ounce | oz | id est (that is) | i.e. | degrees of freedom | df |
| pound | lb | latitude or longitude | lat. or long. | expected value | E |
| quart | qt | monetary symbols (U.S.) | \$, ¢ | greater than | > |
| yard | yd | months (tables and figures): first three letters | Jan, ..., Dec | greater than or equal to | ≥ |
| | | registered trademark | ® | harvest per unit effort | HPUE |
| Time and temperature | | trademark | ™ | less than | < |
| day | d | United States (adjective) | U.S. | less than or equal to | ≤ |
| degrees Celsius | °C | United States of America (noun) | USA | logarithm (natural) | ln |
| degrees Fahrenheit | °F | U.S.C. | United States Code | logarithm (base 10) | log |
| degrees kelvin | K | U.S. state | use two-letter abbreviations (e.g., AK, WA) | logarithm (specify base) | log ₂ , etc. |
| hour | h | | | minute (angular) | ' |
| minute | min | | | not significant | NS |
| second | s | | | null hypothesis | H ₀ |
| | | | | percent | % |
| Physics and chemistry | | | | probability | P |
| all atomic symbols | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| alternating current | AC | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| ampere | A | | | second (angular) | " |
| calorie | cal | | | standard deviation | SD |
| direct current | DC | | | standard error | SE |
| hertz | Hz | | | variance | |
| horsepower | hp | | | population | Var |
| hydrogen ion activity (negative log of) | pH | | | sample | var |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

FISHERY MANAGEMENT REPORT NO. 07-68

**NORTON SOUND SECTION, SHELLFISH, 2007; A REPORT TO THE
ALASKA BOARD OF FISHERIES**

by

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Alaska Department of Fish and Game, Division of Commercial Fisheries, Nome

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Division of Sport Fish, Research and Technical Services
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December 2007

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TABLE OF CONTENTS

| | Page |
|---|-------------|
| LIST OF TABLES..... | ii |
| LIST OF FIGURES..... | ii |
| LIST OF APPENDICES..... | ii |
| ABSTRACT..... | 1 |
| INTRODUCTION..... | 1 |
| Norton Sound..... | 1 |
| HARVEST SUMMARY..... | 3 |
| Summer Open Access Fishery..... | 3 |
| CDQ Fishery..... | 4 |
| Harvest Sampling..... | 4 |
| Winter Commercial Fishery..... | 4 |
| Winter Subsistence Fishery..... | 5 |
| DISCUSSION..... | 6 |
| 2008 ALASKA BOARD OF FISHERIES PROPOSALS..... | 7 |
| RECOMMENDATIONS FOR FURTHER INVESTIGATIONS..... | 7 |
| REFERENCES CITED..... | 8 |
| TABLES AND FIGURES..... | 9 |
| APPENDIX A..... | 27 |

LIST OF TABLES

| Table | | Page |
|--------------|---|-------------|
| 1. | Results of population assessment surveys conducted for red king crab in Norton Sound since 1976..... | 10 |
| 2. | Percent prerecruits, recruits, and postrecruits in the catch of red king crab during the winter pot surveys, 1983–2007, Norton Sound. | 11 |
| 3. | Daily catch based on fish ticket data for the open-access summer commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1–August 8, 2007. | 12 |
| 4. | Historical summer commercial red king crab fishery economic performance, Norton Sound Section, Eastern Bering Sea, 1977–2007. | 13 |
| 5. | Red king crab CDQ and open-access summer commercial harvest based on fish ticket reports by statistical area for Norton Sound Section, Eastern Bering Sea, June 15–August 8, 2007. | 14 |
| 6. | Historical commercial harvest by statistical areas of red king crabs from Norton Sound Section, Eastern Bering Sea, 1977–2007 (catch in pounds). | 15 |
| 7. | Daily CDQ summer commercial red king crab harvest, Norton Sound Section, Eastern Bering Sea, 2007. | 18 |
| 8. | A historical comparison of the percentage of recruit, postrecruit, and oldshell red king crab sampled from the summer commercial harvest, Norton Sound Section, Eastern Bering Sea, 1977–2007. | 19 |
| 9. | Winter commercial and subsistence red king crab harvests, Norton Sound, Eastern Bering Sea, 1978–2007. | 20 |

LIST OF FIGURES

| Figure | | Page |
|---------------|--|-------------|
| 1. | King crab fishing districts and sections of Area Q. | 21 |
| 2. | Norton Sound section of Area Q and associated statistical areas. | 22 |
| 3. | Percent of red king crab harvested during the Norton Sound summer commercial fishery east of 164° W longitude, 1987–2007. | 23 |
| 4. | Length frequency distribution for new and old shell legal male red king crab, sampled from the Norton Sound summer commercial fishery, 6/15–8/07, 2007. | 24 |
| 5. | Carapace length measurement summary of legal male red king crab captured and sampled during the summer commercial harvest, 6/15–8/07, 2007. | 25 |

LIST OF APPENDICES

| Appendix | | |
|-----------------|--|----|
| A1. | Historical summer commercial red king crab annual harvest, Norton Sound Section, Eastern Bering Sea, 1977–2007. | 28 |

ABSTRACT

Legal male red king crab (crab that have a carapace length ≥ 104 mm) *Paralithodes camtschaticus* abundance for the 2007 Norton Sound summer commercial crab fishery was estimated at 3.1 million pounds. A guideline harvest level (GHL) of 315,000 pounds (10% of the estimated legal male abundance) of crab was set for the 2007 summer fisheries. The Norton Sound Community Development Quota (CDQ) crab allocation is 7.5% of the GHL. Therefore, 23,625 pounds of the quota was reserved for the CDQ red king crab fishery and 291,375 pounds was reserved for the open access red king crab fishery. The 2007 CDQ fishery began at 12:00 noon June 15, and closed at 12:00 noon June 28. Total harvest was 23,611 pounds of crab, nearly 100% of the CDQ allocation. The 2007 summer open access fishery opened by regulation at 12:00 noon, July 1 and closed by emergency order at 12:00 noon, August 8. Total commercial open access harvest was 101,672 crab for 289,264 pounds, 99% of the open access allocation. Thirty vessels and permit holders participated in the 2007 fisheries. Two buyers purchased crab in Norton Sound during the season. Local vessels accounted for 79% of the total crab harvest. Overall, catch per unit effort (CPUE) was 12.1 crabs per pot. The average price paid to fishers for crab was \$2.50 per pound during the CDQ fishery and \$2.49 per pound during the open access fishery. The combined fishery value was estimated at \$750,220. Recruit crab (legal male crab with a new shell carapace length < 116 mm) made up 45% of legal male crab sampled, representing a 20% increase from samples collected during the 2006 season.

Key words: Red king crab, *Paralithodes camtschaticus*, Alaska Board of Fisheries, Norton Sound Section, harvest, recruitment, CDQ harvest, open access harvest.

INTRODUCTION

NORTON SOUND

The Norton Sound Section (Q3) consists of all waters in Statistical Area Q north of the latitude of Cape Romanzof ($61^{\circ} 49'$ N lat), south of latitude 66° N, and east of the International Dateline (Figures 1 and 2). A large vessel summer commercial red king crab *Paralithodes camtschaticus* fishery existed in Norton Sound Section from 1977 through 1992. A summer commercial fishery did not occur in 1991 due to a lack of funding for Alaska Department of Fish and Game (ADF&G) staff to manage the fishery. In 1992 the summer commercial fishery resumed. Regulation changes adopted during the March 1993 Alaska Board of Fisheries (BOF) meeting had the effect of changing participation in the fishery to that of small boats. A super-exclusive designation went into effect for the Norton Sound commercial crab fishery June 27, 1994. This designation stated that a vessel registered for the Norton Sound crab fishery may not be used to take king crab in any other registration area during that registration year. Later a vessel moratorium was put into place before the 1996 season opened with the intention of creating a license limitation program. Community Development Quota (CDQ) groups were allocated a portion of the summer harvest beginning in 1998. Although the CDQ allocation was in place, no harvest occurred until the 2000 season. The North Pacific License Limitation Program (LLP) went into effect for the Norton Sound crab fishery January 1, 2000. The program states that a vessel which exceeds 32 feet in length must hold a valid crab license issued under the LLP by the National Marine Fisheries Service (NMFS).

During the March 1999 BOF meeting, a new management strategy was adopted for the Norton Sound summer red king crab fishery (5AAC 34.915). A threshold level abundance of legal male red king crab (crab that have a carapace width ≥ 121 mm) biomass was set at 1.5 million pounds. The summer commercial season may open if the population of legal crab exceeds 1.5 million pounds. If the legal biomass falls within the range of 1.5 to 2.5 million pounds the harvest rate will not exceed 5%, so that the stock may rebuild. If the legal biomass is 2.5 million pounds or more, the harvest rate will be no more than 10%. Improved abundance estimates and the current

management strategy will greatly reduce risks of over fishing the stock. New regulations adopted by the BOF during the March 2002 meeting affected the CDQ crab fishery and modified closed water boundaries in eastern Norton Sound and waters west of Sledge Island (Figure 2). At a special BOF meeting on May 3, 2006, Norton Sound Section (Q3) was expanded to include all waters north of the latitude of Cape Romanzof ($61^{\circ} 49' N$ lat), south of latitude $66^{\circ} N$, and east of the International Dateline (Figures 1 and 2). The Norton Sound CDQ fishery may begin at 12:00 noon, June 15, or no less than 72 hours after the commercial gillnet or beach seine herring fishery has closed, whichever is later, through 12:00 noon, June 28. After July 1, the commissioner may, by emergency order, open a CDQ fishery for any remaining allocation after closure of the open access fishery.

From 1976–1991, the NMFS conducted triennial trawl surveys as part of a comprehensive study to document the distribution and abundance of demersal fish and invertebrates in Norton Sound. During the 1976–1985 surveys, legal male king crab were defined as having a carapace length (CL) ≥ 100 mm (Fair 1998). For the 1988 and 1991 surveys, legal male crab were redefined as those with a CL ≥ 104 mm (Fair 1998). ADF&G conducted the triennial trawl survey from 1996–2002. The 2005 trawl survey was postponed due to difficulties procuring a vessel. The 2006 trawl survey was conducted jointly with Norton Sound Economic Development Corporation (NSEDC). On these surveys, ADF&G defined legal male king crab as having a carapace width (CW) of 121 mm (4.75 in) or more, which relates to a CL of approximately 104 mm (Fair 1998). Raw CL data collected from the all NMFS trawl surveys, except the survey conducted in 1979, were reanalyzed and legal male king crab were redefined as having a CL of 104 mm or more for each survey conducted by NMFS. Statistical analysis indicates that there is a highly significant relationship between crab CW and CL and legal male king crab can be defined as either having a CW of at least 121 mm, or a CL of at least 104 mm (Fair 1998). Data from the 1979 survey were incomplete and reanalysis of the data was not possible. However, the difference in the 1979 legal crab population estimates based on CL's of 100 mm and 104 mm is assumed to be very small and would not have altered the population estimate significantly.

Table 1 summarizes the abundance estimates of legal and sublegal male red king crab in Norton Sound. These abundance estimates are based on information collected from the 10 trawl surveys conducted by NMFS and ADF&G during the period, 1976–2006. Note however, that abundance estimates of sublegal male king crab or prerecruits, were not available in 1979. Abundance estimates for legal male red king crab for the 9 trawl surveys prior to 2006 varied from a low of 771,569 legal male crab in 2002 to a high of 1,742,755 crab in 1976, the year of the first trawl survey, and averaged 1,072,279 legal crab for years when the surveys were conducted (Table 1). The 2006 legal male king crab estimate of 726,251 was over 30% below the long-term average abundance estimate, but very similar to the 2002 estimate of 771,569 crab. Abundance estimates for prerecruit-1 (pre-1) male king crab (crab that are 90–103 mm in CL) for the 8 trawl surveys prior to 2006 varied from a low of 303,682 in 1991 to 940,198 in 1999 and averaged 616,132 crab (Table 1). The 2006 pre-1 abundance estimate of 569,833 was slightly below this long-term average abundance estimate (Table 1). Abundance estimates for prerecruit-2 (pre-2) male red king crab (crab that are 76–89 mm in CL) during this same time period varied from 103,832 in 1999 to 466,858 in 1985 and averaged 374,914 crab (Table 1). The estimated abundance of pre-2 male king crab abundance in 2006 is the highest abundance estimate of pre-2 crab in the history of the trawl survey, representing a 66% increase over the previous record abundance estimate and a more than two-fold increase over the long-term average of 374,914 pre-2 crabs (Table 1) (Soong and Banducci 2006). Pre-2 crabs require 2 years in order to molt and grow large enough

to contribute to the legal proportion of the red king crab population. A large abundance of pre-2 crab observed in 2006 suggests that there should be a substantial increase in the legal male crab portion of the population in 2008 and 2009.

Size composition data from the 2007 winter pot study indicated that the portion of the crab population that was considered legal size, 21.9%, was one of the lowest legal crab proportions on record. Near equal percentages of legal sized crab were classified as recruits (legal male crab with a carapace length < 116 mm), 11.3%, and post recruits (legal male crab with a carapace length \geq 116 mm), 10.6% (Table 2). Results from these winter pot surveys indicated a continued decline in the percentage of legal crab over the previous 2 years, with decreased percentages occurring in both categories. Sublegal prerecruit crab accounted for 61.5% of the total population in 2006 and 69.2% of the total population in 2007. Percentage of pre-1 crabs observed during the 2007 winter pot survey was the highest on record. The pre-2 crab percentage, 16.4%, was slightly below the long-term (1983–1993 and 1995–2006) average of 18.8%. The prerecruit-3 (pre-3) crab (crab with a carapace length < 76 mm) percentage, 8.8%, was more than double the long-term average of 3.5% (Table 2).

The projected estimated legal male red king crab abundance for the 2007 summer commercial crab fishery was 3.1 million pounds. This was more than 30% below the 2005 and 2006 abundance estimates of 4.8 million and 4.5 million pounds, respectively. At a maximum exploitation rate of 10%, the guideline harvest level (GHL) was set at 315,000 pounds of crab in 2007. By regulation, the CDQ fishery is allocated 7.5% of the GHL, which resulted in 23,625 pounds being set aside for the CDQ fishery. This follows the harvest strategy set by the Alaska Board of Fisheries that is stipulated in 5AAC 34.915 (b).

HARVEST SUMMARY

SUMMER OPEN ACCESS FISHERY

The 2007 summer open access commercial crab fishery was opened by regulation at 12:00 noon, July 1 in the Norton Sound Section. The guideline harvest level for this portion of the fishery (92.5% of the total GHL) was set at 291,375 pounds of crab. Two companies were registered to buy crab in Norton Sound during the season. One of these buyers operated a seafood processing plant in Nome and purchased crabs from local Norton Sound fishers, while some fishers based in Unalakleet and non-resident fishers delivered to the second buyer in Anchorage. Some fishers also sold their catch dockside as catcher/sellers. The open access portion of the fishery was closed by emergency order 12:00 noon, August 7, 2007 when the harvest approached the goal of 291,375 pounds.

The open-access harvest from fish ticket reports was 101,672 red king crabs or 289,264 pounds (Table 3), more than 99% of the open access allocation. Of this total, 119 pounds were seized by the Department of Public Safety, 965 pounds were reported as deadloss, and 3,932 pounds were kept for personal use. A total 234 landings were made by 30 permit holders operating 30 vessels (Table 3). The average weight for commercially caught crab was 2.85 pounds (Table 3) and the average price paid was \$2.49 per pound (Table 4). Total exvessel value of the open access fishery was \$693,412. Historic information regarding the commercial open access and CDQ red king crab fisheries from 1977–2007, including economic performance and season length can be

found in Table 4. Overall CPUE was 12.1 crabs per pot compared to the 2006 CPUE of 17.3 crabs per pot (Table 5; Appendix A1).

Fish ticket reports document that 14 statistical areas were legally fished in the open access and CDQ fisheries (Table 5; Figure 2). Statistical area 636401 had the highest catch with 123,092 pounds of crab. The other large catches came from stat areas 656401 (70,065 pounds) and 626401 (61,704 pounds). The catch from stat areas east of 164°W longitude made up 71.1% of the harvest (Table 5; Figure 3). A historical comparison of the combined harvest from the open-access and CDQ fisheries by statistical area is provided in Table 6.

Commercial crab fishers either delivered to a small tender vessel in northeastern Norton Sound, which then delivered the crabs to Nome for processing, or crab were sold directly to a seafood processing plant. The majority of fishers delivered to the plant in Nome, while two Unalakleet fishers and two non-resident fishers flew live crabs to a buyer in Anchorage.

CDQ FISHERY

The Norton Sound and Yukon Delta CDQ groups divide the CDQ allocation. Only fishers designated by these two CDQ groups are allowed to participate in this portion of the king crab fishery. Fishers are required to have a CDQ fishing permit from the Commercial Fisheries Entry Commission (CFEC) and register their vessel with ADF&G before they make their first delivery. Fishers operate under authority of the CDQ group and each CDQ group decides how their crab quota is harvested. In 2007, as in the previous 2 years, Yukon Delta transferred their quota to Norton Sound; therefore, all fishers operated under authority of the Norton Sound CDQ group.

The CDQ fishery opened at 12:00 noon June 15, 2007, but fishers did not start fishing until June 18. The harvest was 23,611 pounds of crab (Table 7), nearly 100% of the CDQ allocation. This was the sixth year a CDQ harvest occurred since the CDQ fishery was implemented in 1998, and the fourth year in which fishers harvested or nearly harvested the entire allocation. With only 14 pounds remaining of the quota, the fishery was not reopened after the close of the open access fishery. Eight vessels participated and 17 landings were made (Table 7). The average price paid to fishers for their harvest was \$2.50 per pound. The exvessel value was \$56,808 for the CDQ fishery, the fourth highest on record (Table 4). The fishery was closed 12:00 noon June 28, 2007.

HARVEST SAMPLING

Carapace length measurements and shell age were collected from 6,125 commercially-caught crabs during the open access and CDQ fisheries. Carapace age was classified as new (2–12 months old) or old (over 13 months old). Male new-shell crabs made up 88% of the total legal crabs sampled, and old-shell crabs made up 12% (Table 8; Figure 4). Recruit crabs are new-shell legal crabs < 116-mm carapace length (CL). Postrecruit crabs are legal new-shell male crabs ≥ 116-mm CL and all legal old-shell males. Recruit crabs made up 45% of the legal crabs sampled and postrecruit crabs made up 55% (Table 8; Figure 5). This was a 26% decrease in the number of postrecruit crabs compared to samples from the 2006 fishery. Overall mean carapace length of legal male crabs was 117.0 mm. This was slightly less than the 119.4 mm average length observed from samples collected from the 2006 fishery.

WINTER COMMERCIAL FISHERY

A winter commercial fishery in Norton Sound Section occurs from November 15 through May 15 and typically takes place near Nome. Most fishers consider winter commercial crabbing an

extra source of income and work other jobs. Usually, two or three of the winter crab fishers sell the majority of the crab harvest. The use of vessels is prohibited and the winter commercial fishery takes place through the ice. Stability of sea ice greatly affects the success of the winter fishery. During the winter of 2006–2007, sea ice conditions were good until early March, at which point unstable sea ice contributed to the loss of several commercial pots. Table 9 summarizes the winter commercial and subsistence harvest of crab from 1978 to 2007.

The winter commercial season opened November 15, 2006, and 8 fishers registered to fish. Based on fish tickets submitted, the first landing was made January 17 and the final delivery occurred on May 5. A total of 3,313 crabs were caught by 8 fishers for an average harvest of 92 crab per permit holder (Table 9). Average weight was 2.4 pounds and average price per pound was \$3.06 (Soong 2007b). Percentages of crabs sold (and CPUE) by month are as follows: January 2% (1.5), February 37% (3.4), March 36% (3.7), April 24% (4.2), and May 2% (5.0) (Soong 2007b).

WINTER SUBSISTENCE FISHERY

Residents of Norton Sound subsistence fish for red king crab mainly during the winter. Fishing occurs through cracks or holes cut in the ice with the use of handlines and pots. In order to document trends in subsistence harvests, the BOF enacted a regulation in 1977 requiring subsistence fishers in Norton Sound to obtain a subsistence permit prior to fishing. Fishers record their daily effort and catch on these permits. During the 2006–2007 season, 129 subsistence permits were issued for all of Norton Sound, and of the 127 permits returned, 116 reported that they actually fished (Table 9). A total of 10,690 crabs were recorded as kept, or harvested for subsistence use in the Norton Sound (Table 9), with 80% of the catch being harvested in the Nome area. Unstable sea ice in the Nome area led to few subsistence fishers participating in the fishery and resulted in a small harvest.

The first year subsistence permits were required, 1977, had the highest number of permits issued and a relatively high harvest rate. The fishery declined sharply the following year and remained at low levels throughout the 1981–1982 season. Lack of success in past winter crab fisheries has been attributed to a declining crab population caused by the removal of crab in the summer commercial fishery, low recruitment, low effort due to poor ice conditions, and changes in nearshore winter distribution of crab. During the 1978–1979 winter fishery, the king crab population was relatively large. Despite this large population, harvests were the lowest recorded, indicating that major factors limiting winter harvests were probably poor ice conditions and crab distribution. During the winter of 1981–1982, poor winter catches could more reasonably be attributed to a declining crab population since crab abundance was at a much lower level. Subsistence fishing success during the winters of 1982–1983 through 1986–1987 improved due to a rebuilding population and increased use of more efficient gear (pots instead of handlines). Unstable ice conditions and/or record snowfalls adversely affected 1987–1988, 1988–1989, 1992–1993, 2000–2001, and 2003–2006 harvests (Soong 2007a; Soong and Kohler 2005). During years of stable ice conditions, approximately 100 fishers averaged 100 crabs each.

DISCUSSION

The number of vessels and permit holders participating in the Norton Sound summer crab fishery has been stable since 2001. From 1997 through 1999, the GHL for the summer commercial crab fisheries was set at 80,000 pounds. Participation dropped significantly during these 3 years because fishing became economically impractical for fishers and buyers. Starting in 2000, the GHL was set in association with the estimated legal crab biomass. A GHL set at more than 300,000 pounds of crab caused an increase in effort in the 2000 fishery and a GHL of 240,000 pounds in 2002 was still viewed by participants as a viable fishery. Since then, the GHL has ranged from 250,000 pounds in 2003 to the highest GHL since 1985, 450,000 pounds, set in 2006 (Table 4).

There has been a shift in the commercial fishery effort and harvest eastward and closer in shore since 1993 (Tables 5 and 6; Figures 2 and 3). This is caused in part by the change in participation from large vessels to small vessels. Before 1993, most vessels participating in the Norton Sound summer king crab fishery were 100 feet or greater in length and had circulating seawater holding tanks. These vessels could deploy hundreds of pots and the fishery usually lasted a few days. Large vessels had to avoid freshwater influences that would kill crab in seawater holding tanks. Since 1993, most vessels participating in the summer crab fisheries are 32-foot modified herring and salmon boats that do not have circulating seawater tanks. These boats are ill equipped to handle heavy seas, and, therefore, fish closer to shore to avoid bad weather. Near shore fishing has focused the commercial crab fleet toward statistical areas offshore of Nome and Golovnin Bay. Crabs are abundant at the beginning of the season, the closed water boundary line is close to land, and boats have a short distance to travel if the weather deteriorates.

Average CPUE decreased from 17.3 crab per pot in 2006 to 12.0 crab per pot in 2007 (Appendix A1). Overall mean CL also decreased from the 119.4 mm observed in 2006 to 117.0 mm during the 2007 commercial fishery. Reductions in both catch rates and body size can most likely be attributed to the decrease in the percentage and number of postrecruits in the crab population in 2007. The 2007 Norton Sound summer commercial crab harvest showed a 20% decrease in the percentage of post recruits from the 2006 summer commercial season (Table 8). However, this was expected as low numbers of recruit male crabs were observed during the 2006 trawl survey (10%) (Table 1) and 2006 summer commercial fishery (25%) (Table 8). Additionally, this trend was further supported by results of the 2006–2007 winter pot survey in which postrecruits comprised a mere 10.6% of the samples (Table 2). An increase in average legal mean length is expected for the 2008 season because of increased recruitment observed in 2007. Recruits from 2007 will molt and contribute to the postrecruit portion of the population in 2008. There are also indications that the legal red king crab portion of the population is expected to increase in 2008. Specifically, the record abundance of pre-2 male crab from the 2006 trawl survey (Table 1), as well as the record percentage, 52.8%, of pre-1 crab that comprised the 2006–2007 winter pot survey samples (Table 2) are anticipated to contribute to the 2008 legal size male crab population. Pre-2 males will molt over a 2-year period and become legal recruit male crab in 2008 and post-recruit males in 2009. Legal red king crab biomass is therefore expected to increase in 2008, followed by a possible decline in 2009, depending on the results of the 2008 winter pot survey.

The Norton Sound red king crab fishery has not had a floating processor on the fishing grounds since the Norton Sound Economic Development Corporation began operating its Nome seafood processing plant in the summer of 2002. In years when there is not a floating processor with an

observer on board to sample crab, a smaller percentage of the commercial harvest is sampled because fishers deliver at all times of the day and night. During the 2007 season ADF&G personnel were able to coordinate catch sampling with fishers and buyers to ensure optimal harvest data collection.

Until 2002, the Norton Sound CDQ fishery occurred directly after the open access fishery that generally ends in late August or early September. By late August, male red king crab in Norton Sound begin to molt, which in turn led to an increase in handling mortality and a marketing problem associated with double shell crab. This problem was solved through a BOF action in 2002 that opened the CDQ fishery in mid June, prior to the July 1 open access fishery. In 2007, the CDQ fishery was able to harvest nearly 100% of the quota prior to the June 28 closure, thereby avoiding handling mortality and marketing problems.

2008 ALASKA BOARD OF FISHERIES PROPOSALS

There are five proposals the BOF will consider in March 2008 affecting Norton Sound Section red and blue king crab. They are as follows:

Proposal 387: This proposal would move the start of open access summer king crab fishery from July 1 to June 15 and move the CDQ fishery from June 15 until after the open access fishery is closed.

Proposal 388: This proposal would remove the restriction that the herring fishery must be complete before the start of the CDQ king crab fishery on June 15.

Proposal 389: This proposal involves reducing the size limit for blue king crab in Norton Sound from a carapace width of 5 ½ inches to 5 inches.

Proposal 390: This proposal would require commercial king crab pots to have escape mechanisms modified in one of two ways. Option one would be for crab pots to have at least four escape rings with an inside diameter of 4 ½ inches. The alternative would be for a four-sided pot to have the lower half of one of its side panels comprised of a mesh size no less than 6 ½ inches.

Proposal 391: This proposal would require king crab pots in the Nome winter commercial and subsistence king crab fisheries to have a galvanic release or other thread that would break down quicker than the current 30 thread cotton or smaller requirement.

RECOMMENDATIONS FOR FURTHER INVESTIGATIONS

A winter pot survey is planned during February, March, and April of 2008. Results of the winter project will be incorporated into a model to project the summer 2008 legal biomass and appropriate GHLL. The triennial Norton Sound Trawl Survey will also begin in July of 2008. Results from the trawl survey will not be available until January 2009 and will be used to set the GHLL in 2009.

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TABLES AND FIGURES

Table 1.—Results of population assessment surveys conducted for red king crab in Norton Sound since 1976.

| Year | Dates | Research Agency | Gear | Number of Red King Crabs Captured ^a | | | Population Abundance Estimates ^b | | | | Standard Error | | |
|---------------------------------|---------------------------|-----------------|-------|--|-------------|--------------------------|---|-------------|--------------|-------------|----------------|-------------|-------------|
| | | | | Pre-2 Males | Pre-1 Males | Legal Males ^c | Females | Pre-2 Males | Pre-1 Males | Legal Males | Pre-2 Males | Pre-1 Males | Legal Males |
| 1976 | 9/2 - 9/5, 9/16 - 10/7 | NMFS | Trawl | 58(38) | 110(213) | 180(614) | 101(35) | 331,555 | 808,091 | 1,742,755 | 44,653 | 70,094 | 104,941 |
| 1979 | 7/26 - 8/5 | NMFS | Trawl | N/A | N/A | 90(86) | N/A | | ^d | 809,799 | | 61,176 | |
| 1982 | 9/5 - 9/11 | NMFS | Trawl | 42 | 107 | 97 | 256 | 356,724 | 832,581 | 877,722 | 50,116 | 76,454 | 79,907 |
| 1985 | 9/16 - 10/1 | NMFS | Trawl | 63 | 94 | 139 | 139 | 466,858 | 707,140 | 1,051,857 | 58,598 | 71,999 | 87,931 |
| 1988 | 8/16 - 8/30 | NMFS | Trawl | 82(0) | 69(1) | 135(3) | 212(2) | 565,255 | 493,030 | 978,748 | 62,339 | 58,224 | 82,083 |
| 1991 | 8/22 - 8/30 | NMFS | Trawl | 39 | 42 | 166 | 105 | 294,801 | 303,682 | 1,287,486 | 46,648 | 46,960 | 98,101 |
| 1996 | 8/7 - 8/18 | ADF&G | Trawl | 39(36) | 32(17) | 53(14) | 98(70) | 452,580 | 325,699 | 536,235 | 52,324 | 47,338 | 69,647 |
| 1999 | 7/28 - 8/7 | ADF&G | Trawl | 9(3) | 64(38) | 103(63) | 64(18) | 103,832 | 940,198 | 1,594,341 | 40,841 | 120,449 | 129,864 |
| 2002 | 7/27 - 8/6 | ADF&G | Trawl | 34(18) | 42(23) | 61(29) | 116(35) | 427,703 | 518,638 | 771,569 | 73,494 | 80,741 | 85,303 |
| 2006 | 7/25 - 8/8 | ADF&G | Trawl | 77(3) | 37(16) | 51(18) | 66(1) | 775,076 | 569,833 | 726,251 | 91,812 | 82,883 | 92,590 |
| Historical Average ^e | | | | | | | | 374,914 | 616,132 | 1,072,279 | | | |

^a The 1976, 1979, 1988, and all ADF&G trawl catches include re-sampled stations (in parentheses). The 1979, 1996, and 2006 population estimates incorporated re-sampled stations by combining catches and tow distances for each station re-sampled.

^b Population estimates are in numbers of crab and are valid for the date of the survey (i.e., either before or after the summer commercial fishery).

^c Legal male red king crabs were defined as 121 mm (4.75 in) in carapace width (CW) for the pot surveys and all ADF&G trawl surveys, and 104-mm CL for all the NMFS trawl surveys except the 1979 survey which defined legal males as 100-mm CL.

^d Pre-1 and pre-2 male, and female data is not available for the 1979 NMFS trawl survey and the legal male abundance estimate is fully standardized.

^e Historical average is from 1976–1991, and from 1996–2002.

Table 2.—Percent prerecruits, recruits, and postrecruits in the catch of red king crab during the winter pot surveys, 1983–2007, Norton Sound.

| Year ^{b,c} | Sublegal Prerecruits ^a | | | | Legal | | |
|---------------------------------|-----------------------------------|---------------------|-------------------|----------|-----------------------|---------------------------|----------|
| | Threes ^{d,e} | Twos ^{d,f} | Ones ^g | Subtotal | Recruits ^h | Postrecruits ⁱ | Subtotal |
| 1983 | | 26.2% | 38.0% | 64.2% | 26.1% | 9.6% | 35.7% |
| 1984 | | 34.7% | 31.0% | 65.6% | 18.6% | 15.8% | 34.4% |
| 1985 | | 24.7% | 45.1% | 69.8% | 20.4% | 9.8% | 30.2% |
| 1986 | | 25.7% | 35.0% | 60.7% | 21.7% | 17.7% | 39.3% |
| 1987 | | 12.5% | 31.3% | 43.8% | 10.4% | 45.8% | 56.3% |
| 1989 | | 26.8% | 15.4% | 42.2% | 27.3% | 30.5% | 57.8% |
| 1990 | | 15.9% | 33.5% | 49.4% | 24.7% | 26.0% | 50.6% |
| 1991 | 0.2% | 4.8% | 30.6% | 35.4% | 33.5% | 30.9% | 64.4% |
| 1993 | 0.0% | 3.3% | 8.8% | 12.2% | 17.1% | 70.7% | 87.9% |
| 1995 ^j | 2.1% | 9.8% | 11.4% | 21.2% | 32.3% | 44.4% | 76.7% |
| 1996 | 9.2% | 22.1% | 33.1% | 55.2% | 10.1% | 25.5% | 35.6% |
| 1997 | 11.0% | 32.3% | 20.8% | 53.1% | 14.3% | 21.6% | 35.8% |
| 1998 | 0.8% | 36.6% | 44.3% | 81.0% | 8.7% | 9.5% | 18.3% |
| 1999 | 0.7% | 6.5% | 42.4% | 48.9% | 39.0% | 11.3% | 50.3% |
| 2000 | 3.1% | 13.2% | 20.3% | 33.5% | 38.6% | 24.9% | 63.5% |
| 2001 | 4.5% | 18.2% | 15.9% | 34.1% | 13.6% | 47.7% | 61.3% |
| 2002 | 10.7% | 43.1% | 25.5% | 68.6% | 9.0% | 11.8% | 20.8% |
| 2003 | 4.2% | 19.7% | 41.6% | 61.3% | 20.2% | 14.2% | 34.4% |
| 2004 | 0.0% | 9.4% | 40.2% | 49.6% | 37.1% | 13.3% | 50.4% |
| 2005 | 1.5% | 15.8% | 23.9% | 39.7% | 25.4% | 33.5% | 58.9% |
| 2006 | 1.0% | 28.5% | 33.0% | 61.5% | 15.6% | 21.9% | 37.5% |
| 2007 | 8.8% | 16.4% | 52.8% | 69.2% | 11.3% | 10.6% | 21.9% |
| Historical Average ^k | 3.5% ^k | 18.8% ^k | 29.6% | 50.0% | 22.1% | 25.5% | 47.6% |

^a Prerecruit threes are all sublegal males with carapace length < 76 mm.

^b Unstable ice conditions in 1988 and 2001.

^c Project was not funded in 1992 and 1994.

^d Prior to 1991 carapace lengths were consolidated in pairs so that prerecruit threes and twos cannot be accurately separated.

^e Prerecruit three crabs have CL < 76mm.

^f Prerecruit twos are all sublegal males with carapace length from 76 through 89 mm.

^g Prerecruit ones are all sublegal males with carapace length ≥ 90 mm.

^h Recruits are new-shell, legal crabs with CL ≤ 115 mm.

ⁱ Postrecruits are new-shell, legal crabs with CL > 115 mm and all old-shell legal crabs.

^j Includes catch from 12 test fishing stations and from one commercial fisherman's catch on 5 April.

^k Historical average is from 1983–1993 and 1995–2006.

Table 3.—Daily catch based on fish ticket data for the open-access summer commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1–August 8, 2007.

| Date ^{a,b} | Number of Vessels | Number of Permits | Landings | Number of Crabs | Daily Harvest (lbs) | Cumulative Harvest (lbs) ^c | No. Pots Pulled | Average Weight (lbs) | CPUE |
|---------------------|-------------------|-------------------|------------|-----------------|---------------------|---------------------------------------|-----------------|----------------------|-------------|
| 6/30 | 2 | 2 | 2 | 42 | 119 | 119 | 2 | 2.83 | 21.0 |
| 7/3 | 3 | 3 | 3 | 663 | 1,840 | 1,959 | 140 | 2.78 | 4.7 |
| 7/4 | 5 | 5 | 5 | 2,742 | 7,843 | 9,802 | 180 | 2.86 | 15.2 |
| 7/6 | 9 | 9 | 9 | 3,277 | 9,153 | 18,955 | 331 | 2.79 | 9.9 |
| 7/7 | 3 | 3 | 3 | 1,632 | 4,389 | 23,344 | 97 | 2.69 | 16.8 |
| 7/8 | 3 | 3 | 3 | 1,513 | 4,274 | 27,618 | 77 | 2.82 | 19.6 |
| 7/9 | 10 | 10 | 10 | 5,044 | 14,148 | 41,766 | 460 | 2.80 | 11.0 |
| 7/10 | 2 | 2 | 2 | 862 | 2,512 | 44,278 | 55 | 2.91 | 15.7 |
| 7/12 | 14 | 14 | 16 | 6,770 | 18,659 | 62,937 | 564 | 2.76 | 12.0 |
| 7/13 | 3 | 3 | 3 | 1,450 | 4,342 | 67,279 | 116 | 2.99 | 12.5 |
| 7/14 | 5 | 5 | 6 | 2,007 | 5,812 | 73,091 | 170 | 2.95 | 11.8 |
| 7/15 | 10 | 10 | 10 | 4,096 | 11,372 | 84,463 | 390 | 2.78 | 10.5 |
| 7/16 | 3 | 3 | 3 | 1,005 | 2,944 | 87,407 | 102 | 2.93 | 9.9 |
| 7/17 | 10 | 10 | 10 | 4,466 | 12,916 | 100,323 | 363 | 2.88 | 12.3 |
| 7/18 | 11 | 11 | 11 | 4,227 | 11,815 | 112,138 | 406 | 2.80 | 10.4 |
| 7/19 | 2 | 2 | 2 | 352 | 1,076 | 113,214 | 60 | 3.06 | 5.9 |
| 7/20 | 11 | 11 | 11 | 5,053 | 14,372 | 127,586 | 429 | 2.84 | 11.8 |
| 7/21 | 1 | 1 | 1 | 477 | 1,340 | 128,926 | 40 | 2.81 | 11.9 |
| 7/22 | 6 | 6 | 6 | 4,191 | 12,356 | 141,282 | 227 | 2.95 | 18.5 |
| 7/23 | 6 | 7 | 7 | 3,485 | 9,923 | 151,205 | 261 | 2.85 | 13.4 |
| 7/24 | 10 | 10 | 11 | 5,086 | 14,552 | 165,757 | 403 | 2.86 | 12.6 |
| 7/25 | 6 | 6 | 6 | 2,274 | 6,678 | 172,435 | 229 | 2.94 | 9.9 |
| 7/26 | 10 | 10 | 10 | 4,111 | 12,207 | 184,642 | 377 | 2.97 | 10.9 |
| 7/27 | 6 | 6 | 7 | 3,222 | 8,805 | 193,447 | 230 | 2.73 | 14.0 |
| 7/28 | 5 | 5 | 5 | 1,984 | 5,906 | 199,353 | 198 | 2.98 | 10.0 |
| 7/29 | 14 | 14 | 14 | 6,324 | 17,825 | 217,178 | 525 | 2.82 | 12.0 |
| 7/30 | 3 | 3 | 3 | 1,038 | 3,040 | 220,218 | 120 | 2.93 | 8.7 |
| 7/31 | 9 | 9 | 10 | 4,783 | 13,802 | 234,020 | 343 | 2.89 | 13.9 |
| 8/1 | 7 | 7 | 7 | 3,006 | 8,661 | 242,681 | 269 | 2.88 | 11.2 |
| 8/2 | 5 | 4 | 5 | 1,347 | 3,712 | 246,393 | 136 | 2.76 | 9.9 |
| 8/3 | 1 | 1 | 1 | 414 | 1,030 | 247,423 | 40 | 2.49 | 10.4 |
| 8/4 | 12 | 12 | 12 | 6,816 | 19,569 | 266,992 | 485 | 2.87 | 14.1 |
| 8/5 | 5 | 5 | 5 | 1,408 | 3,773 | 270,765 | 147 | 2.68 | 9.6 |
| 8/6 | 1 | 1 | 1 | 540 | 1,205 | 271,970 | 40 | 2.23 | 13.5 |
| 8/7 | 11 | 12 | 13 | 5,719 | 16,643 | 288,613 | 446 | 2.91 | 12.8 |
| 8/8 | 1 | 1 | 1 | 246 | 651 | 289,264 | 38 | 2.65 | 6.5 |
| Totals | 30 | 30 | 234 | 101,672 | 289,264 | | 8,496 | 2.85 | 12.0 |

^a The fishery closed by EO on 8/07/07 at noon.

^b The Department of Public Safety seized 119 pounds of crab on June 30, 2007.

^c Total harvest includes 965 pounds of deadloss and 3,932 pounds that were retained for personal use.

Table 4.—Historical summer commercial red king crab fishery economic performance, Norton Sound Section, Eastern Bering Sea, 1977–2007.

| Year | Guideline Harvest Level (lbs) ^b | | Legal Male Pop. Est. (lbs) ^b | Commercial Harvest (lbs) ^{a,b} | | Number of Pots Registered | Pulls | Exvessel Price/lb | Fishery Value (Thousands \$) | | Season Length | |
|------|--|-----|---|---|------|---------------------------|-------|-------------------|------------------------------|-----|---------------|-------|
| | Open Access | CDQ | | Open Access | CDQ | | | | Open Access | CDQ | Days | Dates |
| 1977 | 3.00 | 1.7 | 0.52 | 5,457 | 0.75 | 229,000 | 60 | 6/7-8/15 | | | | |
| 1978 | 3.00 | 1.7 | 2.09 | 10,817 | 0.95 | 1,897,000 | 60 | 7/15-7/31 | | | | |
| 1979 | 3.00 | 0.8 | 2.93 | 34,773 | 0.75 | 1,878,000 | 16 | 7/15-7/31 | | | | |
| 1980 | 1.00 | 1.9 | 1.19 | 11,199 | 0.75 | 890,000 | 16 | 7/15-8/22 | | | | |
| 1981 | 2.50 | 1.3 | 1.38 | 33,745 | 0.85 | 1,172,000 | 38 | 8/9-9/1 | | | | |
| 1982 | 0.50 | 0.9 | 0.23 | 11,230 | 2.00 | 405,000 | 23 | 8/1-8/5 | | | | |
| 1983 | 0.30 | 0.9 | 0.37 | 11,195 | 1.50 | 537,000 | 3.8 | 8/1-8/15 | | | | |
| 1984 | 0.40 | 0.9 | 0.39 | 9,706 | 1.02 | 395,000 | 13.6 | 8/1-8/23 | | | | |
| 1985 | 0.45 | 1.1 | 0.43 | 13,209 | 1.00 | 427,000 | 21.7 | 8/1-8/23 | | | | |
| 1986 | 0.42 | 1.1 | 0.48 | 578 | 1.25 | 600,000 | 13 | 8/1-8/25 | | | | |
| 1987 | 0.40 | 1.1 | 0.33 | 1,430 | 1.50 | 491,000 | 11 | 8/1-8/12 | | | | |
| 1988 | 0.20 | 1.0 | 0.24 | 360 | 3.00 | 739,000 | 9.9 | 8/1-8/11 | | | | |
| 1989 | 0.20 | 1.0 | 0.25 | 2,555 | 3.00 | 739,000 | 3 | 8/1-8/4 | | | | |
| 1990 | 0.20 | 1.0 | 0.19 | 1,388 | 3.00 | 739,000 | 4 | 8/1-8/5 | | | | |
| 1991 | 0.34 | 1.3 | No summer fishery | | | 0 | | | | | | |
| 1992 | 0.34 | 1.3 | 0.07 | 2,635 | 1.75 | 130,000 | 2 | 8/1-8/3 | | | | |
| 1993 | 0.34 | 1.3 | 0.33 | 560 | 1.28 | 430,000 | 52 | 7/1-8/28 | | | | |
| 1994 | 0.34 | 1.3 | 0.32 | 1,360 | 2.02 | 646,000 | 31 | 7/1-7/31 | | | | |
| 1995 | 0.34 | 1.3 | 0.32 | 1,900 | 2.87 | 926,000 | 67 | 7/1-9/5 | | | | |
| 1996 | 0.34 | 0.5 | 0.22 | 1,640 | 2.29 | 519,000 | 57 | 7/1-9/3 | | | | |
| 1997 | 0.08 | 0.5 | 0.09 | 520 | 1.98 | 184,000 | 44 | 7/1-8/13 | | | | |
| 1998 | 0.08 | 0.5 | 0.03 | 360 | 1.47 | 41,000 | 65 | 7/1-9/3 | | | | |
| 1999 | 0.08 | 1.6 | 0.02 | 360 | 3.08 | 73,000 | 66 | 7/1-9/4 | | | | |
| 2000 | 0.33 | 4.2 | 0.29 | 560 | 2.29 | 715,000 | 91 | 7/1-9/29 | | | | |
| 2001 | 0.30 | 3.8 | 0.28 | 1,200 | 2.31 | 674,000 | 71 | 7/1-9/9 | | | | |
| 2002 | 0.24 | 3.1 | 0.24 | 1,120 | 2.81 | 688,347 | 77 | 6/15-9/3 | | | | |
| 2003 | 0.25 | 3.1 | 0.25 | 960 | 3.09 | 762,546 | 68 | 6/15-8/24 | | | | |
| 2004 | 0.35 | 4.4 | 0.34 | 1,120 | 3.13 | 1,079,278 | 53 | 6/15-8/8 | | | | |
| 2005 | 0.37 | 4.8 | 0.37 | 1,320 | 3.18 | 1,178,035 | 72 | 6/15-8/27 | | | | |
| 2006 | 0.45 | 4.5 | 0.42 | 1,120 | 2.26 | 950,367 | 67 | 6/15-8/22 | | | | |
| 2007 | 0.32 | 3.1 | 0.29 | 1,200 | 2.49 | 693,412 | 52 | 6/15-8/7 | | | | |

^a Deadloss included in total.

^b Millions of pounds.

^c Information not available.

^d Fishing actually began 8/12.

^e Fishing began 7/9 due to fishermen's strike.

^f First delivery was made 7/10.

^g Deadloss included in total.

^h Millions of pounds.

ⁱ Information not available.

^j Fishing actually began 8/12.

^k Fishing began 7/9 due to fishermen's strike.

^l First delivery was made 7/16.

^m The season was extended 24 hours due to bad weather.

ⁿ Open access fishery closed 8/29/00. CDQ fishery was open 9/1/00–9/29/00.

^o Open access fishery closed 9/1/01. CDQ fishery was open 9/1/01–9/9/01.

^p Open access fishery was open 7/1/02–8/6/02. CDQ fishery was open 6/15/02–6/28/02 and 8/9/02–9/3/02.

^q CDQ opened 6/15–6/28. OA opened 7/1 to the end date.

^r OA opened 7/1–8/15. CDQ opened 6/15–6/28 and 8/17–8/27.

Table 5.—Red king crab CDQ and open-access summer commercial harvest based on fish ticket reports by statistical area for Norton Sound Section, Eastern Bering Sea, June 15–August 8, 2007.

| Statistical Area ^a | Number | Pounds | Pots Pulled | CPUE | Average Weight (Lbs.) | Percent of Pots Pulled in Stat. Area | Percent Harvest in Stat. Area |
|-------------------------------|----------------|----------------|--------------|-------------|-----------------------|--------------------------------------|-------------------------------|
| 616401 | 78 | 231 | 20 | 3.9 | 3.0 | 0.2 | 0.1 |
| 626331 | 9,819 | 27,018 | 758 | 13.0 | 2.8 | 8.3 | 8.6 |
| 626401 | 21,984 | 61,704 | 2,168 | 10.1 | 2.8 | 23.8 | 19.7 |
| 636330 | 3,546 | 10,253 | 269 | 13.2 | 2.9 | 3.0 | 3.3 |
| 636401 | 43,610 | 123,092 | 2,703 | 16.1 | 2.8 | 29.6 | 39.3 |
| 646330 | 2,061 | 5,290 | 200 | 10.3 | 2.6 | 2.2 | 1.7 |
| 656300 | 658 | 1,909 | 120 | 5.5 | 2.9 | 1.3 | 0.6 |
| 656330 | 1,775 | 4,911 | 177 | 10.0 | 2.8 | 1.9 | 1.6 |
| 656401 | 23,966 | 70,065 | 2,069 | 11.6 | 2.9 | 22.7 | 22.4 |
| 656402 | 719 | 2,254 | 40 | 18.0 | 3.1 | 0.4 | 0.7 |
| 666330 | 188 | 511 | 120 | 1.6 | 2.7 | 1.3 | 0.2 |
| 666401 | 809 | 2,498 | 127 | 6.4 | 3.1 | 1.4 | 0.8 |
| 666402 | 1,062 | 2,959 | 297 | 3.6 | 2.8 | 3.3 | 0.9 |
| 676400 | 69 | 180 | 50 | 1.4 | 2.6 | 0.5 | 0.1 |
| Total | 110,344 | 312,875 | 9,118 | 12.1 | 2.8 | | |

Note: Information based on fish ticket data.

^a Total harvest includes 715 pounds of crab that were harvested in closed area 626403.

Table 6.—Historical commercial harvest by statistical areas of red king crabs from Norton Sound Section, Eastern Bering Sea, 1977–2007 (catch in pounds).

| Statistical Area | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|------------------|---------|-----------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 616331 | 7,893 | | | | | | | | | | | | |
| 616401 | | | | | | | | | | | | | |
| 626331 | 40,020 | | | | 22 | | | | | | | | |
| 626401 | 31,572 | | | 4,830 | 399 | | | | | | | | |
| 626402 | 38,995 | | | | | | | | | | | | |
| 636330 | | | | | | | | | | | | | |
| 636401 | | | | 12,398 | 61,823 | 32,246 | 5,880 | 41 | 891 | | | | 22,030 |
| 636402 | | | | | | | | | | | | | |
| 646301 | | | | | | | | | | | | | |
| 646330 | | | | | 4,716 | | | | | | | | 5,212 |
| 646401 | | | 155,972 | | 1,319 | 17,532 | | | | | | | |
| 646402 | 80,969 | | | | | 748 | | | | | | | |
| 656300 | | | 161,699 | | 15,174 | | | | | | | | |
| 656330 | | | 323,518 | 72,735 | 395,662 | 3,983 | 24,246 | 83,479 | 7,632 | | 79,006 | 36,129 | 1,757 |
| 656401 | | | 138,011 | 121,147 | 253,387 | 60,480 | 11,422 | 183,119 | 246,200 | | 194,408 | 165,644 | 100,956 |
| 656402 | 306,302 | | 288,869 | 918 | 3,098 | 2,832 | | | 132,363 | | | | |
| 666230 | | | 55,490 | | 77 | | | | | | | | |
| 666300 | | | 162,795 | 84,874 | 9,167 | 95 | | 4,534 | | | | | |
| 666330 | | | 353,016 | 367,446 | 141,513 | 8,990 | 1,192 | | 389 | 70,615 | 2,963 | 13,020 | 1,275 |
| 666401 | | | 179,212 | 486,947 | 205,400 | 79,580 | 325,045 | 116,254 | 5,341 | 408,848 | 50,744 | 21,895 | 115,257 |
| 666402 | 12,036 | | 534,938 | 183,581 | 381,510 | 17,585 | | | 32,992 | | | | |
| 666431 | | | 146,029 | | | | | | | | | | |
| 676300 | | 13,238 | | 126,231 | | | | | | | | | |
| 676330 | | 51,304 | 81,798 | 6,762 | 18,734 | | | | | | | | |
| 676400 | | 667,130 | 33,856 | 274 | 92,026 | 1,315 | 247 | | 32 | | | | |
| 676430 | | 3,811 | 12,309 | | 373 | 3,513 | | | 1,171 | | | | |
| 676501 | | | | | 36 | | | | | | | | |
| 686330 | | | 1,860 | | | | | | | | | | |
| 686431 | | | | | | | | | | | | | |
| Totals | 517,787 | 2,091,961 | 2,931,672 | 1,186,596 | 1,379,014 | 228,921 | 368,032 | 387,427 | 427,011 | 479,463 | 327,121 | 236,688 | 246,487 |

-continued-

Table 6.-Page 2 of 3.

| Statistical Area | 1990 | 1992 | 1993 | 1994 | 1995 | 1996* | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------|---------|--------|---------|---------|---------|---------|--------|--------|--------|---------|---------|---------|
| 616331 | | | | 48 | | | | | 633 | 4,557 | | 3,506 |
| 616401 | | | | | 35 | | | | | | | |
| 626331 | | | | | | 61 | | | | | | 2,455 |
| 626401 | | | | | 18,971 | 45,045 | 18,066 | 8,065 | 508 | 4,689 | 61,620 | 53,722 |
| 626402 | | | | | | | | | | | | |
| 636330 | | | | | | 4,560 | 3,838 | 2,449 | | | 2,253 | |
| 636401 | | 1,159 | 1,373 | 8,087 | 24,329 | 70,677 | 59,206 | 10,771 | 14,201 | 126,994 | 91,343 | 50,906 |
| 636402 | | | | 1,754 | 3,466 | | | | | | | |
| 646301 | | | | | 4,628 | 13,888 | | | | | | |
| 646330 | | | | | 1,493 | 2,894 | 314 | | 3,021 | | 1,868 | 1,955 |
| 646401 | | | 1,963 | 37,222 | 105,045 | 22,834 | 1,052 | 3,194 | 221 | | 4,287 | |
| 646402 | | | 730 | 143,511 | 66,821 | | | | | | | |
| 656300 | | | | | | | | | | | | |
| 656330 | | 4,814 | 265 | | 19,745 | 15,446 | 4,661 | 4,078 | 1,300 | | 20,869 | 12,374 |
| 656401 | 171 | 53,119 | 105,341 | 29,566 | 32,289 | 9,985 | 4,035 | 1,127 | 2,739 | 94,813 | 55,158 | 63,038 |
| 656402 | | | 193,079 | 106,053 | 44,000 | | | | | | | |
| 666230 | | | | | | | | | | | | |
| 666300 | | | | | | 25,519 | | | | | | |
| 666330 | 27,185 | 4,305 | 31,758 | | 730 | | | | | 5,839 | 7,030 | 1,332 |
| 666401 | 162,263 | 10,632 | 746 | 396 | | 3,001 | 1,816 | | 930 | 60,762 | 43,771 | 35,970 |
| 666402 | | | 535 | 1,221 | | | | | | | | 30,070 |
| 666431 | | | | | 1,124 | | | | | | | 4,274 |
| 676300 | | | | | | 546 | | | | | | |
| 676330 | | | | | | | | | | | | |
| 676400 | 3,212 | | | | | 9,775 | | | | | | |
| 676430 | | | | | | | | | | | | |
| 676501 | | | | | | | | | | | | |
| 686330 | | | | | | | | | | | | |
| 686431 | | | | | | | | | | | | |
| Totals | 192,831 | 74,029 | 335,790 | 327,858 | 322,676 | 224,231 | 92,988 | 29,684 | 23,553 | 297,654 | 288,199 | 259,602 |

-continued-

Table 6.--Page 3 of 3.

| Statistical Area | 2003 | 2004 | 2005 | 2006 | 2007 ^b | Totals |
|------------------|----------------|----------------|----------------|----------------|-------------------|-------------------|
| 616331 | 646 | | | 2,357 | | 19,640 |
| 616401 | | | | | 231 | 266 |
| 626331 | | | | 1,415 | 27,018 | 70,991 |
| 626401 | 15,899 | 23,113 | 94,130 | 118,202 | 61,704 | 560,535 |
| 626402 | 1,352 | | | | | 40,347 |
| 636330 | | | 126 | 26,680 | 10,253 | 50,159 |
| 636401 | 83,949 | 166,489 | 227,204 | 224,531 | 123,092 | 1,419,620 |
| 636402 | | | | | | 5,220 |
| 646301 | | | | | | 18,516 |
| 646330 | | 2,226 | 4,097 | 2,629 | 5,290 | 35,715 |
| 646401 | 3,952 | 1,964 | 149 | 1,660 | | 358,366 |
| 646402 | | | | | | 292,779 |
| 656300 | 14 | 932 | | 284 | 1,909 | 180,012 |
| 656330 | 21,176 | 46,288 | 47,411 | 17,752 | 4,911 | 1,249,237 |
| 656401 | 40,566 | 21,579 | 9,405 | 28,434 | 70,065 | 2,096,204 |
| 656402 | 1,441 | | 380 | 807 | 2,254 | 1,172,583 |
| 666230 | | | | 1,721 | | 57,288 |
| 666300 | | | | 18,245 | | 366,045 |
| 666330 | 1,296 | 12,359 | 142 | 5,041 | 511 | 1,562,997 |
| 666401 | 83,998 | 42,452 | 727 | 600 | 2,498 | 2,826,595 |
| 666402 | 12,873 | 23,344 | 16,025 | 1,050 | 2,959 | 1,384,987 |
| 666431 | 45 | | | | | 151,472 |
| 676300 | | | | | | 140,015 |
| 676330 | | | | | | 158,598 |
| 676400 | | | | | 180 | 808,047 |
| 676430 | | | | | | 21,177 |
| 676501 | | | 1,008 | | | 1,044 |
| 686330 | | | | | | 1,860 |
| 686431 | | | | 340 | | 340 |
| Totals | 267,207 | 340,746 | 400,804 | 451,748 | 312,875 | 15,050,655 |

Note: No commercial fishery occurred in 1991.

^a Does not include approximately 2,490 lbs that was not reported on fish tickets.

^b Includes 715 pounds caught in closed area 626403.

Table 7.—Daily CDQ summer commercial red king crab harvest, Norton Sound Section, Eastern Bering Sea, 2007.

| Date | Landings | Number of Crab | Harvest (lbs) | Cumulative Harvest (lbs) | Number of Pots Pulled | Average Weight (lbs) | CPUE |
|-------------------|-----------------|-----------------------|----------------------|---------------------------------|------------------------------|-----------------------------|-------------|
| 6/21 | 1 | 69 | 180 | 180 | 50 | 2.6 | 1.4 |
| 6/22 | 1 | 77 | 210 | 390 | 18 | 2.7 | 4.3 |
| 6/23 | 2 | 2,177 | 5,660 | 6,050 | 60 | 2.6 | 36.3 |
| 6/24 | 2 | 539 | 1,517 | 7,567 | 80 | 2.8 | 6.7 |
| 6/25 | 1 | 625 | 1,701 | 9,268 | 40 | 2.7 | 15.6 |
| 6/26 | 4 | 2,542 | 6,804 | 16,072 | 138 | 2.7 | 18.4 |
| 6/27 | 4 | 1,913 | 5,480 | 21,552 | 156 | 2.9 | 12.3 |
| 6/28 ^a | 2 | 730 | 2,059 | 23,611 | 80 | 2.8 | 9.1 |
| Totals | 17 | 8,672 | 23,611 | 23,611 | 622 | 2.7 | 13.9 |

Note: Information based on fish ticket data.

^a The CDQ fishery closed by regulation on 6/28, and the last delivery was made 6/28.

Table 8.—A historical comparison of the percentage of recruit, postrecruit, and oldshell red king crab sampled from the summer commercial harvest, Norton Sound Section, Eastern Bering Sea, 1977–2007.

| Year | Percent Recruits ^a | Percent Postrecruits ^b | Percent Old Shell ^c | Average Weight (lbs) | Legal mean Length (mm) |
|-------------------|-------------------------------|-----------------------------------|--------------------------------|----------------------|------------------------|
| 1977 | 53 | 47 | ^d | 3 | 113.4 |
| 1978 | 29 | 71 | ^d | 3 | 118.9 |
| 1979 | 33 | 67 | ^d | 3 | 119.8 |
| 1980 | 15 | 85 | ^d | 4 | 125.8 |
| 1981 | 10 | 90 | ^d | 4 | 128.5 |
| 1982 | 27 | 73 | ^d | 4 | 125.4 |
| 1983 | 55 | 45 | ^d | 3 | 115.2 |
| 1984 | 59 | 41 | ^d | 3 | 112.5 |
| 1985 | 45 | 55 | ^d | 3 | 115.8 |
| 1986 | 48 | 52 | ^d | 3 | 115.9 |
| 1987 | 22 | 78 | 13 | 3 | 121.7 |
| 1988 | 25 | 75 | 26 | 3 | 119.0 |
| 1989 | 23 | 77 | 29 | 3 | 119.8 |
| 1990 | 21 | 79 | 17 | 3 | 121.1 |
| 1991 ^e | | | | | |
| 1992 | 28 | 72 | 29 | 3 | 119.7 |
| 1993 | 31 | 69 | 10 | 3 | 119.1 |
| 1994 | 14 | 86 | 71 | 3 | 118.8 |
| 1995 | 36 | 64 | 21 | 3 | 118.2 |
| 1996 | 30 | 70 | 36 | 3 | 117.1 |
| 1997 | 49 | 51 | 14 | 3 | 115.7 |
| 1998 | 32 | 68 | 39 | 3 | 116.9 |
| 1999 | 42 | 58 | 12 | 3 | 118.1 |
| 2000 | 41 | 60 | 16 | 3 | 116.0 |
| 2001 | 33 | 67 | 11 | 3 | 119.1 |
| 2002 | 33 | 67 | 12 | 3 | 119.5 |
| 2003 | 48 | 52 | 14 | 3 | 116.8 |
| 2004 | 49 | 51 | 8 | 3 | 116.5 |
| 2005 | 36 | 64 | 9 | 3 | 118.2 |
| 2006 | 25 | 75 | 27 | 3 | 119.4 |
| 2007 | 45 | 55 | 12 | 3 | 117.0 |

^a Recruit crab are legal male crab with a carapace length < 116 mm.

^b Postrecruit crab are legal male crab with a carapace length ≥ 116 mm.

^c Oldshell crab are classified by a carapace age ≥ 13 months.

^d No information available for years 1977–1986.

^e Fishery closed in 1991.

Table 9.--Winter commercial and subsistence red king crab harvests, Norton Sound, Eastern Bering Sea, 1978–2007.

| Year ^a | Commercial Fishery | | Subsistence Fishery | | | | | | |
|----------------------|--------------------|---------------------|----------------------|------------|--------------|------------|--------------------------|----------------------------|-----------------|
| | No. Fishers | No. Crabs Harvested | Winter ^a | Permits | | No. Fished | Total Crabs | | |
| | | | | No. Issued | No. Returned | | Total Catch ^b | Total Harvest ^c | Average Harvest |
| 1978 | 37 | 9,625 | 1977-78 | 290 | 206 | 149 | ^d | 12,506 | 84 |
| 1979 | ^e | ^e | 1978-79 | 48 | 43 | 38 | ^d | 224 | 6 |
| 1980 | ^e | ^e | 1979-80 | 22 | 14 | 9 | ^d | 213 | 24 |
| 1981 | 0 | 0 | 1980-81 | 51 | 39 | 23 | ^d | 360 | 16 |
| 1982 | ^e | ^e | 1981-82 | 101 | 76 | 54 | ^d | 1,288 | 24 |
| 1983 | 5 | 549 | 1982-83 | 172 | 106 | 85 | ^d | 10,432 | 123 |
| 1984 | 8 | 856 | 1983-84 | 222 | 183 | 143 | 15,923 | 11,220 | 78 |
| 1985 | 9 | 1,168 | 1984-85 | 203 | 166 | 132 | 10,757 | 8,377 | 63 |
| 1985-86 | 5 | 2,168 | 1985-86 | 136 | 133 | 107 | 10,751 | 7,052 | 66 |
| 1986-87 | 7 | 1,040 | 1986-87 | 138 | 134 | 98 | 7,406 | 5,772 | 59 |
| 1987-88 | 10 | 425 | 1987-88 | 71 | 58 | 40 | 3,573 | 2,724 | 68 |
| 1988-89 | 5 | 403 | 1988-89 | 139 | 115 | 94 | 7,945 | 6,126 | 65 |
| 1989-90 | 13 | 3,626 | 1989-90 | 136 | 118 | 107 | 16,635 | 12,152 | 114 |
| 1990-91 | 11 | 3,800 | 1990-91 | 119 | 104 | 79 | 9,295 | 7,366 | 93 |
| 1991-92 | 13 | 7,478 | 1991-92 | 158 | 105 | 105 | 15,051 | 11,736 | 112 |
| 1992-93 | 8 | 1,788 | 1992-93 | 88 | 79 | 37 | 1,193 | 1,097 | 30 |
| 1993-94 | 25 | 5,753 | 1993-94 | 118 | 95 | 71 | 4,894 | 4,113 | 58 |
| 1994-95 | 42 | 7,538 | 1994-95 | 166 | 131 | 97 | 7,777 | 5,426 | 56 |
| 1995-96 | 9 | 1,778 | 1995-96 | 84 | 44 | 35 | 2,936 | 1,679 | 48 |
| 1996-97 | ^e | ^e | 1996-97 | 38 | 22 | 13 | 1,617 | 745 | 57 |
| 1997-98 | 5 | 984 | 1997-98 | 94 | 73 | 64 | 20,327 | 8,622 | 135 |
| 1998-99 | 5 | 2,714 | 1998-99 | 95 | 80 | 71 | 10,651 | 7,533 | 106 |
| 1999-00 | 10 | 3,045 | 1999-00 | 98 | 64 | 52 | 9,816 | 5,723 | 107 |
| 2000-01 | 3 | 1,098 | 2000-01 | 50 | 27 | 12 | 366 | 256 | 21 |
| 2001-02 | 11 | 2,591 | 2001-02 | 114 | 61 | 45 | 5,119 | 2,177 | 48 |
| 2002-03 | 13 | 6,853 | 2002-03 | 107 | 70 | 61 | 9,052 | 4,140 | 68 |
| 2003-04 ^f | 2 | 522 | 2003-04 | 96 | 77 | 41 | 1,775 | 1,181 | 29 |
| 2004-05 | 4 | 2,091 | 2004-05 ^g | 170 | 102 | 60 | 6,496 | 3,973 | 66 |
| 2005-06 | ^e | ^e | 2005-06 | 98 | 97 | 67 | 2,083 | 1,239 | 18 |
| 2006-07 | 8 | 3,313 | 2006-07 | 129 | 127 | 116 | 21,444 | 10,690 | 92 |
| Average | | | Average | | | | | | |
| 1978-2006 | 9 | 2,357 | 1983-2006 | 119 | 95 | 72 | 8,049 | 5,301 | 68 |

^a Prior to 1985 the winter commercial fishery occurred from January 1–April 30. As of March 1985, fishing may occur from November 15–May 15. The winter subsistence fishery occurs during months of 2 calendar years (as early as December, through May).

^b The number of crab actually caught; some may have been released.

^c The number of crab harvested is the number of crab caught and kept.

^d Information not available for years 1978–1983.

^e Confidential under AS 16.05.815.

^f Confidentiality was waived by the fishers.

^g During the 2004–2005 season, permits were given out in Elim, Golovin, Shaktoolik, and White Mountain. In other years, permits were only given out of the Nome ADF&G office.

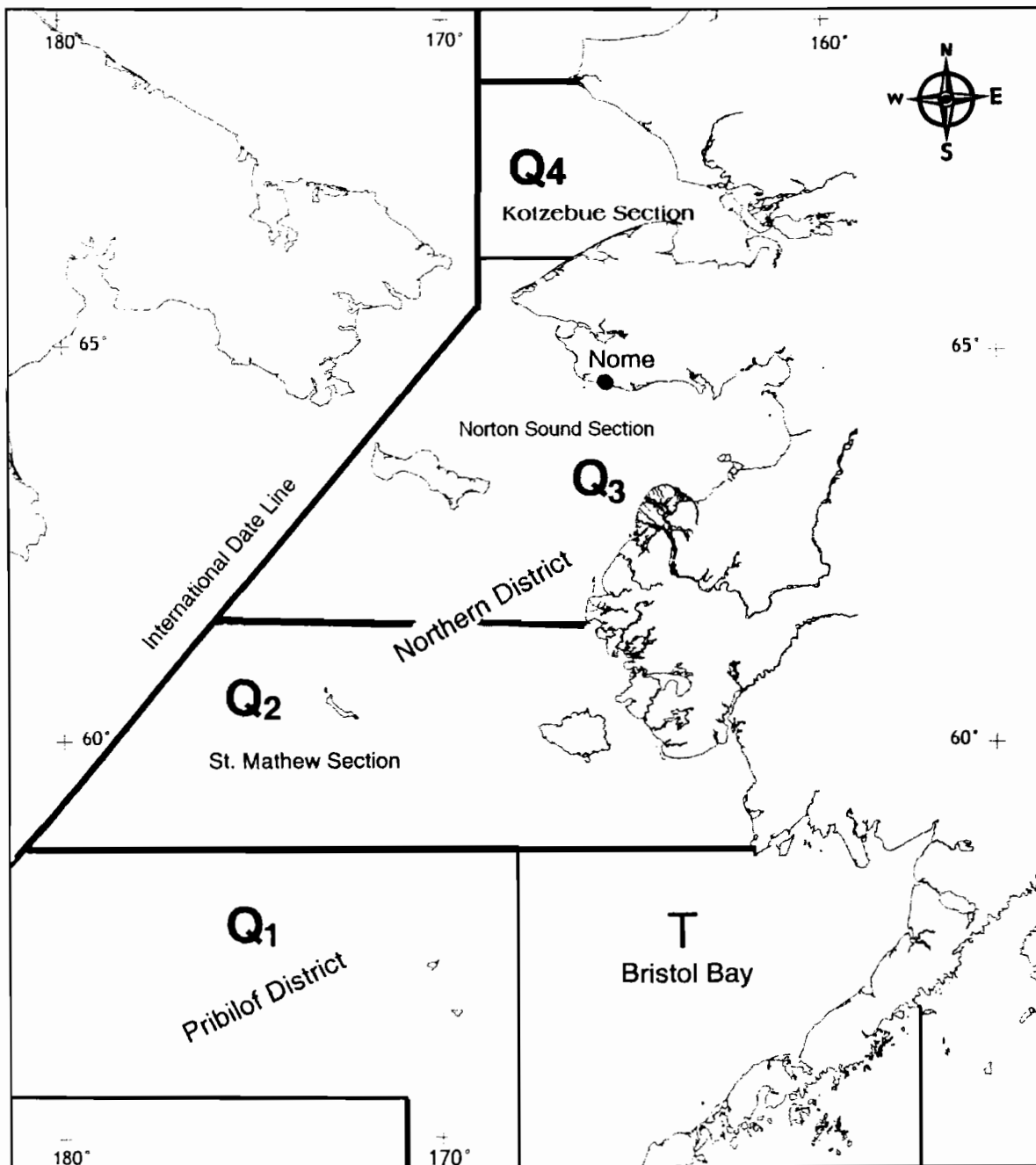


Figure 1.—King crab fishing districts and sections of Area Q.

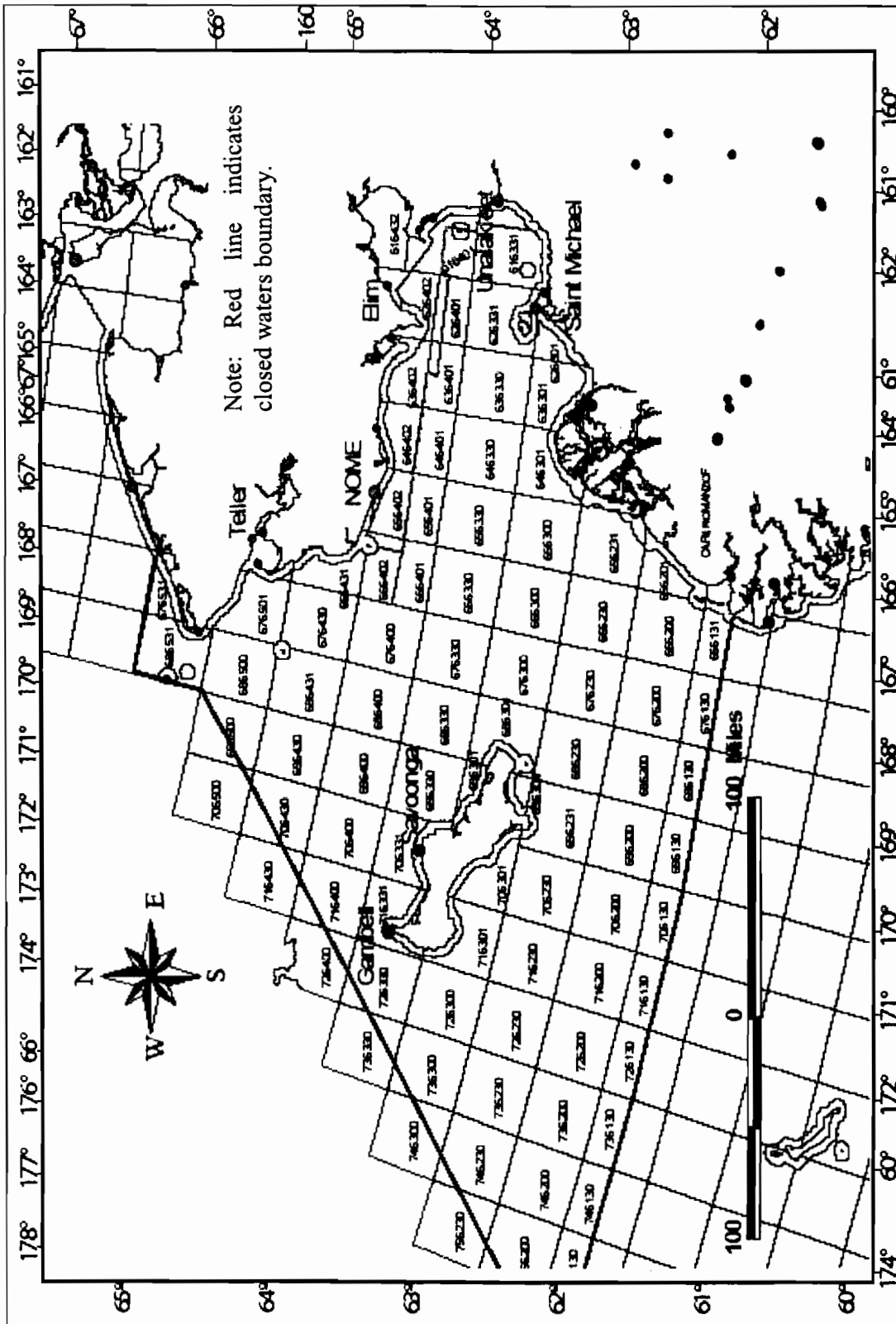


Figure 2.—Norton Sound section of Area Q and associated statistical areas.

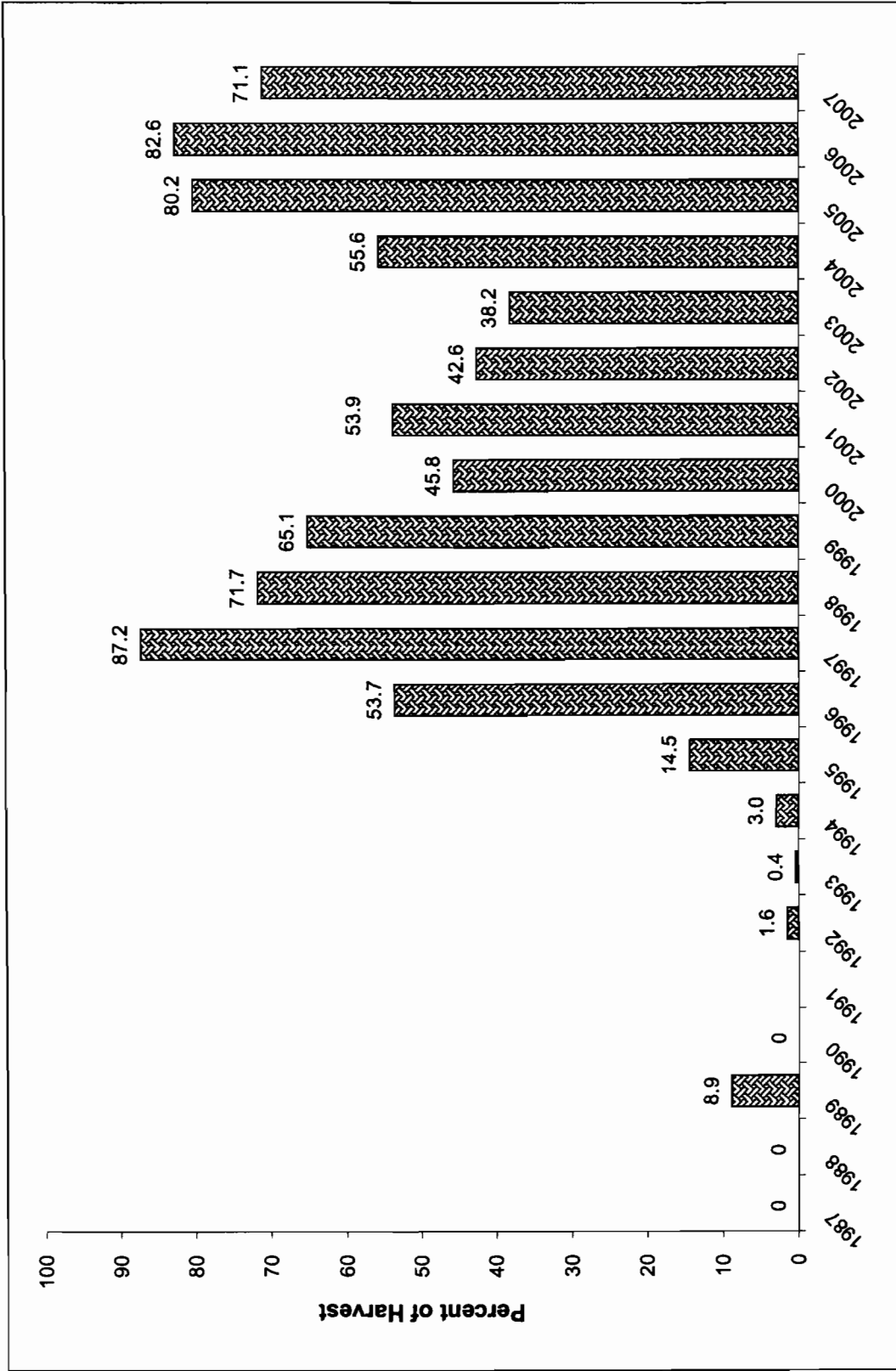


Figure 3.—Percent of red king crab harvested during the Norton Sound summer commercial fishery east of 164° W longitude, 1987–2007.

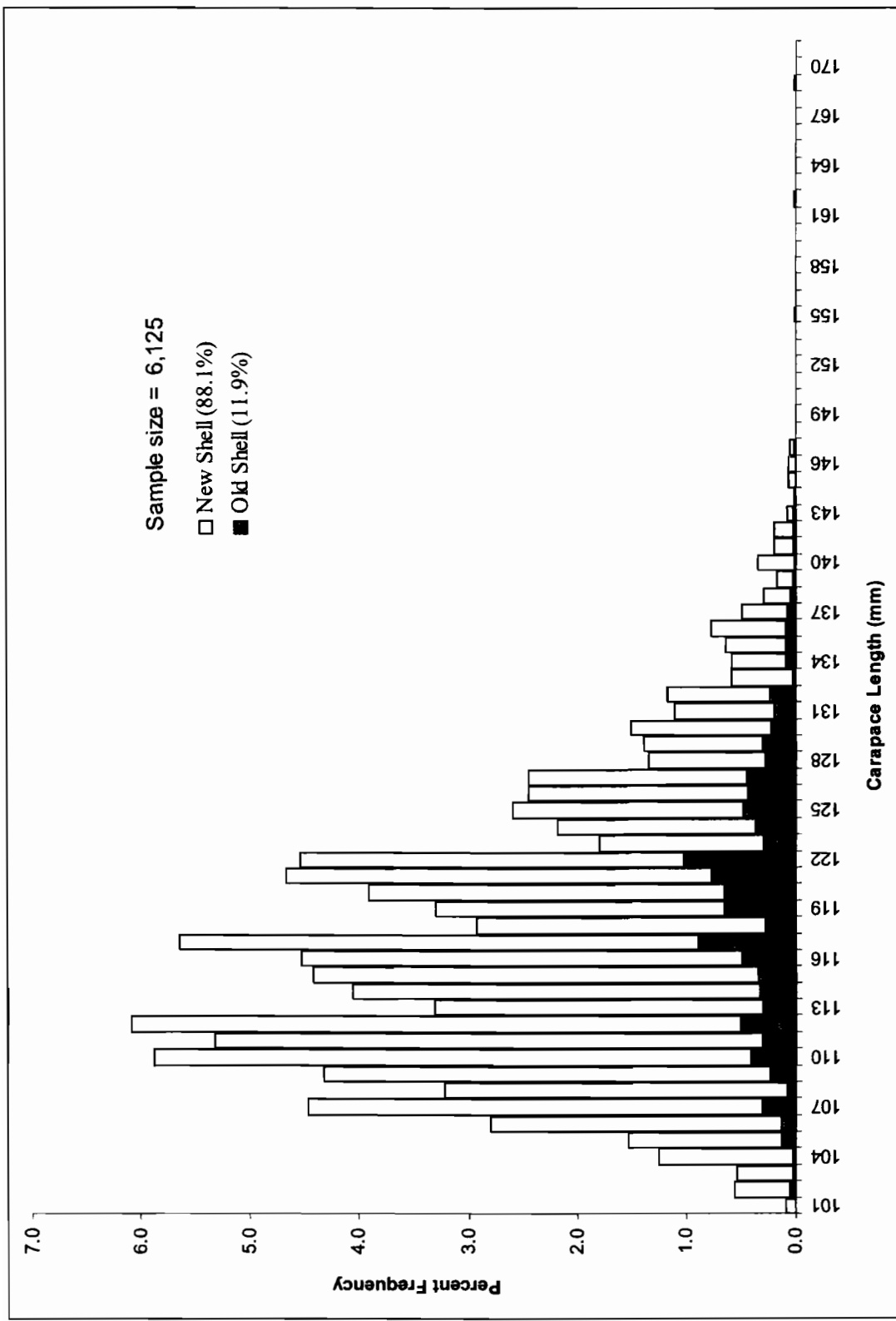


Figure 4.-Length frequency distribution for new and old shell legal male red king crab, sampled from the Norton Sound summer commercial fishery, 6/15-8/07, 2007.

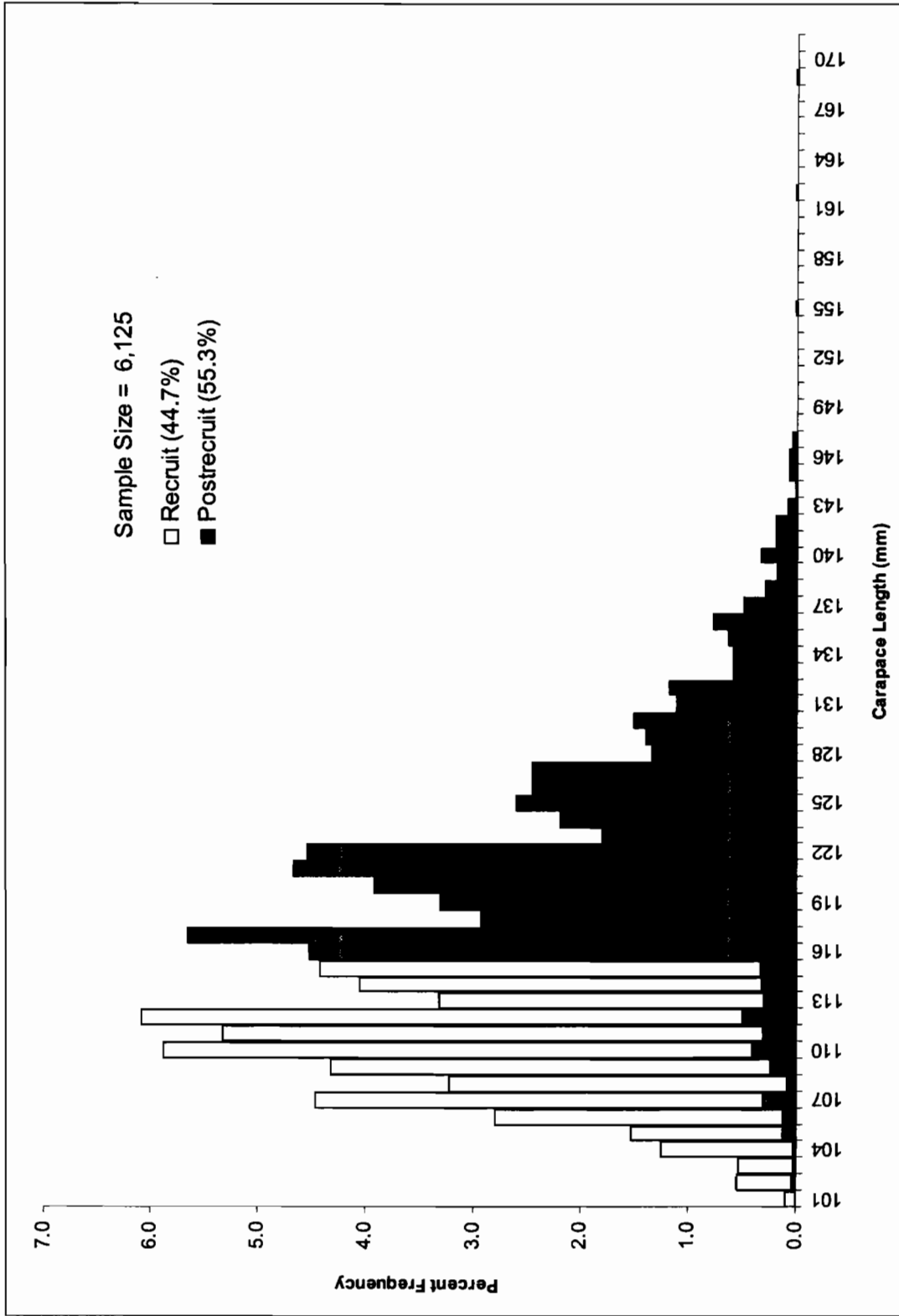


Figure 5.—Carapace length measurement summary of legal male red king crab captured and sampled during the summer commercial harvest, 6/15–8/07, 2007.

Appendix A1.—Historical summer commercial red king crab annual harvest, Norton Sound Section, Eastern Bering Sea, 1977–2007.

| Year | Number of Vessels | | Number of Permits | | Number of Landings | | Number of Crabs | | Harvest (lbs) ^a | | Number of Pot Lifts | | CPUE | Percent Old Shell | Average Weight (lbs) | Avg. Legal Mean Length (mm) |
|------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------------|--------------------|---------------------|--------------------|------|-------------------|----------------------|-----------------------------|
| | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | (open access only) | | | | |
| 1977 | 7 | 7 | 13 | 195,877 | 517,787 | 36 | 5,457 | 36 | 2.7 | 113.4 | | | | | | |
| 1978 | 8 | 8 | 54 | 660,829 | 2,091,961 | 64 | 10,817 | 64 | 3.0 | 118.9 | | | | | | |
| 1979 | 34 | 34 | 76 | 970,962 | 2,931,672 | 28 | 34,773 | 28 | 3.0 | 119.8 | | | | | | |
| 1980 | 9 | 9 | 50 | 329,778 | 1,186,596 | 29 | 11,199 | 29 | 3.6 | 125.8 | | | | | | |
| 1981 | 36 | 36 | 108 | 376,313 | 1,379,014 | 11 | 33,745 | 11 | 3.7 | 128.5 | | | | | | |
| 1982 | 11 | 11 | 33 | 63,949 | 228,921 | 6 | 11,230 | 6 | 3.6 | 125.4 | | | | | | |
| 1983 | 23 | 23 | 26 | 132,205 | 368,032 | 12 | 11,195 | 12 | 2.8 | 115.2 | | | | | | |
| 1984 | 8 | 8 | 21 | 139,759 | 387,427 | 14 | 9,706 | 14 | 2.8 | 112.5 | | | | | | |
| 1985 | 6 | 6 | 72 | 146,669 | 427,011 | 11 | 13,209 | 11 | 2.9 | 115.8 | | | | | | |
| 1986 | 3 | 3 | c | 162,438 | 479,463 | 38 | 4,284 | 38 | 2.9 | 115.9 | | | | | | |
| 1987 | 9 | 9 | c | 103,338 | 327,121 | 10 | 10,258 | 10 | 3.2 | 121.7 | | | | | | |
| 1988 | 2 | 2 | c | 76,148 | 236,688 | 32 | 2,350 | 32 | 3.1 | 119.0 | | | | | | |
| 1989 | 10 | 10 | c | 79,116 | 246,487 | 15 | 5,149 | 15 | 3.1 | 119.8 | | | | | | |
| 1990 | 4 | 4 | c | 59,132 | 192,831 | 19 | 3,172 | 19 | 3.1 | 121.1 | | | | | | |
| 1991 | | | | | | | | | | | | | | | | |
| 1992 | 27 | 27 | c | 24,902 | 74,029 | 4 | 5,746 | 4 | 3.0 | 119.7 | | | | | | |
| 1993 | 14 | 20 | 208 | 115,913 | 335,790 | 16 | 7,063 | 16 | 2.9 | 119.1 | | | | | | |
| 1994 | 34 | 52 | 407 | 108,824 | 327,858 | 9 | 11,729 | 9 | 3.0 | 118.8 | | | | | | |
| 1995 | 48 | 81 | 665 | 105,967 | 322,676 | 5.6 | 18,782 | 5.6 | 3.0 | 118.2 | | | | | | |
| 1996 | 41 | 50 | 264 | 74,752 | 224,231 | 7.1 | 10,453 | 7.1 | 3.0 | 117.1 | | | | | | |
| 1997 | 13 | 15 | 100 | 32,606 | 92,988 | 10.9 | 2,982 | 10.9 | 2.8 | 115.7 | | | | | | |
| 1998 | 8 | 11 | 50 | 10,661 | 29,684 | 6.5 | 1,639 | 6.5 | 2.8 | 116.9 | | | | | | |
| 1999 | 10 | 9 | 53 | 8,734 | 23,553 | 5.4 | 1,630 | 5.4 | 2.7 | 118.1 | | | | | | |
| 2000 | 14 | 17 | 202 | 108,249 | 297,654 | 17.7 | 6,345 | 17.7 | 2.7 | 116.0 | | | | | | |
| 2001 | 30 | 37 | 320 | 98,321 | 288,199 | 7.6 | 11,928 | 7.6 | 2.9 | 119.1 | | | | | | |
| 2002 | 28 | 32 | 164 | 86,666 | 244,376 | 13.7 | 6,491 | 13.7 | 3.0 | 119.5 | | | | | | |
| 2003 | 24 | 30 | 219 | 88,518 | 253,284 | 11.0 | 8,494 | 11.0 | 2.8 | 116.8 | | | | | | |
| 2004 | 26 | 29 | 208 | 120,289 | 314,472 | 14.9 | 8,066 | 14.9 | 2.8 | 116.5 | | | | | | |
| 2005 | 30 | 32 | 227 | 128,405 | 370,744 | 15.9 | 8,867 | 15.9 | 2.9 | 118.2 | | | | | | |
| 2006 | 28 | 29 | 224 | 139,131 | 419,191 | 17.3 | 8,695 | 17.3 | 3.0 | 119.4 | | | | | | |
| 2007 | 30 | 30 | 234 | 101,672 | 289,264 | 12.0 | 9,118 | 12.0 | 2.8 | 117.0 | | | | | | |

^a Deadloss included in total.

^b No CDQ fishery harvest prior to the 2000 season.

^c Data not available.

^d No summer commercial fishery.

Special Publication No. 08-02

**Prince William Sound Area King and Tanner Crab
Review, 2007; a Report to the Alaska Board of
Fisheries**

by

Robert Bercei

Charles E. Trowbridge

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and

Richard L. Gustafson

February 2008

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | | | mideye-to-fork | MEF |
| gram | g | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mideye-to-tail-fork | METF |
| hectare | ha | | | standard length | SL |
| kilogram | kg | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | total length | TL |
| kilometer | km | | | | |
| liter | L | at | @ | Mathematics, statistics | |
| meter | m | compass directions: | | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | east | E | alternate hypothesis | H _A |
| millimeter | mm | north | N | base of natural logarithm | e |
| | | south | S | catch per unit effort | CPUE |
| | | west | W | coefficient of variation | CV |
| Weights and measures (English) | | copyright | © | common test statistics | (F, t, χ^2 , etc.) |
| cubic feet per second | ft ³ /s | corporate suffixes: | | confidence interval | CI |
| foot | ft | Company | Co. | correlation coefficient (multiple) | R |
| gallon | gal | Corporation | Corp. | correlation coefficient (simple) | r |
| inch | in | Incorporated | Inc. | covariance | cov |
| mile | mi | Limited | Ltd. | degree (angular) | ° |
| nautical mile | nmi | District of Columbia | D.C. | degrees of freedom | df |
| ounce | oz | et alii (and others) | et al. | expected value | E |
| pound | lb | et cetera (and so forth) | etc. | greater than | > |
| quart | qt | exempli gratia (for example) | e.g. | greater than or equal to | ≥ |
| yard | yd | Federal Information Code | FIC | harvest per unit effort | HPUE |
| | | id est (that is) | i.e. | less than | < |
| Time and temperature | | latitude or longitude | lat. or long. | less than or equal to | ≤ |
| day | d | monetary symbols (U.S.) | \$, ¢ | logarithm (natural) | ln |
| degrees Celsius | °C | months (tables and figures): first three letters | Jan, ..., Dec | logarithm (base 10) | log |
| degrees Fahrenheit | °F | registered trademark | ® | logarithm (specify base) | log ₂ , etc. |
| degrees kelvin | K | trademark | ™ | minute (angular) | ' |
| hour | h | United States (adjective) | U.S. | not significant | NS |
| minute | min | United States of America (noun) | USA | null hypothesis | H ₀ |
| second | s | U.S.C. | United States Code | percent | % |
| | | U.S. state | use two-letter abbreviations (e.g., AK, WA) | probability | P |
| Physics and chemistry | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| all atomic symbols | | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| alternating current | AC | | | second (angular) | " |
| ampere | A | | | standard deviation | SD |
| calorie | cal | | | standard error | SE |
| direct current | DC | | | variance | |
| hertz | Hz | | | population | Var |
| horsepower | hp | | | sample | var |
| hydrogen ion activity (negative log of) | pH | | | | |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

SPECIAL PUBLICATION NO. 08-02

**PRINCE WILLIAM SOUND AREA KING AND TANNER CRAB REVIEW,
2007; A REPORT TO THE ALASKA BOARD OF FISHERIES**

by

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TABLE OF CONTENTS

| | Page |
|--|-------------|
| LIST OF TABLES | ii |
| LIST OF FIGURES..... | ii |
| ABSTRACT | 1 |
| INTRODUCTION..... | 1 |
| TANNER CRAB..... | 2 |
| Historical Background..... | 2 |
| Commercial Fishery | 2 |
| Non-commercial Fisheries..... | 3 |
| Stock Status and Management Measures | 3 |
| KING CRAB | 4 |
| Historical Background..... | 4 |
| Commercial Fishery | 5 |
| Noncommercial Fisheries | 5 |
| Stock Status and Management Measures | 5 |
| CONCLUSIONS..... | 7 |
| REFERENCES CITED | 8 |
| TABLES AND FIGURES..... | 9 |

LIST OF TABLES

| Table | | Page |
|--------------|--|-------------|
| 1. | Commercial Tanner crab harvests from the Prince William Sound Management Area, 1968–2007..... | 10 |
| 2. | Tanner and king crab catch by pot (1977–1991) and in trawl surveys of core stations (1991–2007) in the Northern and Hinchinbrook Districts (except Valdez Arm), Prince William Sound. | 11 |
| 3. | Male Tanner crab abundance estimates from trawl surveys of core stations in the Northern (except Valdez Arm) and Hinchinbrook Districts of Prince William Sound, 1991–2007..... | 12 |
| 4. | Female Tanner crab abundance estimates from trawl surveys of core stations in the Northern and Hinchinbrook Districts (except Valdez Arm) of Prince William Sound, 1991–2007. | 13 |
| 5. | Male Tanner crab abundance estimates from trawl surveys of core stations in the Valdez Arm Prince William Sound, 1999–2007. | 14 |
| 6. | Female Tanner crab abundance estimates from trawl surveys of core stations in the Valdez Arm Prince William Sound, 1999–2007. | 15 |
| 7. | Commercial king crab harvests from the Prince William Sound Management Area, 1960–1995..... | 16 |

LIST OF FIGURES

| Figure | | Page |
|---------------|---|-------------|
| 1. | Prince William Sound shellfish registration area. | 17 |
| 2. | Commercial Tanner crab harvests from the Prince William Sound Area, 1968–1988. | 18 |
| 3. | Prince William Sound Tanner crab fishing districts..... | 19 |
| 4. | Tanner crab population estimates (males top; females bottom) from Prince William Sound trawl surveys, 1991–2007. | 20 |
| 5. | Prince William Sound bottom trawl survey locations from 1991–2007. | 21 |
| 6. | Commercial king crab harvests from the Prince William Sound Management Area during 1960–1998..... | 22 |
| 7. | Golden king crab survey locations in Knight Island Passage, Prince William Sound, Alaska. | 23 |

ABSTRACT

The Prince William Sound (PWS) Registration Area E includes the territorial waters of Alaska from 144°00' W. longitude to the longitude of Cape Fairfield and extending 3 nautical miles offshore. The Alaska Department of Fish and Game (ADF&G) is responsible for the management of commercial, personal use, and subsistence shellfish fisheries within the registration area. In addition, ADF&G assumes management authority of king crab (red *Paralithodes camtschaticus*, blue *Paralithodes platypus* and golden *Lithodes aequispina*) and Tanner *Chionoecetes bairdi* crab fisheries within federal waters of the exclusive economic zone (EEZ), extending from 3-200 nautical miles offshore.

Waters of the PWS Management Area once supported commercial and non-commercial Tanner crab fisheries. The commercial Tanner crab fishery began in the late 1960's, peaked at nearly 14 million pounds during the 1972–1973 season and then decreased until 1988. Due to low abundance, ADF&G closed the commercial Tanner crab fishery by emergency order authority from 1989 until 1999. ADF&G also issued emergency orders for partial area closures of the non-commercial Tanner crab fisheries beginning in 1982. In 1999, the Alaska Board of Fisheries (BOF) adopted a regulatory closure of all Tanner crab fisheries to facilitate rebuilding. The collapse of the PWS Tanner crab may be attributed to factors of fishing mortality and environmental conditions. ADF&G assessment surveys using pot gear from 1977–1991 and trawl gear since 1991, documented the decline of Tanner crab within PWS. The abundance estimate of legal male Tanner crab (crab with a carapace width ≥ 5.3 inches (135 mm)) from the 2007 survey was 33,518.

Red, blue, and golden king crab species occur in PWS and commercial harvests date to 1957. Commercial harvests occurred in the early 1960's, peaked at 296,200 pounds in 1972 and decreased until 1988. Commercial fisheries for red and blue king crab were closed by emergency order from the 1984–1985 season to the present except for an "exploratory season" in 1991–1992. Similarly, golden king crab fisheries were closed by emergency order for the 1989–1990 season, from 1992–1994, and from 1995 to 1999. In 1999, the BOF adopted a regulatory closure of all king crab fisheries. ADF&G did not have the means to assess king crab. However, in March 2004 ADF&G attained funding and initiated a 3 year survey to index the relative abundance and monitor the status of golden king crab in Western PWS. Data obtained over the course of a 3 year survey indicates that golden king crab abundance in the Knight Island Passage area of western PWS may be steady, but is low. The combination of low (and many zero) catches to the north and south of the Passage, and that data only show relative growth in adult cohorts with extremely low numbers of small (young) crabs and very low recruitment, are of concern for the resource, area managers and potential resource users.

Key words: assessment, Alaska Board of Fisheries, Prince William Sound, Tanner crab, *Chionoecetes bairdi*, king crab, *Paralithodes camtschaticus*, *Paralithodes platypus*, *Lithodes aequispina*, harvest, management.

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) Prince William Sound (PWS) Management Area (Area E) includes waters of PWS and the Gulf of Alaska bounded by 144°00' W. longitude near Cape Suckling on the east and Cape Fairfield (146°50' W) on the west (Figure 1). The Alaska Department of Fish and Game manages all commercial shellfish fisheries within the territorial waters of Prince William Sound or those waters from the shoreline to 3 nautical miles offshore. The department also manages all commercial shellfish fisheries in the adjacent waters of the federal exclusive economic zone (EEZ), those waters beyond 3 nautical miles offshore. Commercial shellfish harvests are monitored inseason through ADF&G fish tickets (regulation 5 AAC 39.130) with additional information derived, in some instances, from logbooks, onboard observers, catch samples and interviews with fishermen.

Statewide regulations establish a vessel registration requirement for each crab fishery and PWS is a superexclusive registration area for king and Tanner crab. This means that a vessel registered for a king or a Tanner crab fishery in PWS may not participate in any other king or Tanner crab fishery in Alaska during that year. Conversely, a vessel registered to fish in another registration area may not

fish in PWS during that registration year. Regulations define pot gear overall and tunnel size dimensions and require a biodegradable escape mechanism on each pot (5.AAC 39.145).

Commercial harvest data for PWS were compiled from historical annual management reports, previous reports to the Alaska Board of Fisheries (BOF), and data summaries from the ADF&G fish ticket harvest database. Survey data were compiled from historical management and survey reports as well as recent ongoing research efforts.

Because of low abundance, the BOF adopted regulations in March of 1999 to close commercial, sport, personal use, and subsistence harvests of king and Tanner crabs in all waters of PWS and the adjacent Gulf of Alaska. This report summarizes past commercial fisheries for Tanner *Chionoecetes bairdi*, red king *Paralithodes camtschaticus*, blue king *Paralithodes platypus*, and golden or brown king *Lithodes aequispina* crabs within Area E. This report also reviews non-commercial fisheries as well as current assessment information and past management actions taken to conserve these crab resources (Berceli et al. 2002).

TANNER CRAB

Proposal 362–365. Establish a personal use Tanner crab fishery.

HISTORICAL BACKGROUND

Commercial Fishery

The PWS commercial Tanner crab fishery began in 1968 when 1.2 million pounds were landed (Table 1). The harvest peaked in 1972–1973 at 13.9 million pounds, prior to the 1976 adoption of a minimum legal carapace width. Harvests decreased during the late 1970s and early 1980s, followed by district closures during 1984 and 1985. Small postrecruit fisheries during 1986 to 1988 yielded relatively stable harvests of approximately 0.5 million pounds (Table 1; Figure 2). However, skip molting in the prerecruit-1 size class resulted in fewer legal males and no harvest in the Eastern District.

Plausible explanations for the collapse of Tanner crab within PWS include factors related to fishing mortality and environmental conditions. Overharvesting may have occurred prior to the 1976 adoption of the male-only restriction and minimum carapace size limit of 5.3 inches. For example, the 3.8 million pound harvest in 1974–1975 included 2.7 million pounds of crab smaller than the current minimum size limit (Donaldson 1991). The legal male portion of PWS Tanner crab may have been overharvested because early fisheries were limited by regulatory season length rather than an abundance based guideline harvest level. Handling mortality of undersized and female crab may have contributed to the decline, particularly during fishing seasons of 7 months duration. Finally, and perhaps more importantly, changes in environmental conditions, documented on a Gulf of Alaska-wide basis, may have caused greater mortality of Tanner crab larvae, impaired growth and reproduction, and coincided with increased production of crab predators such as gadoid fishes.

PWS is divided into 4 Tanner crab management districts (Figure 3). The Northern and Hinchinbrook Districts include most of the waters inside PWS proper, while the Eastern and Western Districts encompass waters of the Gulf of Alaska and southwestern PWS. Historically, the commercial Tanner crab harvest was equally divided between the Gulf of Alaska and PWS portions of the management area.

Other regulations distinctive to the PWS commercial Tanner crab fishery include: a gear limit not to exceed 75 king and Tanner pots per vessel; a buoy tag requirement and a minimum legal carapace width of 5.3 inches (135 mm) for all retained crab. Past regulatory fishing seasons opened January 15 and closed March 31.

Non-commercial Fisheries

Historically, sport, personal use, and subsistence Tanner crab fisheries remained open on a year around basis throughout most of PWS. Despite low and declining abundance estimates, daily bag and possession limits remained at 20 male crabs. Minimum legal size differed by fishery; 5.3 inches (135 mm) for personal use and subsistence fisheries and 5.5 inches (140 mm) for sport fisheries. Legal gear types for sport and personal use fishing included pots, ring nets, dive gear, dip nets, and hooked or hookless hand lines. Pot gear was limited to 5 pots per person and 10 pots per vessel for all non-commercial crab fisheries and all pots were required to have a biodegradable escape mechanism. However, legal gear for the subsistence harvest of Tanner crab was broadly defined and included any gear type defined in regulation 5 AAC 39.105.

There was no mechanism to directly monitor effort or harvest of Tanner crab in historical non-commercial fisheries. Data from the Division of Sport Fish Statewide Harvest Survey (SWHS; Howe et al. 2001) indicated a harvest range of 137 to 537 crabs, with an average annual harvest of 300 Tanner crabs during the years 1994 to 1998 (ADF&G *Unpublished*). Limited data developed through household interviews by ADF&G Subsistence Division staff suggested that subsistence harvests totaled less than 4,900 Tanner crab among all PWS communities in 1997 (ADF&G 1999).

STOCK STATUS AND MANAGEMENT MEASURES

ADF&G has conducted assessment programs for Tanner crab within the PWS Management Area since 1977 (Berceci et al. 2002). Surveys were conducted with pot gear through 1991 (Donaldson 1991). Pot survey objectives were to provide indices of legal and sublegal male Tanner crab and to monitor reproductive success of female Tanner crab. This information was used to determine relative stock condition, as well as to set preseason harvest guidelines for the commercial fishery. Pot survey data indicated steady declines in the numbers of male and female Tanner crab (Table 2). During the pot survey time series, the mean catch rate of Tanner crab decreased 86%.

Recognizing the inherent weaknesses of pot surveys, such as the inability to expand catches to estimate population abundance, ADF&G implemented trawl surveys in 1991 (Bechtol 1999; Kimker and Trowbridge 1992). An advantage of trawl surveys is that population abundance estimates can be generated by using an area swept method. Trawl surveys to assess crab stocks are also used by ADF&G in other management areas and by the National Marine Fisheries Service for the Bering Sea.

Population estimates generated from ADF&G trawl surveys demonstrate that PWS Tanner crab remain at low levels (Table 3; Figure 4). Estimated abundance of legal male crab in the Northern and Hinchinbrook Districts decreased 97% from 108,689 in 1993 to 3,697 in 1999 (Table 3). The collapse of Tanner crab within PWS may be due to factors related to fishing mortality and, more recently, environmental conditions. Poor recruitment to the legal portion of PWS Tanner crab, due to successive weak pre-recruit classes and skip molting, may have been the result of such factors. Abundance estimates generated since 2001 show numbers are slowly increasing

from the low observed in 1999 (Table 3; Figure 4). The estimate of legal males from the 2007 survey indicated another modest increase from the 2005 survey, but Tanner crab abundance remains low overall and far below historical levels (Figure 4). In addition to the traditional 'core' trawl survey stations north of Montague Island and within Orca Bay and adjacent waters, ancillary tows are conducted in other areas of PWS (Figure 5) that suggest the male (and legal male) Tanner crab numbers remain low throughout PWS. Similarly, female Tanner crab numbers also hit their lowest abundance level in 1999 and appear to be slowly increasing over the past 8 years (Table 4; Figure 4), however, the numbers indicate that there is a reasonable reproductive group of females present in PWS.

Separate population estimates have also been generated from trawl survey data for the Valdez Arm biennially since 1999. Estimated abundance of legal male Tanner crab in this area increased between 1999 and 2005 from 22,083 to 44,250, however, numbers decreased to 30,670 in 2007 (Table 5). The total abundance of female Tanner crab in Valdez Arm was highest in 2001 with 121,776 and has since decreased to 42,170 in 2007 (Table 6). Juvenile female Tanner crab showed a large decrease between 2001 and 2005, but increased slightly in 2007, while mature females show little change between the 2005 and 2007 surveys (Table 6).

Waters of Orca Bay and adjacent fjords were identified as key production areas that historically provided newly mature male and female Tanner crabs. In order to protect crab in these areas, ADF&G annually issued emergency orders closing commercial and subsistence Tanner crab fisheries within the Hinchinbrook Entrance and Orca Bay portions of PWS beginning in 1982 and the personal use fishery in these areas beginning in 1987. Waters off of the northwest end of Montague Island were similarly recognized as an important production area and were first closed to subsistence and personal use fishing in 1988 and again from 1994–1998. In March of 1999, the BOF adopted regulations to close commercial, sport, personal use, and subsistence fisheries for Tanner crab in all waters of the PWS area. Currently, ADF&G trawl surveys indicate that the majority of the Port Valdez area and all of Port Fidalgo and Port Gravina fjords remain as key areas for the potential recovery of PWS Tanner crab to commercial fishing levels. Despite continued closures of Orca Bay and adjacent waters since 1982, Tanner crab in PWS continued to decline leaving the adjacent fjords as the only locations with any reasonable numbers. Tanner crab abundance appears to be slowly increasing in the Orca Bay and North Montague areas in recent years.

The legal male portion of the Tanner crab stock remains depressed far below historical levels from the early 1990's. Studies have indicated the importance of large male crab to mating large females, the most fecund component of the population (Paul and Paul 1996). Because of the lack of understanding of larval sources and the role that local aggregations play in rebuilding the crab population, it is critical to protect key production areas in PWS in order to maximize Tanner crab reproductive potential.

KING CRAB

Proposal 361, 364, 365. Establish a personal use king crab fishery.

HISTORICAL BACKGROUND

Red, blue and golden king crabs are found in PWS. Red king crab are sparsely distributed throughout PWS, with historic concentrations occurring in waters east of Valdez Arm and Hinchinbrook Entrance (Figure 1). Blue king crab are found in the Port Wells and Harriman

Fjord areas; small aggregations may also occur in other glacial fjords of western PWS. Golden king crab were fished in central and western PWS typically at depths of 150–400 fathoms (274–732 m). Waters in the Gulf of Alaska portion of the management area have no documented concentrations of king crab except for a sparse distribution of golden king crab.

Commercial Fishery

Commercial harvests of king crab from PWS date to 1957 when 300 lb were landed (Kaydas and Koppfen 1957). However, the fishery rapidly developed and the area's second highest harvest of 246,965 pounds was landed 1960 (Table 7). Catch reporting by king crab species did not begin until the 1979–1980 season. The 1972 harvest of 296,200 pounds is believed to have been primarily blue king crab. During 1979 to 1984, both blue and red king crab numbers declined and commercial fisheries for both species were closed by emergency order from the 1984–1985 season through the 1990–1991 season and from 1991 through 1998. The closures coincided with development of the golden king crab fishery from 1982–1989 (Figure 6).

The golden king crab numbers proved to be relatively small, as indicated by fishery catch per unit of effort data coupled with rapid declines in average weight, size, and geographic distribution. In 1988, the BOF adopted a guideline harvest range (GHR) of 40,000 to 60,000 pounds for golden king crab in an attempt to help stabilize these declines. The GHR was apparently established too late because the 1990–1991 and 1991–1992 fisheries failed to attain the low end of the range. The commercial golden king crab fishery was closed in 1992, but reopened for a month during the 1994–1995 season. Harvests during this opening, although confidential due to the small number of participants, were low.

Harvest is restricted to males only with minimum legal carapace widths of 7.0 inches (178 mm) for red and golden king crabs, and 5.9 inches (150 mm) for blue king crab. Past regulatory seasons provided two open periods: October 1 to December 20 and January 15 to March 15.

Noncommercial Fisheries

The historical non-commercial king and Tanner crab fisheries shared many similarities. The fisheries remained open year around despite declines in abundance, legal gear, and gear limits were identical with legal subsistence gear types more liberal than for other non-commercial fisheries. The daily bag and possession limit for all non-commercial fisheries was 6 king crab and minimum legal sizes were identical to those set for commercial fisheries.

There was no mechanism in place to directly monitor the effort or harvest in the non-commercial king crab fisheries of PWS. Prior to the fishery closure in 1999, data from the Division of Sport Fish SWHS indicated a harvest of 40 king crabs in 1997 and 72 king crabs in 1998 (ADF&G *Unpublished*). Limited data developed through household interviews by ADF&G Subsistence Division staff suggested that subsistence harvests totaled less than 150 king crabs among all PWS communities in 1997 (ADF&G 1999).

STOCK STATUS AND MANAGEMENT MEASURES

ADF&G does not assess blue king crab in PWS. Permit holders targeting blue king crab during the 1991–1992 season reported few sublegal (crab with a carapace width < 5.9 inches (150 mm)) male and female crabs. Increased recruitment from immigration is unlikely because even historic aggregations were small and widely dispersed.

The ADF&G has assessed the relative abundance of red king crab within the eastern portion of PWS in conjunction with Tanner crab surveys since 1977. The frequency captures in the historical pot and more recent trawl surveys is believed to be an index of red king crab abundance. During the pot survey time series, 1977–1991, red king crab catches ranged from a high of 193 crabs in 1978 to 1 crab in 1987 (Table 2). Trawl surveys in traditional index stations since 1991 have likewise demonstrated that red king crab in PWS remain depressed and are unlikely to recover in the near future.

In 2004, ADF&G initiated a 3 year study to establish baseline data on golden king crab relative abundance and distribution in the Knight Island Passage area of PWS where the fishery used to occur (Figure 7). Over the course of the study period, a total of 436 pots were set at depths ranging from 27–37 fathoms (50–800 m) yielding 580 golden king crabs; 158 pots in 2004 yielded 297 golden king crabs (127 males and 170 females), 178 pots in 2005 yielded 132 golden king crabs (90 males and 42 females), and 80 pots in 2006 yielded 126 golden king crabs (68 males and 58 females). Pot soak times averaged 22.0 hrs in 2004 (range of 15–28 hrs), 22.8 hrs in 2005 (range of 19–29 hrs) and 22.8 hrs in 2006 (range of 21.8–23.9 hrs). The CPUE for legal males in this study was: 0.7 in 2004, 0.5 in 2005 and 0.8 in 2006. The vast majority of golden king crab caught during the survey were large. Legal males (≥ 7 " or 177.8 mm spine-to-spine carapace width) composed 93%, 98% and 96% of the total male catch in 2004, 2005 and 2006, respectively. ADF&G data provide an indication that the golden king crab numbers in Knight Island Passage may be stable at this time, but are at low levels. Additional concerns are that the lower (and many zero) catches to the north and south of the Passage indicate that relative abundance may be even lower in other areas that were part of the historical fishing grounds in PWS. Legal male CPUE values from the 3 year study are similar to those immediately following the oil spill in 1989. Additionally, there are indications that recruitment to this area is poor. Out of the 580 golden king crabs caught over the 3 year period, only 4 individuals were smaller than 125 mm carapace length, and the data indicate that our study was witness to the growth of a group of adult cohorts of mainly adult crab growing over a 3 year period with virtually no recruitment to the area. The lack of small golden king in our survey data may be due to the fact that those age-classes are not present or that they occur in another area of PWS. However, there appears to be a reasonable proportion of egg-bearing females within the Knight Island Passage area of PWS. In our survey 42% of mature females were egg-bearing in 2004, 60% were egg-bearing during the 2005 survey and 69% were egg-bearing during our 2006 survey.

The blue and red king crab fisheries remained closed by emergency order following the 1991–1992 season which provided no indication of recovery. Trawl survey data suggest continued low numbers for red king crab. Fishery performance data from the 1994–1995 golden king crab season demonstrated a continued low level of abundance, provided no indication of impending recruitment to the legal segment, and reported low harvests of sublegal (crab with a carapace width < 7.0 inches (178 mm)) male and female crab. The commercial fishery for golden king crab has remained closed since the 1994–1995 season.

In March 1999, the BOF adopted a regulation to close all commercial and non-commercial fisheries for king crab in PWS due to demonstrated low abundance levels and lack of non-commercial fishery harvest information.

CONCLUSIONS

Waters of the PWS Management Area once supported commercial and noncommercial Tanner and king crab fisheries. Commercial fisheries for both Tanner and king crab species demonstrated strong harvests during the early years of fisheries development followed by precipitous harvest declines. Past regulatory measures were inadequate, or were enacted too late to curb the decline of PWS crab as evidenced by fishery performance. Explanations for the collapse of PWS crab include factors related to fishing mortality and unfavorable environmental conditions.

ADF&G closed the commercial Tanner crab fisheries by emergency order authority for more than 10 years prior to the BOF regulatory closures adopted in 1999. Similarly, with the exception of a few limited area openings, ADF&G acted to protect juvenile and newly matured crab by closing non-commercial fisheries in key Tanner crab production areas of Orca Bay since 1982 and waters north of Montague Island since 1991.

Tanner crab numbers in PWS remain far below historical levels. ADF&G assessment surveys conducted with pot gear from 1977 to 1991 and trawl gear from 1991 to present, document the decline of Tanner crab. Abundance estimates of legal male Tanner crab in the Northern and Hinchinbrook Districts decreased 97% from 1993 to 1999, but recent data indicate that abundance is slowly increasing. It is critical to protect key production areas in PWS in order to maximize Tanner crab reproductive potential.

Despite partial and full area fishery closures, persistent low numbers of red and blue king crabs suggests a continuing need to protect them in PWS to allow recovery and capitalize on the available reproductive potential.

Survey data suggest that golden king crab are at low, but steady levels. Using historical data from the PWS golden king crab fishery and a 1989 oil spill damage assessment study (O'Clair et al. 1990) enabled ADF&G to place study results in relative perspective to catches during the fishery and near its close. The results suggest that there is no surplus production to be commercially harvested at this point in time.

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TABLES AND FIGURES

Table 1.—Commercial Tanner crab harvests from the Prince William Sound Management Area, 1968–2007.

| Season ^a | Vessels | Landings | Harvest by Area (lb) | | | Total | Mean Weight (lb/crab) | Number of crab | Percent New-shell Recruits ^b |
|------------------------|---------|----------|----------------------|--------------|------------|-----------|-----------------------|----------------|---|
| | | | Inside | Outside | Total | | | | |
| 1968–1969 | | | | | 1,235,613 | | | | |
| 1969–1970 | | | | | 1,284,597 | | | | |
| 1970–1971 | | | | 4,159 | 7,788,498 | | | | |
| 1971–1972 | | | | | 13,927,868 | | | | |
| 1972–1973 | | | | | 10,158,000 | | | | |
| 1973–1974 | | | 1,658,000 | 8,500,000 | 3,854,000 | | | | |
| 1974–1975 | | | 1,187,000 | 2,667,000 | 7,132,744 | | | | |
| 1975–1976 | | | 3,322,482 | 3,810,262 | | | | | |
| | | | Northern | Hinchinbrook | Western | Eastern | Total | | |
| 1976–1977 ^c | 23 | 316 | 782,048 | 766,650 | 701,725 | 70,925 | 2,321,348 | | |
| 1977–1978 | 38 | 591 | 994,721 | 1,161,831 | 2,079,549 | 570,573 | 4,806,674 | 2.2 | |
| 1978–1979 | 51 | 783 | 649,977 | 708,562 | 2,248,545 | 3,443,471 | 7,050,555 | 2.1 | |
| 1979–1980 | 49 | 561 | 140,228 | 332,583 | 1,462,059 | 4,057,847 | 5,992,717 | 2.0 | |
| 1980–1981 | 30 | 304 | 152,196 | 812,352 | 1,561,207 | 250,076 | 2,775,831 | 2.1 | |
| 1981–1982 | 29 | 216 | 351,139 | 722,834 | 1,503,253 | 288,425 | 2,865,651 | No Data | |
| 1982–1983 | 40 | 304 | 471,422 | 31,447 | 921,663 | 45,308 | 1,469,840 | 2.1 | |
| 1984 ^d | 0 | 0 | Closed | Closed | Closed | No Effort | 0 | | |
| 1985 | 0 | 0 | Closed | Closed | No Effort | No Effort | 0 | | |
| 1986 | 14 | 35 | 137,720 | 236,241 | 160,829 | 587 | 535,377 | 2.1 | |
| 1987 | 23 | 65 | 152,834 | 222,052 | 196,246 | 0 | 571,132 | 2.1 | |
| 1988 | 21 | 46 | 55,929 | 226,509 | 191,654 | 0 | 474,092 | 2.1 | |
| 1989–2007 | 0 | 0 | Closed | Closed | Closed | Closed | 0 | | |

^a Closed from 1989 to present.

^b New shell crab are less than year since its last molt with few or no scratches or growth of epifauna (such as barnacles) on the shell.

^c New districts and minimum legal size established.

^d Calendar year season established.

Table 2.—Tanner and king crab catch by pot (1977–1991) and in trawl surveys of core stations (1991–2007) in the Northern and Hinchinbrook Districts (except Valdez Arm), Prince William Sound.

| Pot Survey Catch Abundance | | | | | | |
|-----------------------------------|-----------------------|---------------------------|-------------------------|---------------------------------------|---------------------------------|-------------------------------|
| Year | Number of Pots | Female Tanner Crab | Male Tanner Crab | Total Tanner Crab (both sexes) | Mean Tanner Crab Per Pot | King Crab (both sexes) |
| 1977 | 51 | 1,972 | 2,773 | 4,745 | 93.0 | 30 |
| 1978 | 146 | 1,099 | 6,376 | 7,475 | 51.2 | 193 |
| 1979 | 237 | 3,210 | 16,831 | 20,041 | 84.6 | 161 |
| 1980 | 240 | 2,092 | 11,012 | 13,104 | 54.6 | 103 |
| 1981 | 216 | 1,064 | 8,114 | 9,178 | 42.5 | 36 |
| 1982 | 224 | 849 | 4,734 | 5,583 | 24.9 | 30 |
| 1983 | 180 | 573 | 3,225 | 3,798 | 21.1 | 3 |
| 1984 | 178 | 610 | 3,440 | 4,050 | 22.8 | 18 |
| 1985 | 163 | 212 | 2,191 | 2,403 | 14.7 | 15 |
| 1986 | 168 | 570 | 2,473 | 3,043 | 18.1 | 18 |
| 1987 | 138 | 1,010 | 2,336 | 3,346 | 24.2 | 1 |
| 1988 | 119 | 750 | 1,195 | 1,945 | 16.3 | 2 |
| 1989 | 114 | 459 | 1,640 | 2,099 | 18.4 | 5 |
| 1990 | 109 | 255 | 1,336 | 1,591 | 14.6 | 5 |
| 1991 | 81 | 331 | 724 | 1,055 | 13.0 | 23 |

| Trawl Survey Catch Abundance | | | | | | |
|-------------------------------------|---|---------------------------|-------------------------|--|----------------------|-------------------------|
| Year | Number of Tows | Female Tanner Crab | Male Tanner Crab | Mean Legal Male Tanner Crab Per Tow | Red King Crab | Golden King Crab |
| 1991 | 29 | 1,632 | 1,722 | 3.6 | 0 | 0 |
| 1992 | 37 | 1,512 | 1,776 | 1.9 | 2 | 0 |
| 1993 | 38 | 790 | 1,245 | 3.3 | 2 | 0 |
| 1994 | 38 | 904 | 1,088 | 1.4 | 2 | 0 |
| 1995 | 32 | 276 | 417 | 0.6 | 0 | 1 |
| 1996 | Biennial survey schedule initiated, no survey | | | | | |
| 1997 | 39 | 341 | 380 | 0.3 | 0 | 1 |
| 1998 | No Survey | | | | | |
| 1999 | 40 | 135 | 181 | 0.1 | 0 | 0 |
| 2000 | No Survey | | | | | |
| 2001 | 40 | 2,397 | 2,177 | 0.2 | 0 | 0 |
| 2002 | No Survey | | | | | |
| 2003 | 40 | 993 | 955 | 0.4 | 0 | 0 |
| 2005 | 40 | 642 | 687 | 0.8 | 1 | 0 |
| 2007 | 35 | 1,395 | 1,367 | 0.9 | 0 | 0 |

Table 3.—Male Tanner crab abundance estimates from trawl surveys of core stations in the Northern (except Valdez Arm) and Hinchinbrook Districts of Prince William Sound, 1991–2007.

| Year | Shell Age | Pre-4 | | Pre-3 | | Pre-2 | | Pre-1 | | Recruit | | Post-recruit | | Legal Males | Total Males |
|------|-----------|-----------|---------|---------|---------|---------|---------|--------|--------|---------|-------|--------------|-----------|-------------|-------------|
| | | All | < 73 | All | 73–92 | New | Old | New | Old | New | Old | New | Old | | |
| 1991 | Abundance | 819,732 | 597,697 | 237,445 | 39,924 | 83,001 | 154,327 | 24,632 | 90,238 | 1,167 | 3,502 | 119,539 | 1,963,879 | | |
| | 95% CI | 499,942 | 556,415 | 229,947 | 21,591 | 90,923 | 90,380 | 30,003 | 84,593 | 2,391 | 5,269 | 94,869 | 1,283,310 | | |
| 1992 | Abundance | 601,197 | 280,805 | 347,506 | 84,635 | 136,697 | 146,578 | 8,875 | 49,042 | 915 | 1,738 | 60,571 | 1,593,606 | | |
| | 95% CI | 180,032 | 236,540 | 214,806 | 38,809 | 57,025 | 60,848 | 6,872 | 32,335 | 1,793 | 2,379 | 34,186 | 522,912 | | |
| 1993 | Abundance | 470,835 | 106,194 | 105,838 | 96,573 | 108,154 | 129,447 | 57,284 | 48,821 | - | 2,584 | 108,689 | 1,075,308 | | |
| | 95% CI | 243,483 | 77,781 | 54,226 | 38,869 | 53,846 | 43,466 | 26,762 | 20,830 | - | 3,707 | 34,360 | 374,233 | | |
| 1994 | Abundance | 669,186 | 79,919 | 34,622 | 88,999 | 21,152 | 161,834 | 4,989 | 49,388 | - | 998 | 55,375 | 1,111,087 | | |
| | 95% CI | 420,605 | 48,840 | 23,013 | 33,035 | 12,633 | 59,551 | 6,962 | 22,580 | - | 1,956 | 22,686 | 467,940 | | |
| 1995 | Abundance | 251,182 | 38,033 | 17,061 | 51,421 | 6,753 | 90,757 | - | 22,275 | - | - | 22,275 | 477,482 | | |
| | 95% CI | 142,439 | 24,749 | 16,285 | 21,616 | 5,882 | 44,583 | - | 14,959 | - | - | 14,959 | 176,965 | | |
| 1997 | Abundance | 209,014 | 55,608 | 34,123 | 16,235 | 10,208 | 22,651 | 1,750 | 8,944 | - | - | 10,694 | 358,533 | | |
| | 95% CI | 116,889 | 33,038 | 15,339 | 9,338 | 6,309 | 17,720 | 2,393 | 7,733 | - | - | 9,929 | 151,268 | | |
| 1999 | Abundance | 17,294 | 7,678 | 2,938 | 24,549 | 948 | 15,924 | - | 2,749 | - | 948 | 3,697 | 173,027 | | |
| | 95% CI | 51,522 | 6,174 | 3,242 | 11,828 | 1,858 | 10,769 | - | 3,034 | - | 1,858 | 3,484 | 6,231 | | |
| 2001 | Abundance | 1,362,743 | 405,778 | 180,832 | 42,360 | 30,237 | 28,815 | 3,791 | 2,844 | - | - | 6,635 | 2,057,399 | | |
| | 95% CI | 459,552 | 232,409 | 144,850 | 23,247 | 23,272 | 16,469 | 5,830 | 3,134 | - | - | 6,456 | 758,905 | | |
| 2003 | Abundance | 495,318 | 113,584 | 99,695 | 96,492 | 38,388 | 56,682 | 5,592 | 10,332 | - | - | 15,924 | 883,591 | | |
| | 95% CI | 269,14 | 58,999 | 58,805 | 55,808 | 28,451 | 56,317 | 6,108 | 16,642 | - | - | 17,404 | 324,777 | | |
| 2005 | Abundance | 279,90 | 80,568 | 82,179 | 60,473 | 50,142 | 67,298 | 17,914 | 10,142 | 948 | - | 29,004 | 649,566 | | |
| | 95% CI | 170,91 | 55,821 | 63,290 | 48,666 | 37,377 | 49,250 | 15,478 | 13,039 | 1,858 | - | 24,999 | 282,982 | | |
| 2007 | Abundance | 779,049 | 192,538 | 120,234 | 104,031 | 109,677 | 92,933 | 9,749 | 23,769 | - | - | 33,518 | 1,431,980 | | |
| | 95% CI | 301,229 | 66,449 | 59,018 | 35,311 | 60,192 | 50,630 | 8,817 | 26,858 | - | - | 28,958 | 379,932 | | |

Note: Biennial survey schedule adopted in 1995. No surveys conducted in 1996, 1998, 2000, 2002, 2004 and 2006.

Note: Confidence interval (CI) displayed as 95% is a plus or minus value to be added or subtracted from the estimate.

Table 4.—Female Tanner crab abundance estimates from trawl surveys of core stations in the Northern and Hinchinbrook Districts (except Valdez Arm) of Prince William Sound, 1991–2007.

| Year | Females | | Total | |
|-------------|------------------|------------------|----------------|------------------|
| | Juvenile | Mature | Females | |
| 1991 | Abundance | 1,465,189 | 630,292 | 2,095,481 |
| | 95% CI | 1,075,250 | 258,088 | 1,210,931 |
| 1992 | Abundance | 591,438 | 765,282 | 1,356,720 |
| | 95% CI | 168,586 | 335,920 | 393,560 |
| 1993 | Abundance | 460,259 | 304,711 | 764,970 |
| | 95% CI | 216,090 | 125,971 | 248,302 |
| 1994 | Abundance | 700,715 | 223,794 | 924,509 |
| | 95% CI | 465,339 | 104,022 | 489,320 |
| 1995 | Abundance | 210,306 | 106,160 | 316,465 |
| | 95% CI | 118,462 | 46,514 | 132,183 |
| 1997 | Abundance | 223,208 | 99,258 | 322,465 |
| | 95% CI | 106,249 | 67,970 | 154,179 |
| 1999 | Abundance | 108,515 | 22,749 | 131,263 |
| | 95% CI | 45,881 | 13,127 | 48,815 |
| 2001 | Abundance | 1,629,594 | 631,235 | 2,260,830 |
| | 95% CI | 534,210 | 319,648 | 743,204 |
| 2003 | Abundance | 423,692 | 518,288 | 941,979 |
| | 95% CI | 216,079 | 324,044 | 380,492 |
| 2005 | Abundance | 349,664 | 258,670 | 608,334 |
| | 95% CI | 207,198 | 137,247 | 276,176 |
| 2007 | Abundance | 686,352 | 747,589 | 1,433,941 |
| | 95% CI | 233,423 | 343,740 | 458,723 |

Note: Biennial survey schedule adopted in 1995. No surveys conducted in 1996, 1998, 2000, 2002, and 2004.

Note: Confidence interval (CI) displayed as 95% is a plus or minus value to be added or subtracted from the estimate.

Table 5.—Male Tanner crab abundance estimates from trawl surveys of core stations in the Valdez Arm Prince William Sound, 1999–2007.

| Year | Size (mm) | Shell Age | Pre-4 | | Pre-3 | | Pre-2 | | Pre-1 | | Recruit | | Post-recruit | | Legal Males | Total Males | |
|-------------|------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|-------|--------------|---------------|----------------|
| | | | < 73 | All | 73–92 | All | 93–112 | New | Old | 113–134 | New | Old | 135–157 | New | | | Old |
| 1999 | Abundance | 1,463 | - | - | 4,648 | - | - | 4,503 | 6,820 | 6,820 | 14,394 | 5,951 | 14,394 | - | 1,738 | 22,083 | 39,517 |
| (n=4) | 95% CI | 4,654 | - | 5,003 | - | 9,234 | 16,106 | 9,234 | 16,106 | 21,697 | 7,904 | 21,697 | - | 5,529 | 20,731 | 37,046 | |
| 2001 | Abundance | 109,613 | 20,272 | 20,272 | 2,896 | 4,344 | - | - | 13,032 | - | - | - | 24,471 | - | 1,448 | 25,919 | 176,075 |
| (n=4) | 95% CI | 75,632 | 52,399 | 52,399 | 5,320 | 13,822 | - | - | 35,590 | - | - | - | 40,184 | - | 4,607 | 42,211 | 185,893 |
| 2005 | Abundance | 10,426 | 11,584 | 11,584 | 31,508 | 19,113 | 19,113 | 26,875 | 39,964 | 39,964 | 5,908 | 5,908 | 37,184 | - | 1,158 | 44,250 | 183,721 |
| (n=5) | 95% CI | 13,831 | 16,863 | 16,863 | 22,833 | 24,857 | 24,857 | 26,187 | 40,885 | 40,885 | 8,812 | 8,812 | 50,095 | - | 3,216 | 57,368 | 122,762 |
| 2007 | Abundance | 18,113 | 17,374 | 17,374 | 40,494 | 844 | 844 | 30,594 | 12,407 | 12,407 | 6,638 | 6,638 | 24,033 | - | - | 30,670 | 150,497 |
| (n=7) | 95% CI | 16,111 | 19,792 | 19,792 | 41,842 | 2,066 | 2,066 | 16,864 | 9,941 | 9,941 | 6,512 | 6,512 | 21,955 | - | - | 23,528 | 103,239 |

Note: Biennial survey schedule adopted in 1995. No surveys conducted in 2000, 2002, 2004 and 2006.

Note: For 2003 survey: n = 1 in Valdez Arm caught zero legal males and 6 sublegal males.

Note: Confidence interval (CI) displayed as 95% is a plus or minus value to be added or subtracted from the estimate.

Table 6.—Female Tanner crab abundance estimates from trawl surveys of core stations in the Valdez Arm Prince William Sound, 1999–2007.

| Year | | Females | | Total |
|-------------|------------------|------------------|---------------|----------------|
| | | Juveniles | Mature | Females |
| 1999 | Abundance | 1,463 | 45,062 | 46,524 |
| (n=4) | 95% CI | 4,654 | 119,010 | 117,710 |
| 2001 | Abundance | 104,400 | 17,376 | 121,776 |
| (n=4) | 95% CI | 91,340 | 30,940 | 117,561 |
| 2005 | Abundance | 3,475 | 34,752 | 38,227 |
| (n=5) | 95% CI | 9,647 | 26,129 | 23,305 |
| 2007 | Abundance | 11,535 | 30,634 | 42,170 |
| (n=7) | 95% CI | 13,052 | 19,226 | 29,897 |

Note: Biennial survey schedule adopted in 1995. No surveys conducted in 2000, 2002, 2004 and 2006.

Note: For 2003 survey: n = 1 in Valdez Arm caught 41 total females.

Note: Confidence interval (CI) displayed as 95% is a plus or minus value to be added or subtracted from the estimate.

Table 7.—Commercial king crab harvests from the Prince William Sound Management Area, 1960–1995.

| Season ^{a,b,c} | Vessels | Landings | King Crab Harvest Biomass (lbs.) | | | | Total | Average wt. |
|-------------------------|--------------|--------------|----------------------------------|--------------|--------------|--------------|---------|-------------|
| | | | Red | Blue | Golden | Golden King | | |
| 1960 | | | | | | 246,965 | | |
| 1961 | | | | | | 236,081 | | |
| 1962 | | | | | | 31,478 | | |
| 1963 | | | | | | 43,569 | | |
| 1964 | | | | | | 14,028 | | |
| 1965 | | | | | | 5,500 | | |
| 1966 | | | | | | 11,000 | | |
| 1967 | | | | | | 41,800 | | |
| 1968 | | | | | | 200,000 | | |
| 1969 | | | | | | 48,100 | | |
| 1970 | | | | | | 94,300 | | |
| 1971 | | | | | | 144,200 | | |
| 1972 | | | | | | 296,200 | | |
| 1973 | | | | | | 207,916 | | |
| 1974 | | | | | | 85,379 | | |
| 1975 | | | | | | 53,423 | | |
| 1976–77 | | | | | | 17,087 | | |
| 1977–78 | | | | | | 86,595 | | |
| 1978–79 | | | | | | 114,000 | | |
| 1979–80 | 18 | 109 | 52,026 | 13,662 | 0 | 65,688 | | |
| 1980–81 | 14 | 65 | 32,433 | 7,282 | 20 | 39,735 | No Data | |
| 1981–82 | 11 | 43 | 25,358 | 5,634 | 0 | 30,992 | | |
| 1982–83 | 31 | 187 | 30,809 | 10,433 | 147,016 | 188,258 | 9.7 | |
| 1983–84 | 18 | 69 | 16,467 | 5,324 | 50,535 | 73,226 | 8.8 | |
| 1984–85 | 4 | 14 | 235 | closed | 40,232 | 40,467 | No Data | |
| 1985–86 | 4 | 11 | closed | closed | 51,800 | 51,800 | 5.8 | |
| 1986–87 | 4 | 11 | closed | closed | 65,674 | 65,837 | 6.1 | |
| 1987–88 | 4 | 15 | closed | closed | 68,270 | 68,270 | 6.6 | |
| 1988–89 | 5 | 14 | closed | closed | 48,442 | 48,442 | 6.6 | |
| 1989–90 | 0 | 0 | closed | closed | closed | 0 | | |
| 1990–91 | ^d | ^d | closed | closed | ^d | ^d | No Data | |
| 1991–92 | ^d | ^d | ^d | ^d | ^d | ^d | No Data | |
| 1992–93 | 0 | 0 | closed | closed | closed | 0 | | |
| 1993–94 | 0 | 0 | closed | closed | closed | 0 | | |
| 1994–95 | ^d | ^d | closed | closed | ^d | ^d | | |

Note: Data confidential under AS 16.05.815.

- ^a 1995–96 to 1999 Seasons closed by emergency order.
- ^b Seasons closed by regulation effective August 1999.
- ^c Catch not reported by species prior to 1979–80 season.

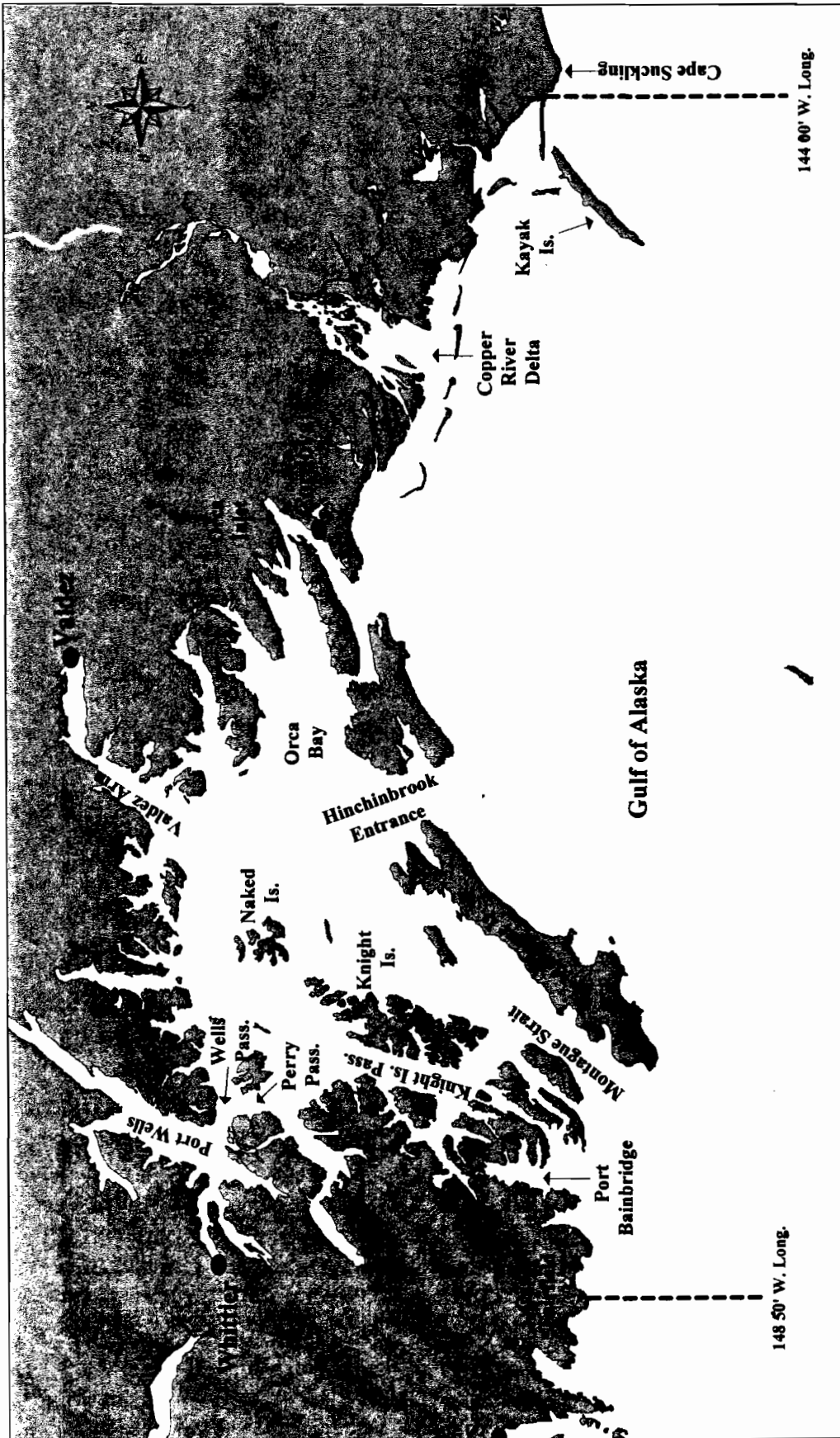


Figure 1.—Prince William Sound shellfish registration area.

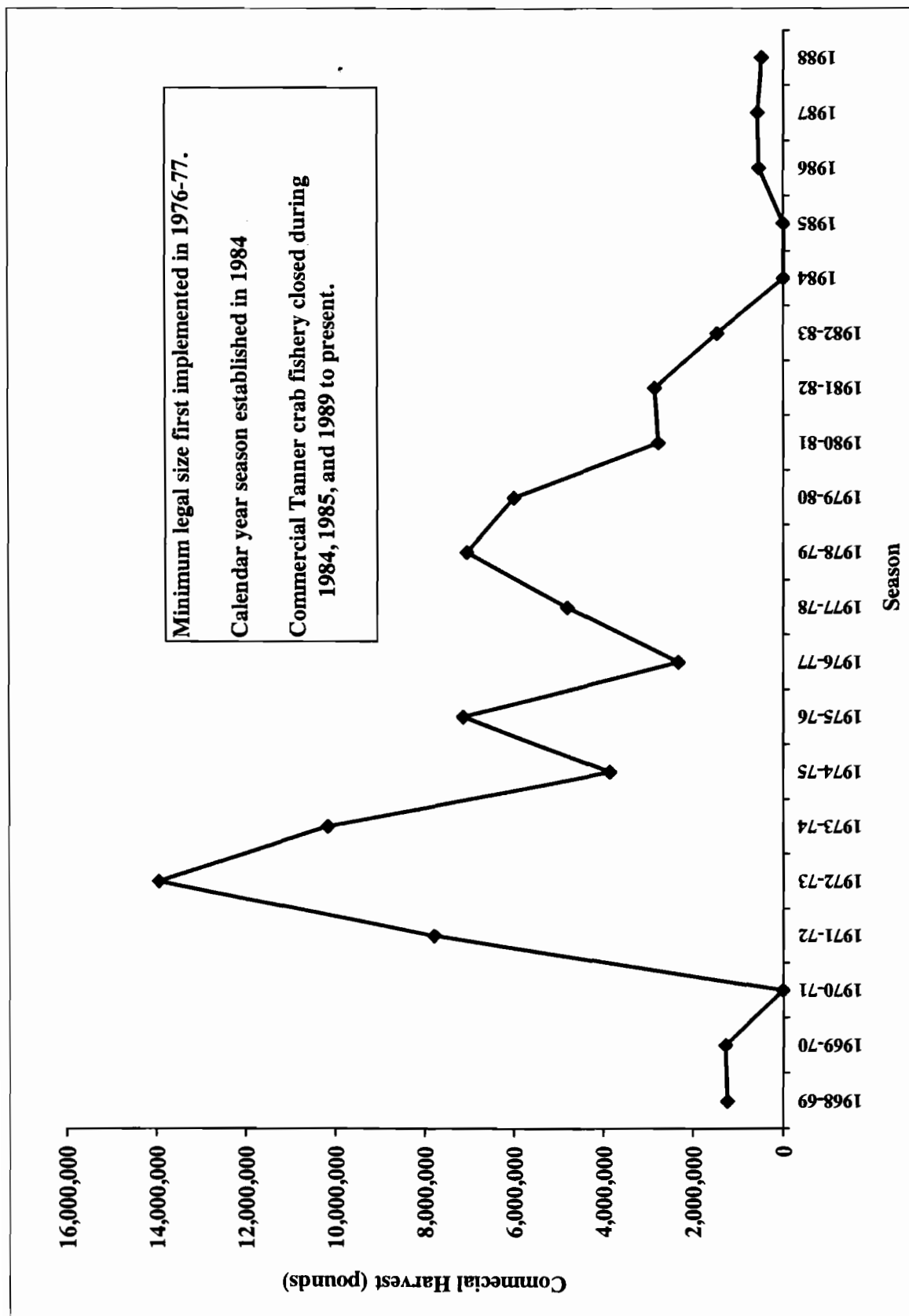


Figure 2.—Commercial Tanner crab harvests from the Prince William Sound Area, 1968–1988.

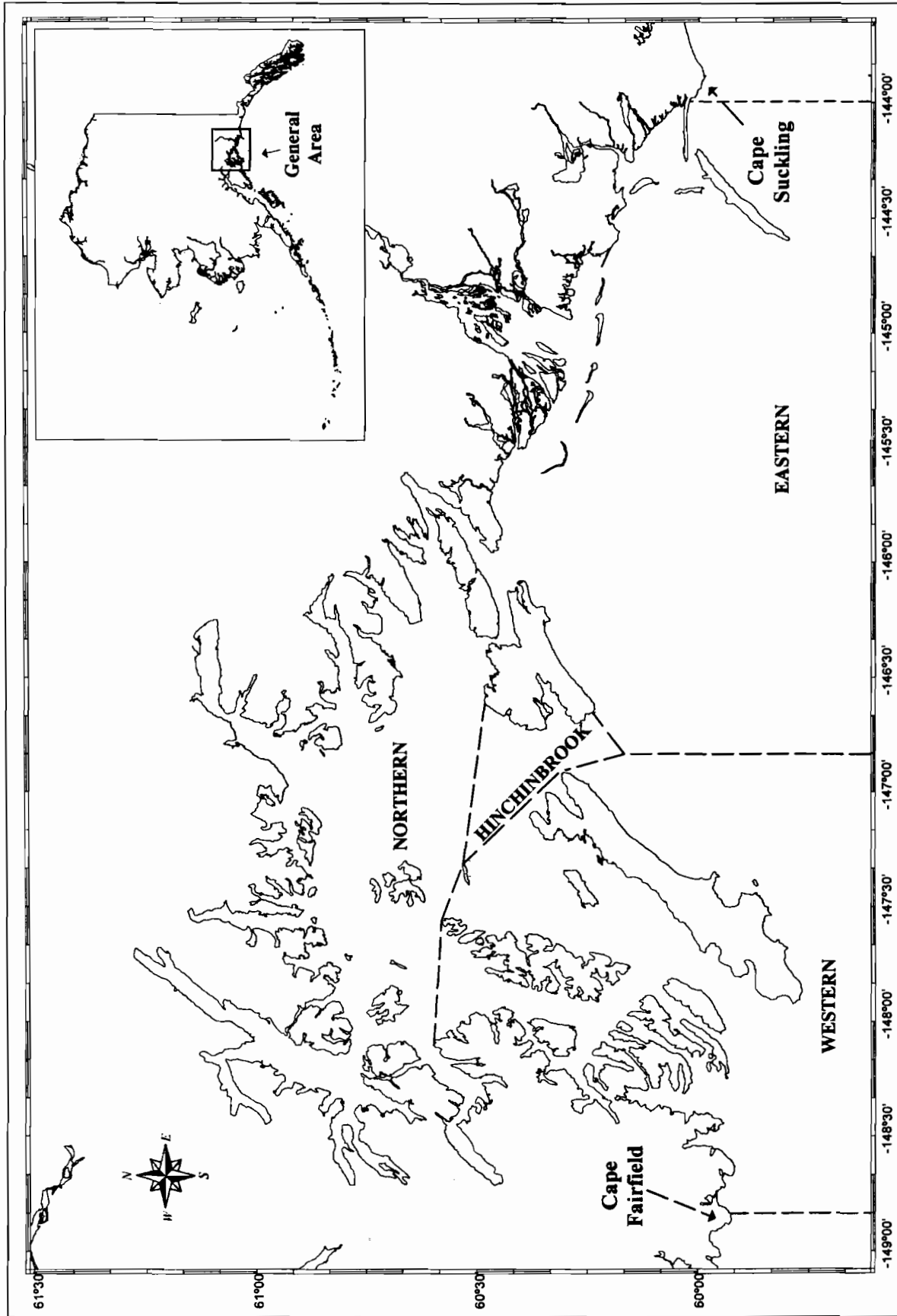


Figure 3.—Prince William Sound Tanner crab fishing districts.

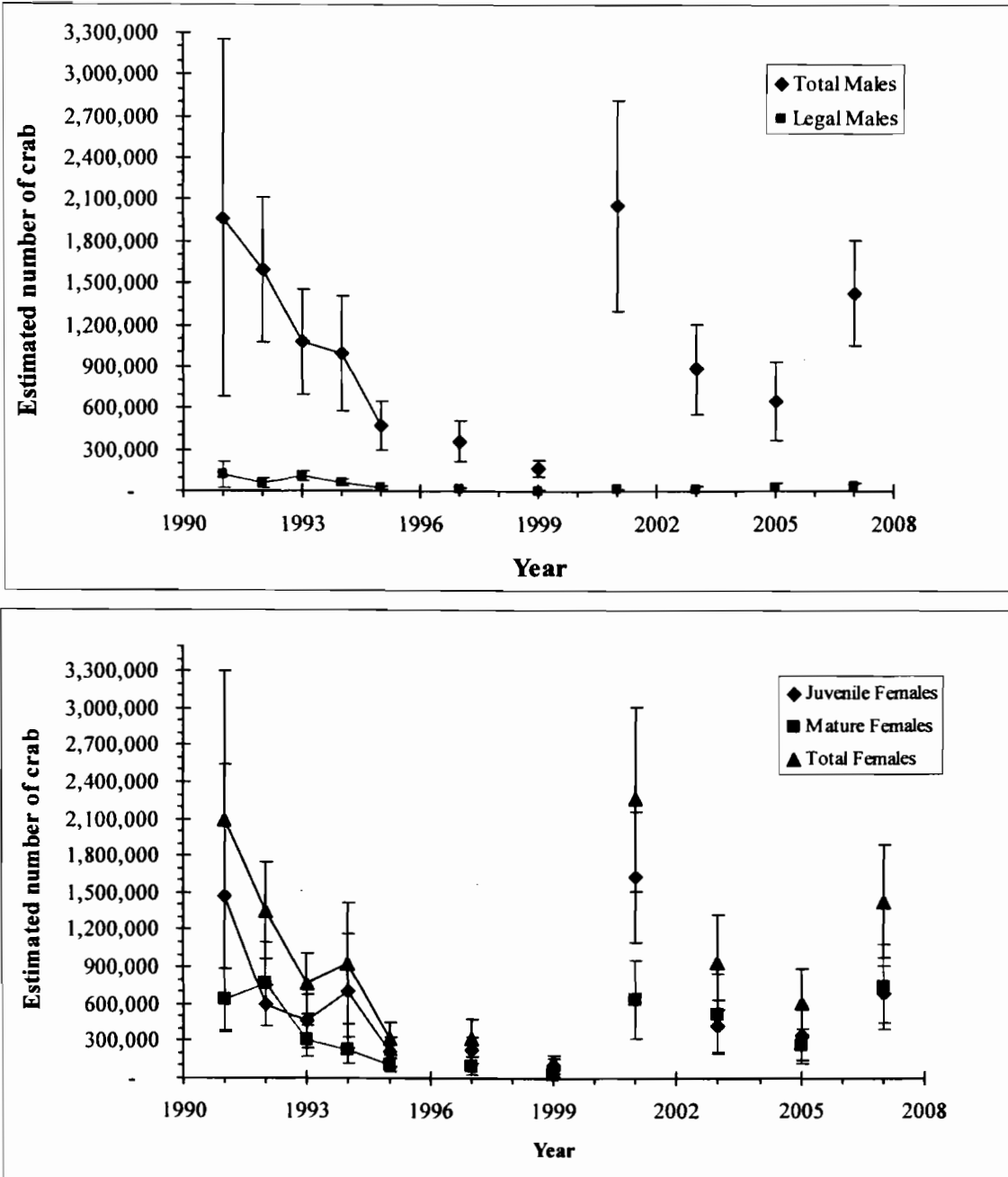


Figure 4.—Tanner crab population estimates (males top; females bottom) from Prince William Sound trawl surveys, 1991-2007.

Note: Surveys not conducted in 1996, 1998, 2000, 2002, 2004 and 2006.

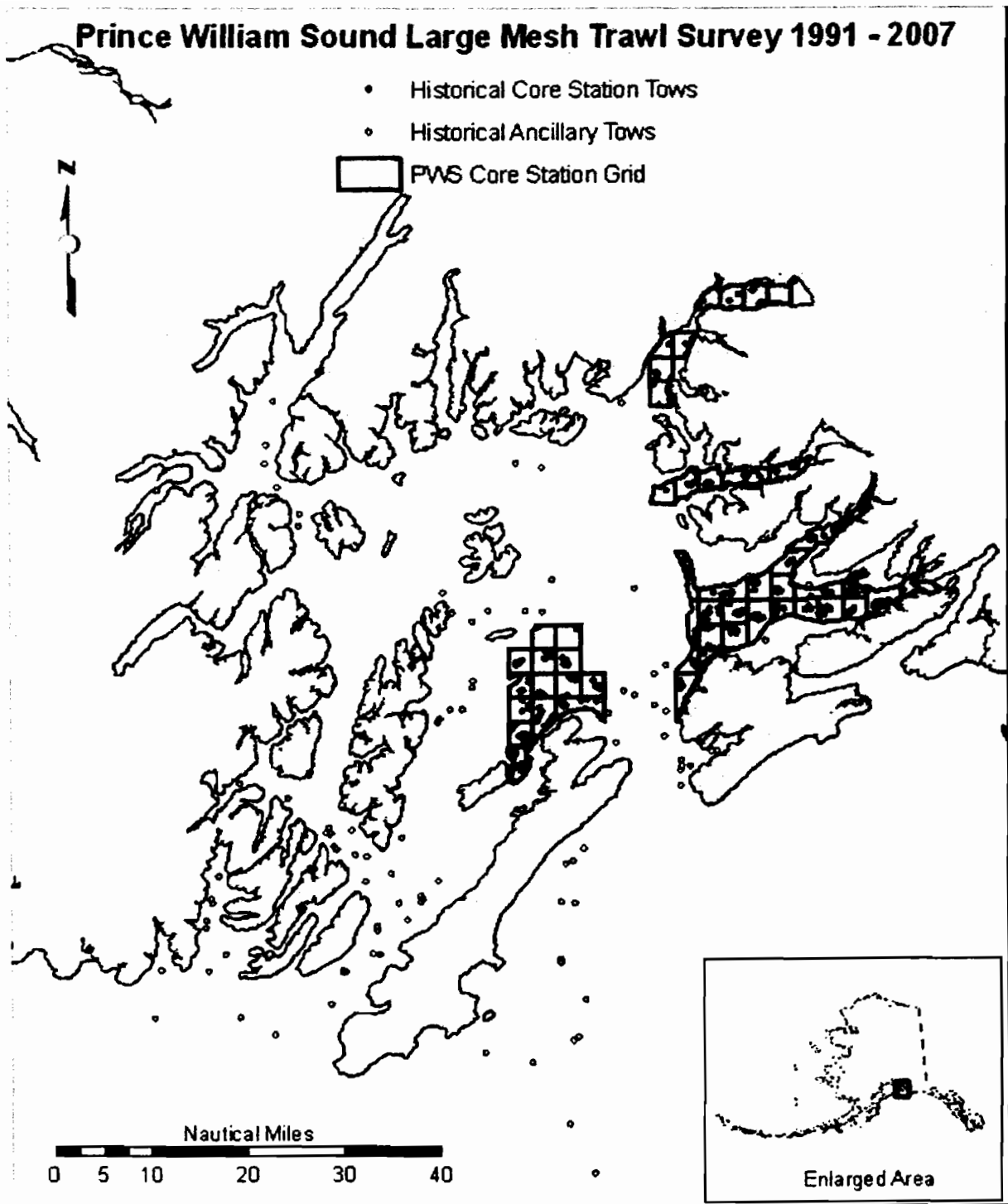


Figure 5.—Prince William Sound bottom trawl survey locations from 1991–2007.

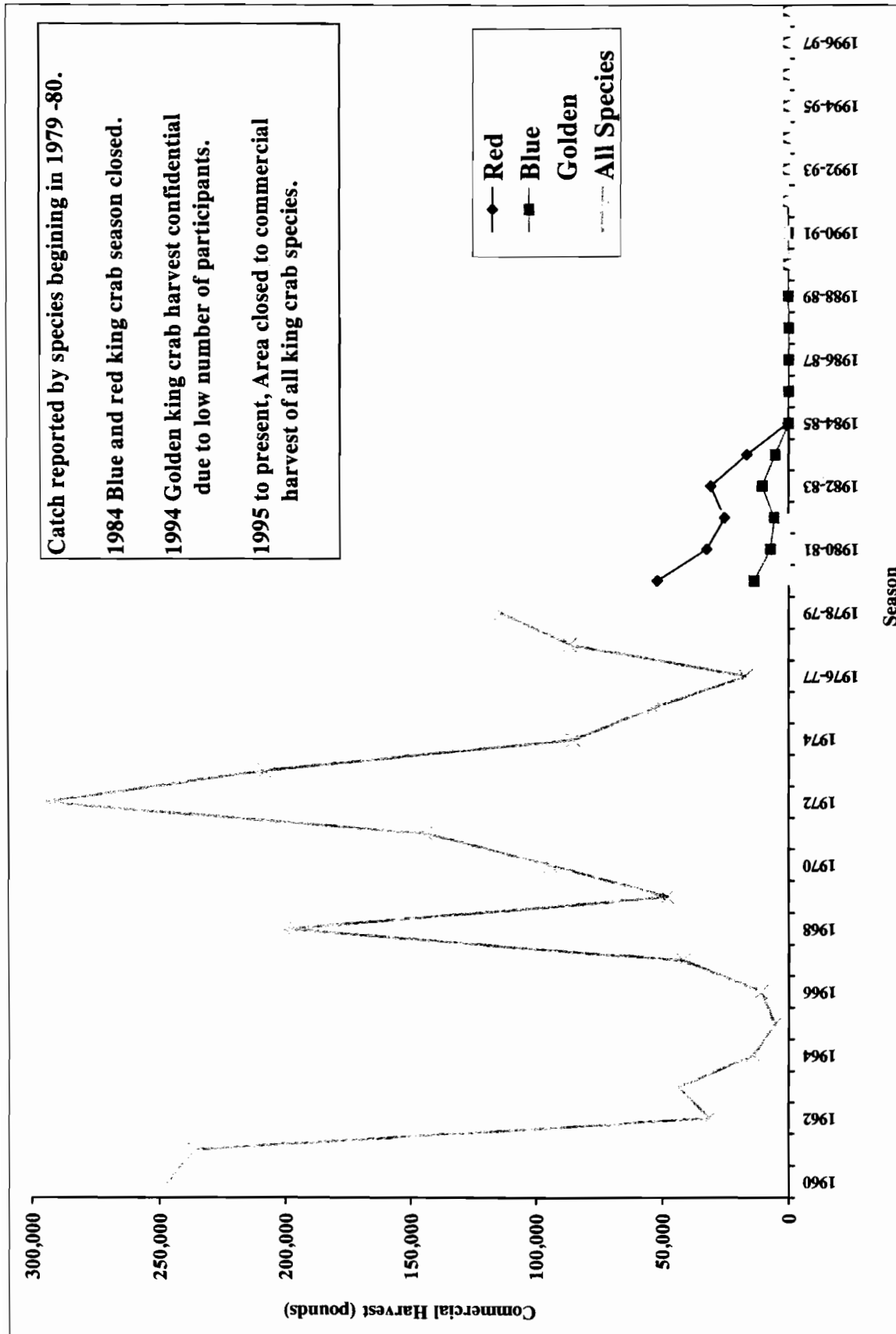


Figure 6.—Commercial king crab harvests from the Prince William Sound Management Area during 1960–1998.

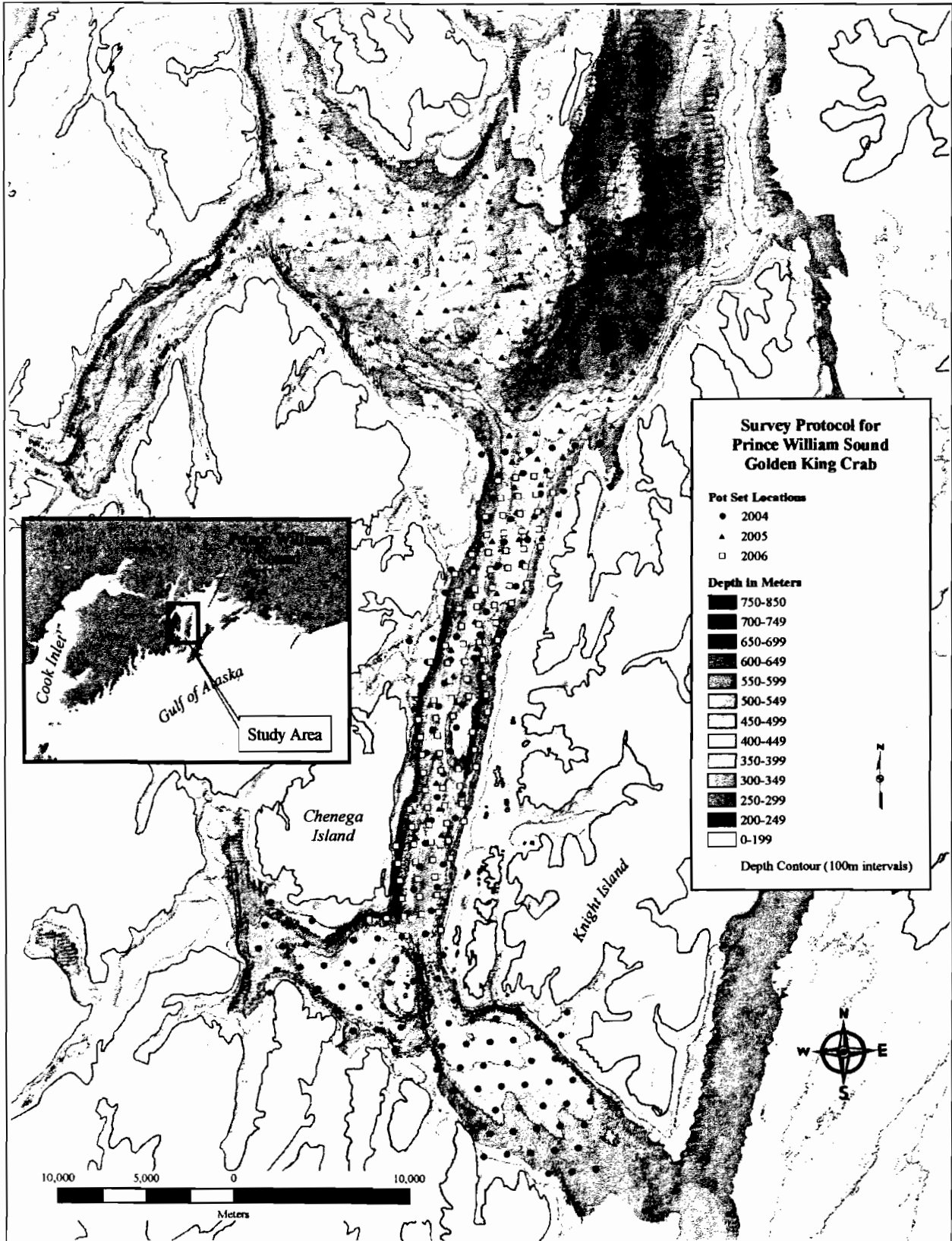


Figure 7.—Golden king crab survey locations in Knight Island Passage, Prince William Sound, Alaska.
Note: Pot set locations for all 3 years of the survey and depth strata are shown.

Fishery Data Series No. 08-05

Biodegradable Twine Report to the Alaska Board of Fisheries

by

David R. Barnard

February 2008

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| Weights and measures (metric) | | General | | Measures (fisheries) | |
|-------------------------------|----|--|---|---|-------------------------|
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | | | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | | | standard length | SL |
| kilogram | kg | | | total length | TL |
| kilometer | km | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | | |
| liter | L | | | Mathematics, statistics | |
| meter | m | at | @ | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | compass directions: | | alternate hypothesis | H _A |
| millimeter | mm | east | E | base of natural logarithm | e |
| | | north | N | catch per unit effort | CPUE |
| | | south | S | coefficient of variation | CV |
| | | west | W | common test statistics | (F, t, χ^2 , etc.) |
| | | copyright | © | confidence interval | CI |
| | | corporate suffixes: | | correlation coefficient (multiple) | R |
| | | Company | Co. | correlation coefficient (simple) | r |
| | | Corporation | Corp. | covariance | cov |
| | | Incorporated | Inc. | degree (angular) | ° |
| | | Limited | Ltd. | degrees of freedom | df |
| | | District of Columbia | D.C. | expected value | E |
| | | et alii (and others) | et al. | greater than | > |
| | | et cetera (and so forth) | etc. | greater than or equal to | ≥ |
| | | exempli gratia (for example) | e.g. | harvest per unit effort | HPUE |
| | | Federal Information Code | FIC | less than | < |
| | | id est (that is) | i.e. | less than or equal to | ≤ |
| | | latitude or longitude | lat. or long. | logarithm (natural) | ln |
| | | monetary symbols (U.S.) | \$, ¢ | logarithm (base 10) | log |
| | | months (tables and figures): first three letters | Jan., ..., Dec | logarithm (specify base) | log ₂ , etc. |
| | | registered trademark | ® | minute (angular) | ' |
| | | trademark | ™ | not significant | NS |
| | | United States (adjective) | U.S. | null hypothesis | H ₀ |
| | | United States of America (noun) | USA | percent | % |
| | | U.S.C. | United States Code | probability | P |
| | | U.S. state | use two-letter abbreviations (e.g., AK, WA) | probability of a type I error (rejection of the null hypothesis when true) | α |
| | | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| | | | | second (angular) | " |
| | | | | standard deviation | SD |
| | | | | standard error | SE |
| | | | | variance | |
| | | | | population | Var |
| | | | | sample | var |

| Weights and measures (English) | | | | | |
|--------------------------------|--------------------|--|--|--|--|
| cubic feet per second | ft ³ /s | | | | |
| foot | ft | | | | |
| gallon | gal | | | | |
| inch | in | | | | |
| mile | mi | | | | |
| nautical mile | nmi | | | | |
| ounce | oz | | | | |
| pound | lb | | | | |
| quart | qt | | | | |
| yard | yd | | | | |

| Time and temperature | | | | | |
|----------------------|-----|--|--|--|--|
| day | d | | | | |
| degrees Celsius | °C | | | | |
| degrees Fahrenheit | °F | | | | |
| degrees kelvin | K | | | | |
| hour | h | | | | |
| minute | min | | | | |
| second | s | | | | |

| Physics and chemistry | | | | | |
|---|--------|--|--|--|--|
| all atomic symbols | | | | | |
| alternating current | AC | | | | |
| ampere | A | | | | |
| calorie | cal | | | | |
| direct current | DC | | | | |
| hertz | Hz | | | | |
| horsepower | hp | | | | |
| hydrogen ion activity (negative log of) | pH | | | | |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

FISHERY DATA SERIES NO. 08-05

**BIODEGRADABLE TWINE REPORT TO THE ALASKA BOARD OF
FISHERIES**

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TABLE OF CONTENTS

| | Page |
|--|-------------|
| LIST OF TABLES..... | ii |
| LIST OF FIGURES..... | ii |
| ABSTRACT..... | 1 |
| INTRODUCTION..... | 1 |
| METHODS..... | 2 |
| Controlled Biodegradation Studies..... | 2 |
| Time-to-Failure Study..... | 4 |
| RESULTS..... | 5 |
| Controlled Biodegradation Studies..... | 5 |
| KFRC Samples..... | 5 |
| St. Herman Harbor Samples..... | 5 |
| Time-to-Failure Study..... | 6 |
| DISCUSSION..... | 7 |
| Controlled Biodegradation Studies..... | 7 |
| Time-to-Failure Study..... | 7 |
| CONCLUSIONS..... | 8 |
| ACKNOWLEDGEMENTS..... | 9 |
| REFERENCES CITED..... | 10 |
| TABLES AND FIGURES..... | 11 |

LIST OF TABLES

| Table | | Page |
|--------------|--|-------------|
| 1. | Results of tensile testing of 30-thread and 60-thread cotton twine soaked at the Kodiak Fisheries Research Center (KFRC) and St. Herman Harbor, Kodiak, AK. | 12 |
| 2. | The resulting survival/reliability analysis coding of observer-collected data from the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fishery seasons. | 13 |
| 3. | Mean soak times in days for pot lifts sampled by onboard observers during the 1997/1998 to 2004/2005 seasons of the Aleutian Islands golden king crab fishery east and west of 174° W longitude. ... | 14 |
| 4. | Relative frequency distribution of soak times (days) for pot lifts sampled by crab observers deployed on vessels fishing in the Aleutian Islands golden in crab fishery east of 174° W longitude and west of 174° W longitude during the 2005/2006 and 2006/2007 commercial fishery seasons..... | 15 |

LIST OF FIGURES

| Figure | | Page |
|---------------|---|-------------|
| 1. | Plots of the observed maximum loads for each sample along with the estimated regression relationships for maximum load as a function of soak time from the KFRC wet lab study for 30-thread and 60-thread cotton twine. | 16 |
| 2. | Plots of the observed maximum loads for each sample along with the estimated regression relationships for maximum load as a function of soak time from the St. Herman Harbor study for 30-thread and 60-thread cotton twine. | 17 |
| 3. | Plots of the hazard functions for the exponential, 3-parameter log-logistic, 3 parameter log-normal and 3-parameter Weibull distributional models. | 18 |
| 4. | Plot of the estimated survival function (solid line) along with 95% confidence limits (dashed lines) from the 3-parameter Weibull distributional model for data collected by crab observers in the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fishery seasons. Included are observed proportions of intact biodegradable twine by soak time (circles) from the same data. | 19 |

ABSTRACT

Pot gear in Alaska crab and bottomfish fisheries is required to have an escape mechanism consisting of an opening closed by 100% cotton twine no larger than 30-thread. Following implementation of the Bering Sea and Aleutian Islands crab rationalization program, soak times increased in the Aleutian Islands golden king crab fishery. Due to reports of premature failure of the regulatory cotton twine in the Aleutian Islands golden king crab rationalized fishery, the Alaska Department of Fish and Game collected time-to-failure data for 30-thread twine and conducted controlled studies of the rates of biodegradation of 30-thread and 60-thread twines in seawater at Kodiak, AK. Data collected from the commercial golden king crab fishery indicated a mean time to failure for 30-thread twine of 44 days. The controlled studies provided data to estimate the tensile strengths of 30-thread and 60-thread twine as a function of time soaked using polynomial regression. Both 30-thread and 60-thread twine began to show loss of tensile strength after 2-3 weeks of soaking. The tensile strength of 60-thread twine is greater than that of new 30-thread twine through approximately the first month of soaking. Twine samples from the controlled study were intact at the end of 77 days with the 30-thread retaining 4-14% of its maximum tensile strength and the 60-thread retaining 17-19% of its maximum strength. The controlled study results are compared to previous twine degradation studies. Twine failures in the Aleutian Islands golden king crab fishery were likely due to excess forces exerted by longlined pots being retrieved from depth. Lost pots would not be subject to those forces and could require over 100 days to completely degrade allowing trapped animals to escape.

Key words: Alaska Department of Fish and Game, Aleutian Islands, crab pot escape mechanisms, cotton twine biodegradation, survival/reliability analysis, ghost fishing.

INTRODUCTION

The Bering Sea and Aleutian Islands crab-fishing industry is important to the economy of Alaska. In order to manage Alaskan crab stocks and conserve these valuable resources, the Alaska Board of Fisheries (BOF) has adopted regulations which govern how, where, and when crabs can be harvested. One such regulation (5 AAC 39.145) is designed to minimize ghost fishing by pots lost to the fishery by incorporating a biodegradable panel. Ghost fishing occurs when an unrecoverable crab or bottomfish pot continues to capture animals that, unable to escape, die of starvation or predation. This biodegradable panel regulation specifies the use of all-cotton twine to provide a time-release mechanism that affords a means of escape for animals captured by lost pots. The relevant portion of this regulation follows.

5 AAC 39.145. Escape mechanism for shellfish and bottomfish pots

Pot gear must include an escape mechanism in accordance with the following provisions:

(1) a sidewall, which may include the tunnel, of all shellfish and bottomfish pots must contain an opening equal to or exceeding 18 inches in length, except that in shrimp pots the opening must be a minimum of six inches in length. The opening must be laced, sewn, or secured together by a single length of untreated, 100 percent cotton twine, no larger than 30 thread. The cotton twine may be knotted at each end only. The opening must be within six inches of the bottom of the pot and must be parallel with it. The cotton twine may not be tied or looped around the web bars.

The first statewide version of this regulation, adopted by the BOF in 1977, called for an opening in the sidewall of a pot "equal to or exceeding one half of the tunnel eye opening perimeter" to be secured by "untreated cotton twine or other natural fiber no larger than 120 thread." No changes relevant to crab fisheries were made until 1990 when the thread count of the untreated

cotton twine was reduced from 120-thread to 30-thread. This change was in part a response to losses of Tanner crabs *Chionoecetes bairdi* following the closure of the 1988 Cook Inlet Tanner crab fishery. Delinquent crab pots left on the grounds for at least 60 days following closure were responsible for the loss of an estimated 15-thousand Tanner crabs (Kimker 1990). The pots were equipped with the appropriate escape openings closed with the regulatory 120-thread twine, but the twine had not degraded to offer escape for the trapped crabs. Following this incident the Alaska Department of Fish and Game (ADF&G) conducted a series of research projects to determine the performance of cotton twine of various thread counts as a biodegradable escape mechanism for crab and bottomfish pots (Kimker 1990). This work provided the information used to specify that the twine used would be untreated 100% cotton no larger than 30 thread. Subsequent additions to 5 AAC 39.145 have provided for the use of 30-day galvanic timed-release devices in lieu of the all-cotton 30-thread twine (1993), extended the regulation to all pot gear, personal subsistence and sport use, as well as commercial (2001), and provided language to include escape mechanisms for pots with rigid mesh (2006).

With the implementation of crab rationalization in August 2005 and the establishment of the individual fishing quota system, the rationalized fishery has resulted in, among other changes, an increase in soak times for crab pots.

Beginning with the 2005/2006 crab season, ADF&G began hearing from some participants in the Aleutian Islands golden king crab *Lithodes aequispinus* fisheries of the loss of crabs due to the failure of the biodegradable twine mandated by state regulation. Reports of losses continued during the 2006/2007 season and it was communicated to ADF&G that a proposal to change the existing biodegradable-twine regulation for the Aleutian Islands golden king crab fishery would be presented to the BOF during the statewide king and Tanner Board meeting in March 2008. In order to provide information to the BOF during their consideration of that proposal, ADF&G initiated studies on the rate of biodegradation of 30-thread and 60-thread cotton twines and the time to failure for 30-thread cotton twine in the Aleutian Islands golden king crab fishery. The results of those studies are presented in this report.

METHODS

Data were collected from controlled studies conducted in Kodiak, AK and from the Aleutian Islands golden king crab fishery. Controlled studies of the rate of biodegradation were conducted by ADF&G in Kodiak from September - December 2007. Time-to-failure data were collected at sea by onboard crab observers during the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fishery seasons. All of the 100% cotton twine used in these studies was purchased from local marine-supplies stores in Kodiak and Dutch Harbor; all twine was distributed by Everson Cordage Works (7180 Everson Goshen Road, Everson, WA 98247).¹

CONTROLLED BIODEGRADATION STUDIES

Twine of two thread counts was used to assess rates of biodegradation. Twelve samples each of 30-thread and 60-thread 100% cotton twine were soaked for up to 77 days in two locations in Kodiak AK with samples collected for weekly assessment. Each twine sample consisted of a

¹ Product names used in this report are included for scientific completeness but do not constitute a product endorsement.

continuous length of twine wound 10 times between the sides of a frame constructed of 1.3 cm (0.5 in) round aluminum bars with the frame sides spaced 61 cm (24 in) apart. The frames rested on supports keeping the twine samples suspended 15.2 cm (6 in) from the substrate. Sample collection consisted of cutting each wind once next to one bar; each collected sample consisted of ten 1.2 m (4 ft) twine strands. The 10 twine strands were held in sea water until tested at which time each strand was cut in half. One sample produced 20 replicate twine segments of approximately 61 cm (24 in) length. Testing took place within 0.5 hr of sample collection. Following International Standard CI 1500-02 established by the Cordage Institute (Cordage Institute 2006), the first sample was collected after the twine had soaked for 24 hr. Subsequent samples were collected at 3-10 day intervals.

Twine samples were soaked at two locations: the Kodiak Fisheries Research Center (KFRC) wet lab, and the city of Kodiak's St. Herman Harbor. At the KFRC wet lab location, two sample frames, one for each twine thread-count, were submerged in a covered tank, 86.4 cm (34 in) wide × 117.8 cm (70 in) long × 25.4 cm (10 in) deep, receiving a continuous supply of raw sea water at a rate of approximately 11 L/min (2.9 gal/min). The cover limited exposure to light simulating light conditions in crab fisheries and minimizing growth of epiphytes. The frames holding the samples of 30-thread and 60-thread twine were submerged in the seawater tank at the KFRC beginning on 20 September 2007. The first sample was taken after 24 hr and samples were taken weekly until the 12th and final sample was collected on 6 December 2007. Water temperatures in the tank ranged from 9.6°C on 27 September to 6.3°C on 21 November. Salinity was near constant for the duration of the study at 34-35 ppt.

In the second location, St. Herman Harbor, the sample frames for 30-thread and 60-thread twine were fastened together end-to-end and lowered to the bottom off the end of N float in approximately 15 m (50 ft) of water. Each week the frames were retrieved, the samples cut from the frames, and the frames lowered again to the bottom of the harbor. The connected frames holding the samples of 30-thread and 60-thread cotton twine began soaking on 11 October 2007. The first sample was collected 24 hr later and subsequent samples were taken weekly until the 12th and final sample was collected on 27 December 2007. Water temperatures at 2 m (6.6 ft) depth ranged from 8.1°C on 13 October to 2.8°C on 18 December. No salinity data were recorded.

The maximum load (twine tensile strength), the measurement of force applied at the time of twine failure, was measured for each twine sample using an ADMET eXpert 5601 ®² universal testing machine (UTM) according to standards specified by the Cordage Institute (Cordage Institute 2006). Each 61 cm (24 in) replicate was mounted on the UTM using two identical grips at each end of the twine segment. Each grip consisted of a clamp and a 2 cm (0.8 in) diameter bollard or capstan. The twine was secured to the lower grip clamp, wound 1.5 times around the lower bollard, across a 30.5 cm (12 in) free span, wound 1.5 times around the upper bollard, and secured to the upper grip clamp. The force applied to the twine sample was measured by a force cell mounted above the upper grip. The portion of the twine replicate tested for tensile strength had not been in contact with the aluminum sample frame. The UTM was programmed to apply force to the twine by moving the top grip away from the bottom grip at a constant rate of 30.5

² Product names used in this report are included for scientific completeness but do not constitute a product endorsement.

cm/min (12 in/min) and to begin recording data when the exerted force equaled 2.2 newtons (N, 0.5 pounds-force (lbf)). The initial tension on the twine for each replicate was approximately 0.4 N (0.1 lbf). Force was applied until the twine failed. Recorded data used in this report were the maximum load applied at the time of failure and soak time measured in days. The recorded maximum load was interpreted as the tensile strength of the twine at the time of failure.

Regression analyses were applied to the maximum load and soak time data. Best fit was determined by examination of the residual plots for competing models, where even residual distribution indicated a better fit (Neter et al. 1996). The estimates of the parameters of the regression relationship along with model fit were computed for each twine thread count from each study location.

TIME-TO-FAILURE STUDY

Onboard crab observers were directed to collect data on the time to failure for the regulatory 30-thread cotton twine during the Aleutian Islands golden king crab fisheries. One longline pot string was selected by the observer for continuous monitoring. Each pot in the selected longline string received a uniquely-numbered tag and at the beginning of the observation period its biodegradable twine was replaced by the vessel crew with new 30-thread 100% cotton twine provided by the observer. Following the initial setting of the selected longline pot string, the observer attended all subsequent retrievals of the longline pot string. Upon retrieval the condition of the biodegradable twine on each pot was assessed and recorded by the observer. If the twine was intact the pot was reset. If the twine had failed prior to being placed on deck, or failed during deck operations, which included the crew actively testing the twine for strength, the biodegradable twine was replaced by the crew with new observer-provided 30-thread twine before the pot was reset.

Crab observer time-to-failure data were collected from one vessel fishing for Aleutian Islands golden king crabs during the 2006/2007 season and two vessels fishing for Aleutian Islands golden king crabs during the 2007/2008 season. A single longline pot string was observed on each vessel with each string being set and pulled a total of three successive times over periods of 46, 33, and 79 days. Two strings had 15 pots each and one string had 19 pots. In all, data on time to failure were collected from 60 individual biodegradable twines.

Observer-collected data were coded for survival/reliability analyses as one of three possible outcomes: exact-time failures, interval-censored failures, and right-censored failures. Exact-time failure observations occurred when the twine failed while the pot was on deck being emptied or being prepared for resetting. Interval-censored failures occurred when the twine failed between the times a pot entered the water when set and was removed from the water when pulled. Right-censored failures occurred when the biodegradable twine was still intact at the end of the study and was presumed to fail at some unobserved time after the conclusion of the study.

Survival/reliability analyses were conducted in two steps (Minitab 2005): a distribution identification analysis to select an appropriate distributional model for the data, and a parametric distribution analysis to provide an estimate of the mean time to failure. Distribution identification analyses were conducted using maximum likelihood estimation methods applied to eleven commonly used distributions: normal, logistic, exponential, Weibull, log-normal, log-logistic, 3-parameter Weibull, 3-parameter log-normal, 2-parameter exponential, 3-parameter log-logistic, and smallest extreme value. Examination of the outcomes of the distributional identification analysis for each distribution, including its Anderson-Darling score and the characteristics of

plots of the survival function and the hazard function, resulted in the choice of an appropriate distributional model. Anderson-Darling scores are goodness-of-fit statistics used to discriminate between competing models. The smaller the Anderson-Darling score, the better the model fit to the data. Plots of the survival and hazard functions allow one to visually determine whether the distributional model is appropriate for the data being analyzed. In this case the survival function plot displays the probability of a biodegradable twine remaining intact past a given soak time and the hazard function plot displays the instantaneous failure rate for the twine at a given soak time.

Following the selection of a distributional model, an estimate of the mean time to failure for the observer-collected data with standard errors was computed by a parametric analysis.

RESULTS

CONTROLLED BIODEGRADATION STUDIES

KFRC Samples

There was no appreciable change in mean maximum load until 21 days soak time for the 30-thread twine and the 14 days soak time for the 60-thread twine (Table 1). Following this initial period the mean maximum load for each sample decreased with increased soak time for both twine thread counts until the end of the experiment. Neither twine degraded completely in the 77 days of exposure to seawater. The 30-thread twine still retained 14% of its maximum mean strength after 77 days and the 60-thread twine retained 19% of its maximum mean strength. After approximately 40 days soak time the 60-thread twine retained as much tensile strength as the initial tensile strength of 30-thread twine.

The regression model with the best fit for maximum load data as a function of soak time for the 30-thread twine was estimated to be a second-order polynomial (Figure 1),

$$\text{MaxLoad} = 426 - 2.14 \times \text{SoakTime} - 0.0344 \times \text{SoakTime}^2, R^2 = 0.964.$$

The regression model with the best fit for the 60-thread twine was estimated to be a third-order polynomial (Figure 1),

$$\text{MaxLoad} = 618 + 2.55 \times \text{SoakTime} - 0.276 \times \text{SoakTime}^2 + 0.00204 \times \text{SoakTime}^3, R^2 = 0.971.$$

It should be noted that second-order and third-order polynomial regression models are appropriate only for the range of predictor values (soak times) used in the model (Neter et al. 1996). Using the model to make predictions outside of the established data range of soak times may result in spurious predictions.

St. Herman Harbor Samples

Similar to the results of the KFRC samples, there was no appreciable change in mean maximum load until 21 days soak time for the 30-thread twine and 14 days soak time for the 60-thread twine (Table 1). Following this initial period, mean maximum load decreased with increased soak time for both twine thread counts until the end of the study. The 30-thread twine retained 4% of its maximum mean strength and the 60-thread twine retained 17% of its maximum mean strength after 77 days of soak time. After approximately 28 days soak time the 60-thread twine retained as much tensile strength as the initial tensile strength for 30-thread twine.

Third-order polynomial regression models for maximum load vs. soak time provided the best fit to the data for both the 30-thread and 60-thread twines (Figure 2):

$\text{MaxLoad} = 456 - 0.251 \times \text{SoakTime}^2 + 0.00234 \times \text{SoakTime}^3$, $R^2 = 0.945$, for the 30-thread twine,
and

$\text{MaxLoad} = 693 - 4.40 \times \text{SoakTime} - 0.225 \times \text{SoakTime}^2 + 0.00243 \times \text{SoakTime}^3$, $R^2 = 0.966$, for
the 60-thread twine.

Stepwise regression analysis resulted in the removal of the first-order SoakTime term from the model for the 30-thread twine due to lack of significance (T-value = -0.83, P-value = 0.41). Again, it should be noted that third-order polynomial regression models are appropriate only for the range of soak time values that are used in the model.

TIME-TO-FAILURE STUDY

The raw data from the 60 individual biodegradable twines in the three longlined pot strings were coded for reliability/survival analyses resulting in 9 exact-failure-time observations, 29 interval-censored observations, and 22 right-censored observations (Table 2).

Results of the distributional identification analyses yielded calculable results for 10 of the 11 potential distributional models. No variance/covariance matrix existed for the 2-parameter exponential distribution which precluded its further consideration. Based on the Anderson-Darling scores (AD) the four distributional models with the best fit to the data were, by ascending AD scores, the exponential (AD = 1.19), the 3-parameter log-logistic (AD = 1.29), the 3-parameter log-normal (AD = 1.34), and the 3-parameter Weibull (AD = 1.52). The remaining six distributional models had Anderson-Darling scores that ranged from 1.73 to 3.38. All four of the selected distributional models displayed survival function plots appropriate for the time-to-failure data. The exponential, 3-parameter log-logistic, and 3-parameter log-normal distributions were removed from consideration due to inappropriate hazard functions. The hazard function plot for the exponential distributional model indicated a constant instantaneous failure rate (Figure 3). This was interpreted as the probability of instantaneous failure being independent of soak time and therefore independent of changes in tensile strength of the twine. For the 3-parameter log-logistic and 3-parameter log-normal distributional models, the hazard function plots indicated that for soak times beyond 50 days (3-parameter log-normal) and 60 days (3-parameter log-logistic) the instantaneous failure rates would become constant and then decrease (Figure 3), i.e. – the tensile strength of the twine would at some point increase with increased soak time, an unlikely outcome. The 3-parameter Weibull distributional model, with the fourth lowest Anderson-Darling score and an appropriate hazard function plot with a constantly increasing instantaneous failure rate (Figure 3), was selected as having the best fit to the data.

Under the 3-parameter Weibull distributional model the estimated mean time to failure for biodegradable twine was 44 days (SE = 2.4) with a 95% confidence interval of 39 days to 49 days. In addition to location and scale parameters, the 3-parameter Weibull distribution included an estimated threshold parameter before which no failures would be observed. For this data the threshold parameter estimate was 20 days (SE = 2.7) with a 95% confidence interval of 14.7 days to 25.3 days. A plot of the survival function for the 3-parameter Weibull distributional model with proportions of intact twine at soak times from the observed data is displayed in Figure 4.

DISCUSSION

CONTROLLED BIODEGRADATION STUDIES

Initial studies of the degradation of cotton twine reported in Kimker (1990) consisted of testing twine of varying thread counts under different conditions, including twine installed on ADF&G survey and experimental pots, use of ADF&G-supplied twine by commercial fishers in crab fisheries, and suspending weights from samples of twine attached to a frame and soaked in a boat harbor. Of those studies the most relevant was data collected from ADF&G survey pots used in the 1990 Cook Inlet Tanner and king crab surveys. That study was conducted under close supervision and used twines that were known to be all cotton. Eight repetitions each of 30-thread, 42-thread, and 60-thread cotton twine were used to secure 46-61 cm (18-24 in) openings in 2.1 m × 2.1 m (7 ft × 7 ft) king crab pots used in the survey. The mean time to failure for the 30-thread, 42-thread, and 60-thread twines were 89 days (SE = 7.9), 101 days (SE = 6.8), and 107 days (SE = 8.7), respectively. The last twine sample, of 60-thread count, failed after 139 days of survey use and wet storage.

The results reported in Kimker (1990) are consistent with the results from the 2007 controlled biodegradation studies for 30-thread twine. While the polynomial regression models have no predictive ability beyond 77 days soak time, extending the trend observed over the last 3 weeks (56-77 days soak time) of the biodegradation study indicated the 30-thread twine soaked in the KFRC wet lab would have totally degraded by approximately 84 days soak time. The tensile strength of the 30-thread twine soaked in St. Herman Harbor had reduced to 20 N (4.5 lbf) after soaking for 77 days and extending the trend observed over the last 3 weeks of the study indicated a total loss of tensile strength at approximately 86 days. Both values were close to the mean time-to-failure estimate (89 days) for 30-thread twine from the earlier Cook Inlet study and were contained by the 95% confidence interval (74 days, 105 days) for that mean estimate. Similarly, extending the trends for the last 3 weeks (56-77 days soak time) of the 60-thread twine samples indicated total twine degradation in approximately 95 days for twine from the KFRC wet lab study and 116 days for the harbor study. Both values are contained by the 95% confidence interval (90 days, 124 days) for the estimated mean time to failure for 60-thread twine reported by Kimker (1990).

TIME-TO-FAILURE STUDY

The estimated threshold value of 20 days for the 3-parameter Weibull distributional model, indicating no failure of 30-thread twine before 20 days soak time, was consistent with results from both controlled biodegradation studies for 30-thread twine. The KFRC and St. Herman Harbor data showed no appreciable change in tensile strength for 30-thread twine prior to 21 days soak time. The combined information points to a soak time of approximately 3 weeks before which there is very little chance of failure of the 30-thread twine currently in use.

The estimated mean time to failure of 44 days for 30-thread cotton twine used in the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fisheries was much less than total-degradation times reported by Kimker (1990) and those estimated from the controlled biodegradation studies reported above. This suggests that biodegradable twine failure in the Aleutian Islands crab fisheries occurred before the twine was completely degraded and still retained some portion of its original tensile strength.

Using the regression equation estimated from the controlled studies, estimates of the force exerted at the time of failure on the 30-thread biodegradable twine used in the Aleutian Islands fisheries can be calculated. Inserting the limits (39 days, 49 days) from the 95% confidence interval for the estimated mean time to failure into the equation for the 30-thread regression relationship estimated from the KFRC wet lab data resulted in estimates for tensile strengths of 290 N (65 lbf) at 39 days and 238 N (53 lbf) at 49 days. That suggests the forces applied to the biodegradable twines in the Aleutian Islands fisheries causing their failure occurred when they retained 56% to 69% of the maximum mean strength for the 30-thread twine. Tensile strengths of 290 N and 238 N for 60-thread twine are predicted to occur after 52 days soak time and 58 days soak time, respectively, by the regression equation estimated from the KFRC data. Hence, an increase from 30-thread twine to 60-thread twine would result in an increase in soak times of 3 days to 19 days before biodegradable twine failure in this fishery.

Employing the same methodology with the St. Herman Harbor controlled study, when the limits of the mean time-to-failure estimates from the observer data (39 days and 49 days) were inserted in the estimated 30-thread regression equation they produced estimates of tensile strengths of 214 N (48 lbf) at 39 days soak time and 129 N (29 lbf) at 49 soak days. That suggests that failures during the fishery occur when the twines retained 28% to 47% of their maximum strength. Tensile strengths of 214 N and 129 N for the 60-thread twine are predicted to occur after 50 days soak time and 63 days soak time, respectively, by the regression equation estimated from the St. Herman Harbor data. Hence from those data a change from 30-thread twine to 60-thread twine would be expected to increase soak times of 1-24 days before biodegradable twine failure in this fisheries.

CONCLUSIONS

The information used in the development of the regulation requiring 30-thread 100% cotton twine as the time release mechanism to prevent ghost fishing by lost crab and bottomfish pots was reported in Kimker (1990) and Kruse and Kimker (1993). Implicit in Kruse and Kimker (1993) is a defining time of 30 days as the targeted time to failure for escape mechanisms. The regulatory failure time for galvanic time-release mechanisms was also set at 30 days. That value comes from work conducted by Paul et al. (1994) and Kimker (1994). Working with Tanner crabs in a laboratory, Paul et al. (1994) found starvation of crabs for 30 days or longer affected their survival even when feeding was resumed following the starvation period. Tanner crabs held in pots and prevented from escaping began to die after 14 days and mortality increased markedly after 28 days (Kimker 1994).

It is clear that the intent of the escape mechanism regulation (5AAC 39.145) is to prevent lost crab and bottomfish pots from retaining captured crabs longer than 30 days. Controlled field and laboratory studies have shown that 30-thread 100% cotton twine remains intact for up to 105 days soak time (Kimker 1990). Larger thread-count all-cotton twine remains intact for longer soak times before total degradation. For 60-thread twine that can be as long as 125 days soak time (Kimker 1990). From the same report, 96-thread twine suspending weights in a boat harbor had 14 of 15 replicates still intact after soaking for 153 days. Canadian researchers testing different twines and cords found 120-thread all-cotton twine was still intact after 115 days soak time and still retained 24% of its original tensile strength (Scarsbrook et al. 1988). All those studies show that twines with a higher thread count require longer soak times to biodegrade.

Failure times
Substantially
increased
to be
lower

The Aleutian Islands golden king crab fisheries have fishing conditions not experienced in the other rationalized crab fisheries. Rather than pots with individual buoy lines, multiple pots fished from longlines are used in the fishery to minimize pot loss under conditions of steep bathymetry, great depths, and strong tidal currents. Soak times have traditionally been long in these fisheries relative to the Bering Sea crab fisheries. Based on crab observer data, before crab rationalization mean soak times from the 1997/1998 to the 2004/2005 seasons have ranged from 4.0-13.4 days (Table 3), with soak times in the fishery west of 174° W longitude averaging longer than in the fishery east of 174° W longitude. Since crab rationalization mean soak times have increased, ranging from 11.5 days for the fishery east of 174° W longitude during the 2006/2007 season to 24.2 days for the fishery west of 174° W longitude during the 2005/2006 season, and instances of soak times in excess of 120 days have been recorded (Table 4). Soak times tended to be longer during the 2005/2006 season than the 2006/2007 season. In relation to two reference points from this report, the 20 soak-day threshold from the time-to-failure study and the 30 soak-day limit identified in regulation, during the 2005/2006 season, 20.8% of the soak times recorded by observers in the fishery east of 174° W longitude exceeded 20 days and 7.3% exceeded 30 days, whereas 45.9% of the soak times recorded by observers west of 174° W longitude exceeded 20 days and 28.0% exceeded 30 days. During the 2006/2007 season, 3.3% of the soak times recorded by observers in the fishery east of 174° W longitude exceeded 20 days and 0.7% exceeded 30 days. However, in the fishery west of 174° W longitude, 36.4% of the soak times recorded during the 2006/2007 season exceeded 20 days and 22.6% exceeded 30 days.

The mean time to failure of 44 days soak time estimated from observer data for 30-thread twine was considerably shorter than the 74-105 days soak time for the same twine established by Kimker (1990). It is likely that forces that result from retrieving longlined pots containing crabs under the conditions experienced in the Aleutian Islands golden king crab fishery caused some twines to fail sooner than experienced in other crab fisheries. However, the 44 day mean time to failure exceeds the 30 day soak time limit implicit in regulation by 2 weeks.

Lost pots would be exempt from the forces exerted by the retrieval process and, based on the information presented here, their biodegradable twine would remain intact for much longer. Moreover, due to the practice of longlined pots, any loss would likely be part or all of a pot string which would involve multiple pots. From the controlled biodegradation studies at KFRC and St. Herman Harbor and from the data collected in Cook Inlet (Kimker 1990), the mean time for 30-thread twine to completely biodegrade was estimated to be 84-89 days soak time. Those same studies provided estimates of 95-116 days soak time before 60-thread twine would be expected to completely biodegrade. Depending on the data set, the estimated mean time to complete biodegradation for 60-thread twine was 13%-35% greater than that for 30-thread twine. Any increase in the thread count of the biodegradable twine used for an escape mechanism for lost pots would only extend the time crabs and other animals remain trapped and lead to increased mortality.

ACKNOWLEDGEMENTS

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for this study. The views expressing herein are those of the author and do not necessarily reflect the views of NOAA or any of its sub-agencies.

Crab observers deployed during the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fisheries collected the time-to-failure data used in the report and I thank them for their diligence and hard work. The National Marine Fisheries Service allowed use their Kodiak Fisheries Research Center wet lab to conduct controlled studies and I thank them for their support. I also owe thanks to Charlie Trowbridge for supplying Al Kimker's original data and invaluable historical insight. I also thank Doug Pengilly, Wayne Donaldson, and Forrest Bowers for reviewing this report and providing valuable input.

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TABLES AND FIGURES

Table 1.—Results of tensile testing of 30-thread and 60-thread cotton twine soaked at the Kodiak Fisheries Research Center (KFRC) and St. Herman Harbor, Kodiak, AK.

| Location | Soak Time (days) | Number of Replicates | 30-thread twine | | 60-thread twine | |
|-------------------------|------------------|----------------------|------------------|----------------|------------------|----------------|
| | | | Maximum Load (N) | Standard Error | Maximum Load (N) | Standard Error |
| KFRC wet lab | 1 | 20 | 413.2 | 5.5 | 624.4 | 7.6 |
| | 7 | 20 | 422.0 | 5.1 | 631.8 | 4.7 |
| | 14 | 20 | 408.3 | 5.4 | 584.0 | 5.0 |
| | 21 | 20 | 352.0 | 2.9 | 560.5 | 5.9 |
| | 28 | 20 | 321.0 | 3.4 | 514.0 | 5.4 |
| | 35 | 20 | 302.7 | 3.1 | 479.2 | 4.2 |
| | 42 | 20 | 287.0 | 3.9 | 408.1 | 6.7 |
| | 49 | 20 | 234.0 | 3.3 | 309.6 | 12.4 |
| | 56 | 20 | 220.2 | 4.8 | 237.0 | 7.7 |
| | 62 | 20 | 156.6 | 5.2 | 207.7 | 5.7 |
| | 70 | 20 | 95.2 | 4.5 | 134.2 | 4.0 |
| 77 | 20 | 60.4 | 2.2 | 117.7 | 5.3 | |
| St. Herman Harbor | 1 | 20 | 446.5 | 8.8 | 675.6 | 7.6 |
| | 7 | 20 | 456.4 | 7.8 | 664.1 | 7.5 |
| | 14 | 20 | 427.8 | 6.8 | 608.6 | 6.8 |
| | 21 | 20 | 364.8 | 8.3 | 516.2 | 9.5 |
| | 28 | 20 | 299.7 | 8.8 | 444.0 | 6.3 |
| | 35 | 20 | 244.8 | 13.2 | 380.9 | 13.7 |
| | 41 | 20 | 171.5 | 8.8 | 276.8 | 9.5 |
| | 49 | 20 | 150.7 | 14.3 | 218.0 | 10.8 |
| | 56 | 20 | 68.5 | 4.2 | 171.4 | 8.6 |
| | 67 | 20 | 46.7 | 4.7 | 127.1 | 4.6 |
| | 70 | 20 | 35.0 | 2.7 | 126.6 | 6.7 |
| 77 | 20 | 19.8 | 2.1 | 113.3 | 5.8 | |

Table 2.—The resulting survival/reliability analysis coding of observer-collected data from the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fishery seasons.

| Type of Outcome | Start Values (days) | End Values (days) | Number of Occurrences |
|---------------------------|---------------------|-------------------|-----------------------|
| Exact-time Failure | 22 | 22 | 1 |
| | 24 | 24 | 1 |
| | 33 | 33 | 4 |
| | 46 | 46 | 3 |
| Interval-censored Failure | 20 | 33 | 1 |
| | 22 | 46 | 9 |
| | 23 | 33 | 1 |
| | 23 | 48 | 9 |
| Right-censored Failures | 48 | 79 | 9 |
| | 9 | * | 1 |
| | 22 | * | 1 |
| | 24 | * | 1 |
| | 31 | * | 17 |
| | 46 | * | 1 |
| | 79 | * | 1 |

* No observed failure by the end of the study.

Table 3.—Mean soak times in days for pot lifts sampled by onboard observers during the 1997/1998 to 2004/2005 seasons of the Aleutian Islands golden king crab fishery east and west of 174° W longitude.

| Season | Mean Observed Soak Time (days) | |
|-----------|--------------------------------|--------------------------|
| | East of 174° W longitude | West of 174° W longitude |
| 1997/1998 | 5.1 | 7.7 |
| 1998/1999 | 4.3 | 9.4 |
| 1999/2000 | 4.2 | 10.0 |
| 2000/2001 | 4.6 | 9.7 |
| 2001/2002 | 4.4 | 12.3 |
| 2002/2003 | 4.1 | 12.1 |
| 2003/2004 | 4.0 | 13.4 |
| 2004/2005 | 3.7 | 11.6 |

Table 4.—Relative frequency distribution of soak times (days) for pot lifts sampled by crab observers deployed on vessels fishing in the Aleutian Islands golden in crab fishery east of 174° W longitude and west of 174° W longitude during the 2005/2006 and 2006/2007 commercial fishery seasons.

| Soak Time (days) | Percent of Sampled Pot Lifts | | | |
|------------------|------------------------------|--------------------------|--------------------------|--------------------------|
| | 2005/2006 Season | | 2006/2007 Season | |
| | East of 174° W longitude | West of 174° W longitude | East of 174° W longitude | West of 174° W longitude |
| 1-2 | -- | 0.4 | 0.3 | -- |
| 3-4 | 9.2 | 0.4 | 2.2 | -- |
| 5-6 | 10.7 | -- | 5.2 | 4.9 |
| 7-8 | 8.5 | 4.5 | 12.6 | 7.7 |
| 9-10 | 5.8 | 3.1 | 22.5 | 10.7 |
| 11-12 | 14.4 | 7.3 | 20.7 | 3.6 |
| 13-14 | 8.1 | 7.6 | 11.0 | 9.2 |
| 15-16 | 13.4 | 11.0 | 12.9 | 13.4 |
| 17-18 | 6.8 | 12.7 | 5.6 | 12.4 |
| 19-20 | 2.3 | 7.1 | 3.7 | 1.7 |
| 21-22 | 3.7 | 8.6 | 0.6 | 7.7 |
| 23-24 | 3.8 | 4.2 | 1.5 | 3.1 |
| 25-26 | 2.7 | 1.5 | -- | 0.2 |
| 27-28 | 1.1 | 0.5 | -- | 0.4 |
| 29-30 | 2.2 | 3.1 | 0.5 | 2.4 |
| 31-32 | 2.1 | 2.7 | -- | 0.8 |
| 33-34 | 0.7 | 1.8 | -- | 11.1 |
| 35-36 | 0.5 | 2.6 | -- | 6.3 |
| 37-38 | 0.8 | 3.4 | -- | 2.8 |
| 39-40 | 1.4 | 4.2 | 0.7 | 0.6 |
| 41-42 | 0.8 | 1.2 | -- | 0.3 |
| 43-44 | 0.8 | 1.2 | -- | 0.2 |
| 45-46 | -- | 3.0 | -- | -- |
| 47-48 | 0.2 | 2.8 | -- | -- |
| 49-50 | -- | 1.1 | -- | -- |
| 51-52 | -- | 1.0 | -- | -- |
| 53-54 | -- | 0.9 | -- | 0.5 |
| 55-56 | -- | 0.8 | -- | -- |
| 57-58 | -- | 0.4 | -- | -- |
| 59-60 | -- | 0.1 | -- | -- |
| > 60 | -- | 0.8 ^a | -- | -- |
| N | 1,190 | 1,365 | 1,097 | 1,183 |
| Mean | 14.2 d | 24.2 d | 11.6 d | 19.0 d |

^a Three observations each of 98 d, 114 d, and 126 d soak time and two observations of 108 d soak time.

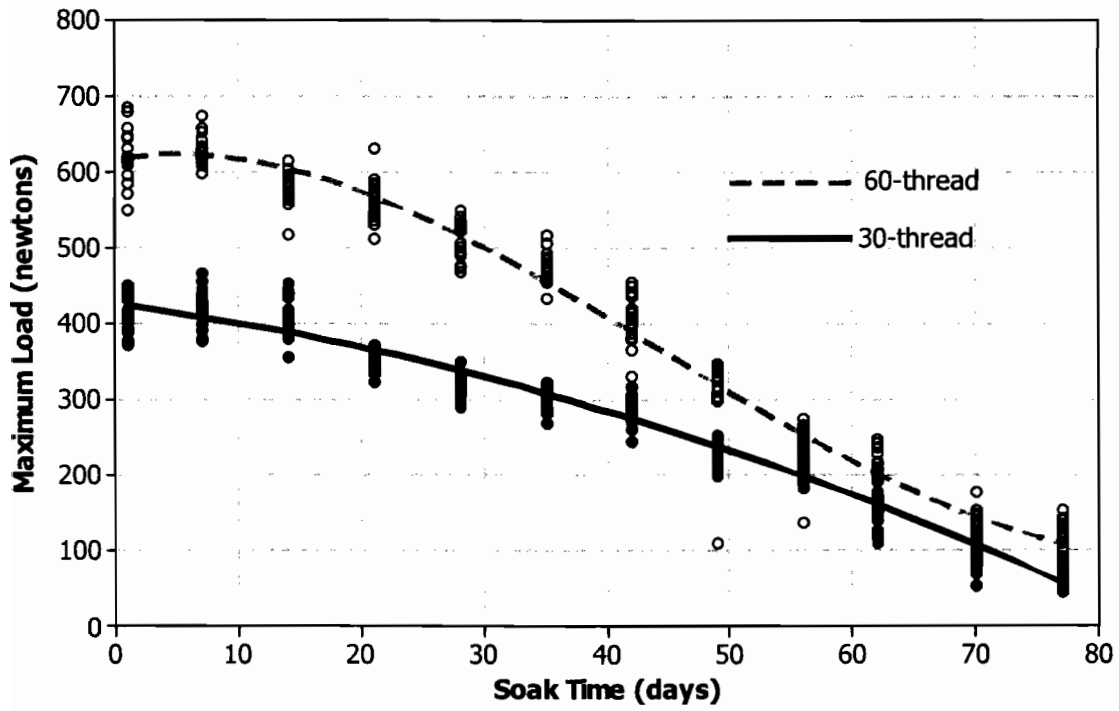


Figure 1.—Plots of the observed maximum loads for each sample along with the estimated regression relationships for maximum load as a function of soak time from the KFRC wet lab study for 30-thread (solid circles) and 60-thread (open circles) cotton twine.

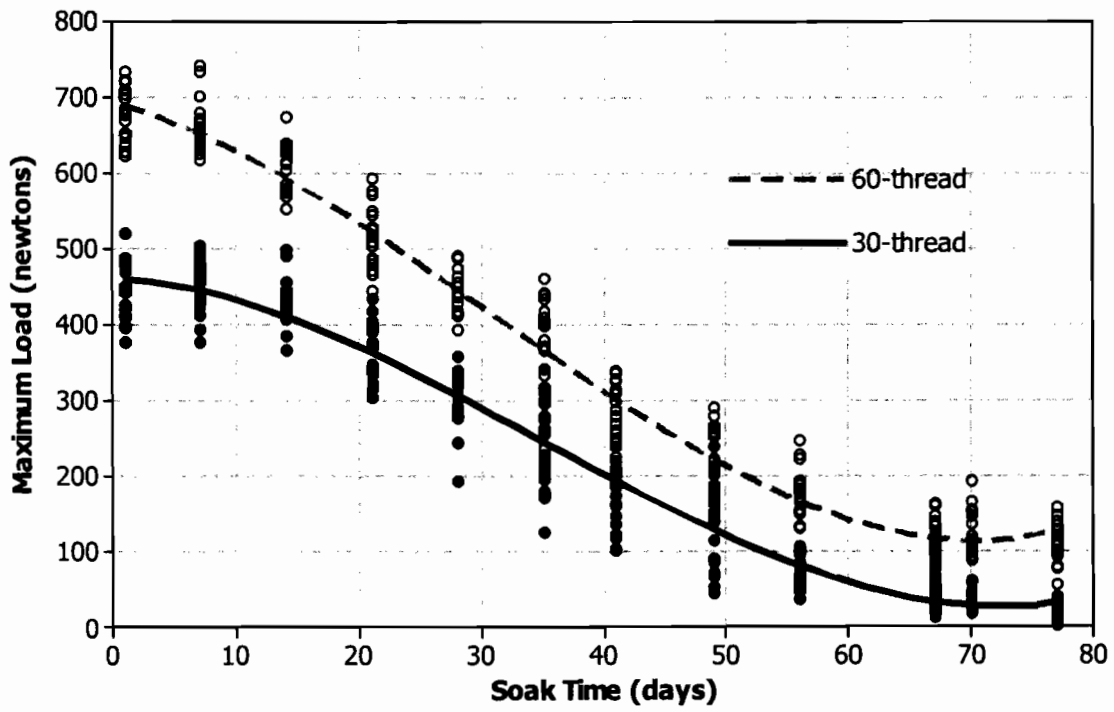


Figure 2.—Plots of the observed maximum loads for each sample along with the estimated regression relationships for maximum load as a function of soak time from the St. Herman Harbor study for 30-thread (solid circles) and 60-thread (open circles) cotton twine.

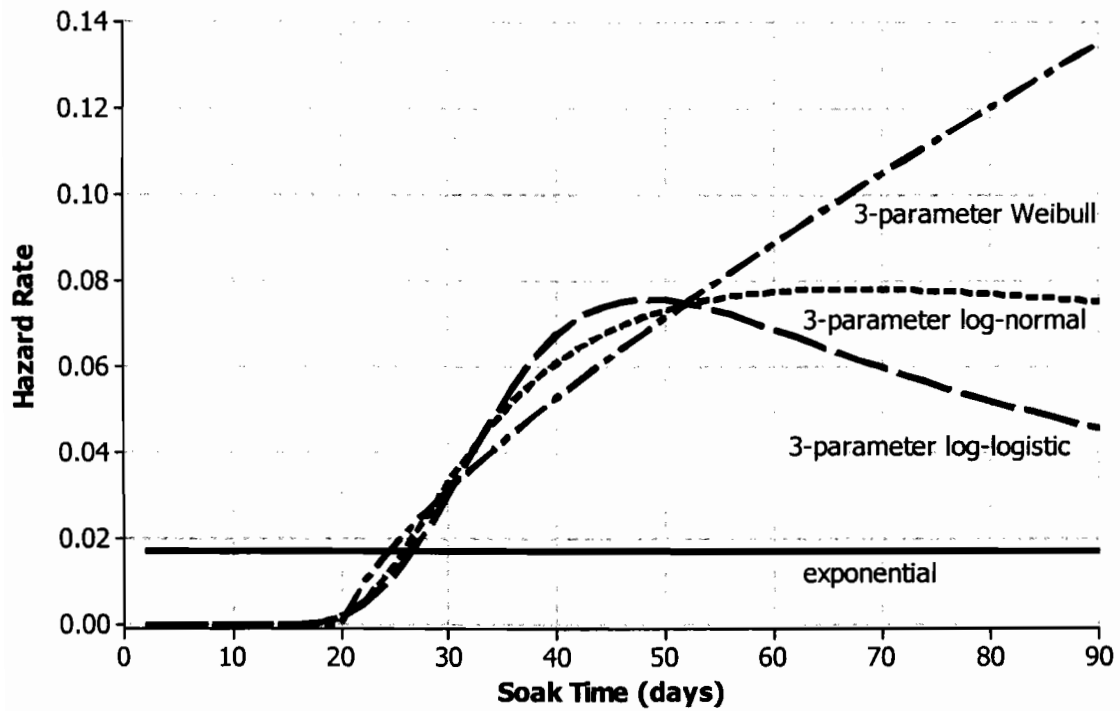


Figure 3.—Plots of the hazard functions for the exponential, 3-parameter log-logistic, 3 parameter log-normal and 3-parameter Weibull distributional models.

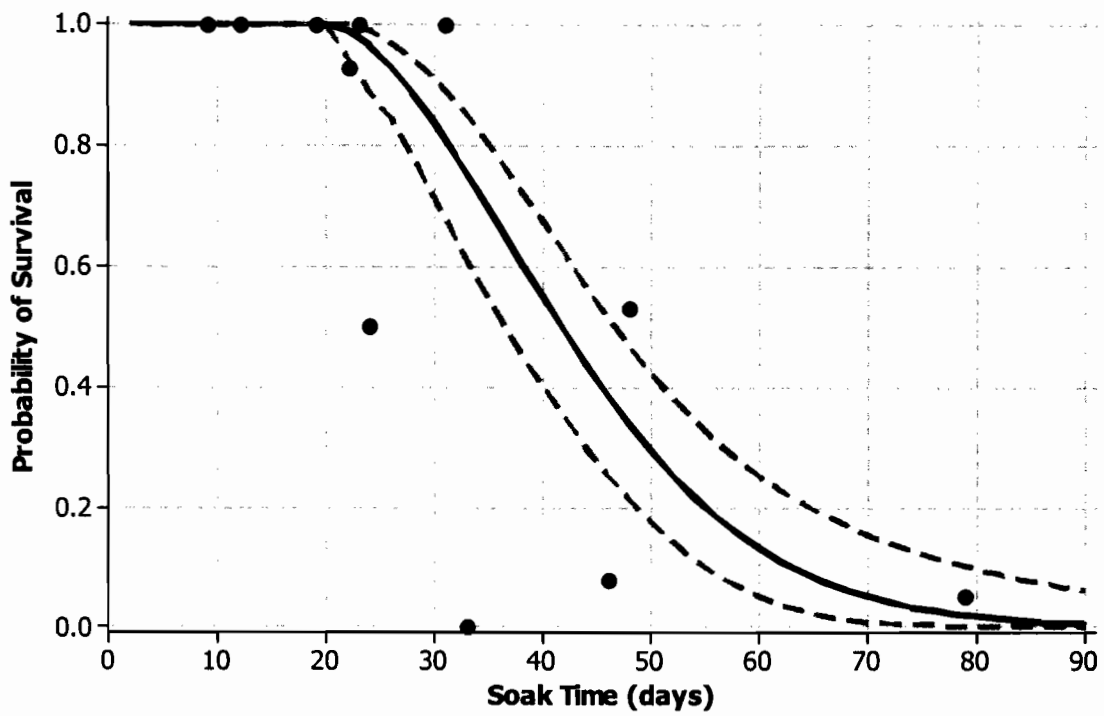


Figure 4.—Plot of the estimated survival function (solid line) along with 95% confidence limits (dashed lines) from the 3-parameter Weibull distributional model for data collected by crab observers in the 2006/2007 and 2007/2008 Aleutian Islands golden king crab fishery seasons. Included are observed proportions of intact biodegradable twine by soak time (circles) from the same data.

Fishery Management Report No. 08-01

**Annual Management Report for the Commercial
Weathervane Scallop Fisheries in Alaska, 2005/06**

by

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February 2008

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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| Weights and measures (metric) | | General | | Measures (fisheries) | |
|---|--------------------|--|---|---|-------------------------|
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | | | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | | | standard length | SL |
| kilogram | kg | | | total length | TL |
| kilometer | km | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | | |
| liter | L | | | Mathematics, statistics | |
| meter | m | at | @ | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | compass directions: | | alternate hypothesis | H _A |
| millimeter | mm | east | E | base of natural logarithm | e |
| | | north | N | catch per unit effort | CPUE |
| Weights and measures (English) | | south | S | coefficient of variation | CV |
| cubic feet per second | ft ³ /s | west | W | common test statistics | (F, t, χ^2 , etc.) |
| foot | ft | copyright | © | confidence interval | CI |
| gallon | gal | corporate suffixes: | | correlation coefficient (multiple) | R |
| inch | in | Company | Co. | correlation coefficient (simple) | r |
| mile | mi | Corporation | Corp. | covariance | cov |
| nautical mile | nmi | Incorporated | Inc. | degree (angular) | ° |
| ounce | oz | Limited | Ltd. | degrees of freedom | df |
| pound | lb | District of Columbia | D.C. | expected value | E |
| quart | qt | et alii (and others) | et al. | greater than | > |
| yard | yd | et cetera (and so forth) | etc. | greater than or equal to | ≥ |
| | | exempli gratia (for example) | e.g. | harvest per unit effort | HPUE |
| Time and temperature | | Federal Information Code | FIC | less than | < |
| day | d | id est (that is) | i.e. | less than or equal to | ≤ |
| degrees Celsius | °C | latitude or longitude | lat. or long. | logarithm (natural) | ln |
| degrees Fahrenheit | °F | monetary symbols (U.S.) | \$, ¢ | logarithm (base 10) | log |
| degrees kelvin | K | months (tables and figures): first three letters | Jan, ..., Dec | logarithm (specify base) | log ₂ , etc. |
| hour | h | registered trademark | ® | minute (angular) | ' |
| minute | min | trademark | ™ | not significant | NS |
| second | s | United States (adjective) | U.S. | null hypothesis | H ₀ |
| | | United States of America (noun) | USA | percent | % |
| Physics and chemistry | | U.S.C. | United States Code | probability | P |
| all atomic symbols | | U.S. state | use two-letter abbreviations (e.g., AK, WA) | probability of a type I error (rejection of the null hypothesis when true) | α |
| alternating current | AC | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| ampere | A | | | second (angular) | " |
| calorie | cal | | | standard deviation | SD |
| direct current | DC | | | standard error | SE |
| hertz | Hz | | | variance | |
| horsepower | hp | | | population | Var |
| hydrogen ion activity (negative log of) | pH | | | sample | var |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

FISHERY MANAGEMENT REPORT NO. 08-01

**ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL
WEATHERVANE SCALLOP FISHERIES IN ALASKA, 2005/06**

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TABLE OF CONTENTS

| | Page |
|---|-------------|
| LIST OF TABLES..... | iii |
| LIST OF FIGURES..... | iii |
| LIST OF APPENDICES | iv |
| ABSTRACT | 1 |
| INTRODUCTION..... | 1 |
| MANAGEMENT HISTORY | 2 |
| Historic Management Measures | 2 |
| CURRENT MANAGEMENT..... | 4 |
| Observer Program..... | 6 |
| Industry..... | 6 |
| YAKUTAT REGISTRATION AREA | 7 |
| Historic Background..... | 7 |
| 2005/06 Fishery | 8 |
| Area D..... | 8 |
| Stock Status..... | 9 |
| District 16 | 9 |
| Stock Status..... | 10 |
| PRINCE WILLIAM SOUND REGISTRATION AREA..... | 10 |
| Historic Background..... | 10 |
| 2005/06 Fishery | 11 |
| Stock Status | 12 |
| COOK INLET REGISTRATION AREA..... | 12 |
| Historic Background..... | 13 |
| 2005 Fishery | 13 |
| Kamishak District | 13 |
| Stock Status | 14 |
| All other Districts..... | 15 |
| KODIAK REGISTRATION AREA..... | 16 |
| Historic Background..... | 16 |
| 2005/06 Fishery | 16 |
| Northeast District..... | 16 |
| Stock Status..... | 17 |
| Shelikof District..... | 17 |
| Stock Status | 18 |
| Semidi Island District | 18 |

TABLE OF CONTENTS, Continued)

| | |
|--|----|
| Stock Status | 19 |
| ALASKA PENINSULA REGISTRATION AREA | 19 |
| Historic Background..... | 19 |
| 2005/06 Fishery | 19 |
| Stock Status | 19 |
| BERING SEA REGISTRATION AREA | 20 |
| Historic Background..... | 20 |
| 2005/06 Fishery | 20 |
| Stock Status | 21 |
| DUTCH HARBOR REGISTRATION AREA | 21 |
| Historic Background..... | 21 |
| 2005/06 Fishery | 22 |
| Stock Status | 22 |
| ADAK REGISTRATION AREA..... | 22 |
| Historic Background..... | 22 |
| 2005/06 Fishery | 22 |
| Stock Status | 22 |
| ACKNOWLEDGEMENTS..... | 22 |
| REFERENCES CITED | 23 |

LIST OF TABLES

| Table | Page |
|---|------|
| 1. Historic statewide commercial weathervane scallop number of vessels, number of landings, and harvest, 1967–2005/06..... | 26 |
| 2. Federal and State Weathervane Scallop Permits, 2005/06..... | 28 |
| 3. Crab bycatch limits by registration area and district, in percent of the crab abundance estimate or number of crab..... | 29 |
| 4. Historic commercial catch, effort, and value of weathervane scallops, Yakutat, Area D, 1969–2005/06.... | 30 |
| 5. Historic commercial catch, effort, and value of weathervane scallops, Yakutat, District 16, 1980–2005/06..... | 32 |
| 6. Yakutat, District 16 scallop fishery summary statistics, 1993–2005/06..... | 33 |
| 7. Yakutat, Area D scallop fishery summary statistics, 1993–2005/06..... | 34 |
| 8. Historic commercial catch, effort, and value of weathervane scallops, Prince William Sound Registration Area, 1992–2005/06..... | 35 |
| 9. Prince William Sound Registration Area scallop fishery summary statistics, 1992–2005/06..... | 36 |
| 10. Assigned ages of weathervane scallops from research surveys at Kayak Island, Prince William Sound Management Area, 1996–2004..... | 37 |
| 11. Historic commercial catch, effort, value of weathervane scallops, Cook Inlet Registration Area, 1983–2005..... | 38 |
| 12. Cook Inlet Registration Area scallop fishery summary statistics, 1993–2005..... | 39 |
| 13. Assigned ages of weathervane scallops from research surveys in Kamishak Bay, Cook Inlet Management Area, 1984–2005..... | 40 |
| 14. Historic commercial catch, effort, and value of weathervane scallops, Kodiak Registration Area, 1967–2005/06..... | 41 |
| 15. Kodiak Registration Area, Northeast District, scallop fishery summary statistics, 1993/94–2005/06..... | 43 |
| 16. Commercial harvest, average shell height from retained catch, and catch per unit effort from observer data, Westward Region, 1993/94–2005/06..... | 44 |
| 17. Estimated round weight of the retained commercial scallop catch and catch per unit effort, Westward Region, 1993/94–2005/06..... | 45 |
| 18. Kodiak Registration Area, Shelikof District, scallop fishery summary statistics, 1993/94–2005/06..... | 46 |
| 19. Kodiak Registration Area, Semidi Island District, scallop fishery summary statistics, 1993/94–2004/05..... | 47 |
| 20. Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975–2005/06..... | 48 |
| 21. Alaska Peninsula Registration Area scallop fishery summary statistics..... | 50 |
| 22. Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987–2006/07..... | 51 |
| 23. Bering Sea Registration Area scallop fishery summary statistics, 1993/94–2005/06..... | 52 |
| 24. Historic commercial catch, effort, and value of weathervane scallops, Dutch Harbor Registration Area, 1982–2005/06..... | 53 |
| 25. Dutch Harbor Registration Area scallop fishery summary statistics, 1993/94–2005/06..... | 54 |

LIST OF FIGURES

| Figure | Page |
|---|------|
| 1. Major weathervane scallop fishing locations in coastal waters of Alaska..... | 55 |
| 2. State of Alaska weathervane scallop fishing registration areas..... | 56 |
| 3. Yakutat weathervane scallop fishing registration area and closed waters..... | 57 |
| 4. Yakutat, District 16, scallop shell heights from resampling observer data, 1997–2005/06..... | 58 |
| 5. Weathervane scallop harvest by round weight, dredge hours, and CPUE, District 16, Yakutat Registration Area, 1994–2005/06..... | 59 |
| 6. Yakutat Area D, Scallop shell heights from resampling observer data, 1998/99–2005/06..... | 60 |
| 7. Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Area D, Yakutat Registration Area, 1993–2005/06..... | 61 |
| 8. Prince William Sound scallop fishing registration area and closed waters, 2005/06..... | 62 |

TABLE OF FIGURES, (Continued)

| | | |
|-----|--|----|
| 9. | Approximate location of weathervane scallop beds located east and west of Kayak Island, Prince William Sound Management Area..... | 63 |
| 10. | Prince William Sound Registration Area scallop shell heights from resampling observer data, 2000/01–2005/06..... | 64 |
| 11. | Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Prince William Sound Registration Area, 1993–2005/06..... | 65 |
| 12. | Cook Inlet weathervane scallop registration area..... | 66 |
| 13. | Approximate locations of the north and south weathervane scallop beds in the Kamishak District of Cook Inlet..... | 67 |
| 14. | Shell height frequencies of commercial weathervane scallop harvest samples from the north bed Kamishak District of Cook Inlet, 1983 - 2005..... | 68 |
| 15. | Shell height frequencies of commercial weathervane scallop harvest samples from the south bed, Kamishak District of Cook Inlet, 2002 - 2004..... | 70 |
| 16. | Kodiak weathervane scallop registration area and closed waters..... | 71 |
| 17. | Kodiak Northeast District scallop shell heights from resampling observer data, 1998/99–2005/06..... | 72 |
| 18. | Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1994/95–2005/06..... | 73 |
| 19. | Kodiak Shelikof District scallop shell heights from resampling observer data, 1998/99–2005/06..... | 74 |
| 20. | Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1994/95–2005/06..... | 75 |
| 21. | Alaska Peninsula weathervane scallop registration area and closed waters..... | 76 |
| 22. | Bering Sea weathervane scallop registration area and closed waters..... | 77 |
| 23. | Bering Sea Registration Area scallop shell heights from resampling observer data, 1998/99–2005/06..... | 78 |
| 24. | Weathervane scallop harvest by round weight, meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1994/94–2005/06..... | 79 |
| 25. | Dutch Harbor weathervane scallop registration area and closed waters..... | 80 |
| 26. | Adak weathervane scallop registration area and closed waters..... | 81 |

LIST OF APPENDICES

| Appendix | Page |
|---|-------------|
| A1. Commercial harvests of weathervane scallops from Prince William Sound, 1992–2005..... | 84 |

ABSTRACT

The Alaska commercial weathervane scallop *Patinopecten caurinus* fishery occurs in waters of the Alaska Territorial Sea and the Exclusive Economic Zone (EEZ) bound by Cape Spencer in Southeast Alaska through the Gulf of Alaska to the western boundary at the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990 in the Bering Sea. This report describes historic and present-day fishery management for the commercial weathervane scallop fishery occurring in the Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, and Adak Registration Areas. A synopsis of the 2005/06 fishing season and stock status is discussed for each scallop registration area.

Key words: Weathervane scallop, *Patinopecten caurinus*, Southeastern Region, Central Region, Westward Region, fishery observer, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, Adak, Aleutian Islands, Fishery Management Plan, crab bycatch, fishery cooperative.

INTRODUCTION

Alaskan weathervane scallop *Patinopecten caurinus* populations were identified in 1953 by the U.S. Bureau of Commercial Fisheries during one of their surveys (Kaiser 1986). However, it was not until 1967 when declines of red king crab *Paralithodes camtschaticus* catches led to the first efforts to establish a weathervane scallop fishery (Kruse et al. 2005). In 1967, two Kodiak-based vessels, were converted to scallop dredging (Turk 2000). At this same time, scallop catches were declining in the eastern U.S. and Canadian fisheries on Georges Bank. By 1968, scallop vessels arrived in Alaska from the east coast. The scallop fishery expanded to 19 vessels consisting of New Bedford type scallop vessels, converted Alaska crab boats, salmon seiners, halibut longliners, and shrimp trawlers (Kaiser 1986).

The fishery developed from 1967 through 1973 as previously unfished scallop beds were identified and harvested (Shirley and Kruse 1995). This was followed by a period of declining scallop harvests from 1974 to the end of the decade. A smaller, more stable fishery followed through the 1980s.

By 1993, the fishery was again expanding with an influx of scallop vessels from the east coast of the United States (Table 1). The influx of vessels into the weathervane scallop fishery concerned the Alaska Department of Fish and Game (ADF&G) about crab bycatch and overharvest of the scallop resource. As a result of the increased effort, the weathervane scallop fishery was designated by the state of Alaska as a high impact emerging fishery on May 21, 1993, and was closed until a conservative management plan could be developed by the ADF&G (Kruse et al. 2005). The resulting Interim Management Plan for Commercial Scallop Fisheries in Alaska was approved by the ADF&G Commissioner in 1993 and finalized as regulation 5 AAC 38.076 Alaska Scallop Fishery Management Plan by the Alaska Board of Fisheries (BOF) in 1994. It includes a provision for onboard observer coverage, measures designed to limit efficiency and slow the pace of fishing, gear regulations that reduce the capture rate of small scallops, and crab bycatch limits (Barnhart 2003).

In 1997, participation in the Alaska weathervane scallop fishery was limited by vessel moratoria in both federal and state waters. In 2001, a federal license limitation program (LLP) replaced the federal moratorium permanently limiting participation in the exclusive economic zone (EEZ). During the same year, the majority of vessel owners formed a fishing cooperative. The result of these actions, associated with a conservative management approach by the ADF&G, has been a reduction in the statewide scallop harvest since the late 1990s (Table 1).

In the 1990s the fishery changed from short trips with numerous deliveries each season to long trips with fewer deliveries, as the majority of the fleet converted from icing to freezing of product onboard vessels (Barnhart 2000). Between the 1990 and 1994/95 seasons when the product was iced on board and delivered fresh, the fleet averaged 136 deliveries per year (Table 1). Of the 136 deliveries, 114 were made by vessels participating in the statewide fishery (outside of Cook Inlet). By 1996, all scallop catcher boats participating exclusively in the statewide fishery (outside of Cook Inlet) were converted to catcher-processors with freezing capability. Freezing product onboard allowed longer trips. As a result, the annual average number of deliveries between 1996/97 and 2002/03 for the catcher-processor fleet operating exclusively in the statewide fishery (outside of Cook Inlet), decreased to 20.

Variable quantities of weathervane scallops are found in patchy distribution along the continental shelf from Southeast Alaska to the Bering Sea and Aleutian Islands. Scallop “beds” are typically elongated and oriented in a north-south direction consistent with prevailing currents parallel to Alaska’s coastline. Scallop beds typically occur in mud, clay, silt, sand, or pebble substrates. Major scallop fishing locations in Alaska coastal waters are shown in Figure 1. Scallops are typically found at depths of 20–125 fathoms, with the majority of the fishing effort occurring between 40 and 60 fathoms (Barnhart and Rosenkranz 2006).

There are nine scallop fishing registration areas within Alaska (Figure 2). This report describes fisheries within the ADF&G Southeastern Region (Yakutat, Registration Area D), Central Region (Prince William Sound, Registration Area E and Cook Inlet, Registration Area H), and Westward Region, including Kodiak (Area K), Alaska Peninsula (Area M), Bering Sea (Area Q), Dutch Harbor (Area O), and Adak (Area R) scallop registration areas. Waters of the Territorial Sea and the EEZ are encompassed within each registration area. Registration Area D includes those waters in the Gulf of Alaska (GOA) north of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and east of the longitude of Cape Suckling at 144° W. long. Registration Area E includes those GOA waters west of the longitude of Cape Suckling at 144° W. long. and east of the longitude of Cape Fairfield (148° 50.25' W long). Registration Area H includes those GOA waters east of Cape Fairfield (148° 50.25' W long) and north of the latitude of Cape Douglas (58° 51.10' N. Lat.). Registration Area J includes GOA waters south of Cape Douglas (58° 51.10' N lat.), west of 148° 50.25' W long and the Bering Sea to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990.

MANAGEMENT HISTORY

HISTORIC MANAGEMENT MEASURES

From inception of the fishery in 1967 until the early 1990s when scallop vessels arrived from the east coast of the United States to Alaska, the fishery was open year-round in many parts of the state, without harvest restrictions. All vessels participating in the scallop fishery were registered to fish under a commissioner’s permit, which could stipulate location and duration of harvest, limit gear and other harvest procedures, and require periodic or annual reporting. Because vessels were registered with the state of Alaska, the state regulated the fishery in federal waters. In 1993, because of increased effort, the scallop fishery was declared high impact and emerging fishery on May 21, 1993 by the Commissioner of ADF&G and was closed until a conservative management plan could be developed by the department. The resulting Interim Management Plan for Commercial Scallop Fisheries in Alaska (5 AAC 38.076) included measures designed to

limit efficiency and slow the pace of fishing, gear regulations that reduce the capture rate of small scallops, onboard observer coverage and crab bycatch limits (Kruse et al. 1992).

At the BOF meeting in March 1994, the Westward Region regulatory season was established as July 1 through February 15. At the March 1997 BOF meeting, the regulatory season in all registration areas of the state, except the Cook Inlet Registration Area, was established as July 1 through February 15. Although season dates were established to protect molting and mating crab, they have the added benefit of not disturbing scallops prior to and during their spawning period of May through early-July.

Federal regulatory actions also changed the fishery. In January 1995, the captain of a scallop vessel returned his state of Alaska 1995 scallop interim use permit card to the Commercial Fisheries Entry Commission (CFEC) and proceeded to harvest scallops in the Gulf of Alaska EEZ with disregard to harvest limits, observer coverage, and all other state regulatory and management measures. In response to the uncontrolled fishing for scallops in the EEZ by this single vessel outside the jurisdiction of the state of Alaska, the fishery was closed by the federal government from February 23, 1995 to August 1, 1996. Fishing in the EEZ was initially closed by federal emergency rule (60 FR 11054). Subsequent to expiration of the emergency rule on May 30, 1995, it was extended by the National Marine Fisheries Service (NMFS) for an additional 90 days through August 28, 1995. The emergency rule was activated to control unregulated scallop fishing in federal waters until a federal fishery management plan could be adopted closing the fishery in federal waters. Prior to the August 28, 1995 emergency rule expiration date, the North Pacific Fishery Management Council (NPFMC) submitted a draft FMP that closed federal waters to scallop fishing for up to one year, with an expiration date of August 28, 1996. Amendment 1 to the FMP became effective August 1, 1996 allowing the fishery to reopen in federal waters. Scallop fishing in state waters, scheduled to open July 1, 1996, was delayed until August 1, 1996 to coincide with the federal water opening. Amendment 2 to the Fishery Management Plan for the Scallop Fishery off Alaska (FMP) was approved on April 11, 1997 (62 FR 17749). Amendment 2 established a federal moratorium on the entry of new vessels into the fishery. The vessel moratorium remained in effect until June 30, 2000. The moratorium was replaced by the LLP that became effective on January 16, 2001. Between June 30, 2000 and January 16, 2001 the fishery was in open access status. In 1998, Amendment 3 to the federal FMP delegated authority to the state of Alaska to manage all aspects of the scallop fishery in federal waters, except limited access (Barnhart 2000). This included the authority to regulate vessels not registered under the laws of Alaska. There have been a total of 11 amendments to the scallop FMP.

In 1997, the Alaska legislature approved legislation (AS 16.43.906) enacting a temporary state waters (0-3 nautical miles) vessel moratorium. In 2001, the legislature authorized a 3-year extension of the moratorium, with an expiration date of July 1, 2004. During the 2002 legislative session, passage of House Bill (HB) 206 resulted in changes to the limited entry statutes allowing for a vessel-based limited entry program. The CFEC adopted regulations 20 AAC 05.1400 through 20 AAC 05.1444 to establish a vessel-based limited entry permit system for the statewide weathervane scallop fishery prior to the moratorium expiration on July 1, 2004. Eight vessel owners received permits to fish for weathervane scallops in state waters. However, the program has a sunset provision. Weathervane scallop fishing in state waters will revert to an open access fishery and vessel entry permits issued for the statewide weathervane scallop fishery will expire on December 31, 2008 unless statutory authority is extended.

CURRENT MANAGEMENT

The weathervane scallop fishery, in both state and federal waters, is managed by the ADF&G. Provisions of the Magnuson-Stevens Act and the scallop FMP apply in federal waters. Vessels eligible to fish in the EEZ are limited by the LLP, while vessels in state waters (0-3 nautical miles) are limited by a state limited entry vessel permit (Table 2).

Section 303(a)(7) of the Magnuson-Stevens Act requires all FMPs to describe and identify Essential Fish Habitat (EFH), which it defines as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” In addition, FMPs must minimize effects on EFH caused by fishing and identify other actions to conserve and enhance EFH. These EFH requirements are detailed in Amendment 5 to the FMP for the Scallop Fishery off Alaska (NPFMC 2005). The scallop fishery does not occur on any areas designated as Habitat Areas of Particular Concern (HAPC). According to the Environmental Impact Statement (EIS) for EFH Identification and Conservation in Alaska, the potential impacts on EFH from the scallop fishery are “minimal and temporary” (NMFS 2005).

The statewide regulatory fishing season for weathervane scallops, outside of the Cook Inlet Registration Area, is July 1 through February 15, while the regulatory fishing season in the Cook Inlet Registration Area is August 15 through October 31. Fisheries may be closed at any time by emergency order. Scallop guideline harvest ranges (GHRs) and crab bycatch limits (CBLs) for the 2005/06 season, excluding Cook Inlet, were announced by news release on June 3, 2005. The scallop GHR and CBLs for Cook Inlet were announced by news release on June 22, 2005. The upper limit of the combined GHRs in the Westward Region totaled 395,000 lb of scallop meats, in the Southeastern Region combined GHRs totaled 235,000 lb of scallop meats, Prince William Sound GHR limit was 50,000 lb of scallop meats, and in Cook Inlet the GHR limit was 7,000 lb of scallop meats.

CBLs for red king crabs, Tanner crabs *Chionoecetes bairdi* and snow crabs *Chionoecetes opilio* have been established for registration areas and districts within the weathervane scallop fishery. Hybrid *Chionoecetes* crabs are included in the snow crab CBL. Each registration area or district has separate CBLs. The bycatch of crabs in the scallop fishery is controlled through the use of the CBLs. The state first instituted CBLs in July 1993. Annual CBLs are established pre-season by the ADF&G based on the most current crab resource abundance information. However, in some registration areas or districts, the CBL is a fixed number of crabs and is not adjusted seasonally.

In the Kodiak, Alaska Peninsula, and Dutch Harbor Registration Areas, the CBLs are set at 0.5% or 1.0% of the total crab stock abundance estimate based on the most recent survey data (Table 3). In registration areas or districts where red king crab or Tanner crab abundance is sufficient to support a commercial crab fishery, the cap is set at 1.0% of the most recent red king crab or Tanner crab abundance estimate. In registration areas or districts where the red king crab or Tanner crab abundance is insufficient to support a commercial fishery, the CBL is set at 0.5% of the most recent red king crab or Tanner crab abundance estimate. Bycatch caps are expressed in numbers of crabs and include all sizes of crabs caught in the scallop fishery.

In the Kamishak District of the Cook Inlet Registration Area, the Tanner crab bycatch limit is 0.5% of the total crab stock abundance and the red king crab limit is fixed at 60 crabs. In the Prince William Sound Registration Area the CBL for Tanner crab is fixed at 0.5% of the total

crab stock abundance estimated from the 2000 scallop assessment survey. This resulted in bycatch limits of 2,700 and 8,700 for the east and west harvest areas.

CBLs in the Bering Sea (Scallop Registration Area Q) have evolved from fixed numbers in 1993 to a three tier approach used in the current fishery. In 1993, Bering Sea CBLs were set by the ADF&G to allow the fleet opportunity to explore and harvest scallop stocks while protecting the crab resource. CBLs were established at 260,000 Tanner and snow crab combined and 17,000 red king crabs. In 1995, ADF&G recommended that CBLs be established at 0.003176% of the best available population estimate of snow crab and 0.13542% of the best available population estimate of Tanner crab abundance in the Bering Sea. That equated to 300,000 snow and 260,000 Tanner crabs based on 1994 crab abundance estimates in Registration area Q. In Amendment 1 of the federal scallop FMP, the NPFMC approved the CBLs established by the ADF&G. The NPFMC also recommended that king crab bycatch limits be set within a range of 500 to 3,000 crabs annually. Beginning with the 1996/97 fishing season, ADF&G took a conservative approach and set the red king crab limit in Scallop Registration Area Q at 500 red king crabs annually.

From the 1996/97 through 1998/99 scallop fishing seasons, the CBL for Tanner and snow crabs in the Bering Sea was established annually by applying the percentages established for snow and Tanner crab limits in Amendment 1 of the FMP. In 1998, consistent with the Tanner crab rebuilding plan in the Bering Sea, crab bycatch limits were modified utilizing a three tier approach.

The current three tier approach was established utilizing the bycatch limits established in Amendment 1 of the FMP, 300,000 snow crab and 260,000 Tanner crab. The three tiers include (1) Tanner crab spawning biomass above minimum stock size threshold (MSST); bycatch limit is set at 260,000 crabs, (2) Tanner crab spawning biomass below MSST; bycatch limit is set at 130,000 crabs, and (3) Tanner crab spawning biomass is below MSST and the commercial fishing season is closed; Tanner crab limit is set at 65,000 crabs. A similar three tier approach was taken with the snow crab bycatch caps. The three tiers include (1) snow crab spawning biomass above the MSST; bycatch limit is set at 300,000 crabs, (2) snow crab spawning biomass below MSST; bycatch limit is set at 150,000 crabs, and (3) snow crab spawning biomass below MSST and the commercial fishing season is closed; the snow crab limit is set at 75,000 crabs.

Closures based on the fleet reaching CBLs have decreased over the years since inception of CBLs in 1993, possibly due to decreased crab abundance (Barnhart and Rosenkranz 2003). During the 1993/94 season, four statewide areas were closed due to attainment of CBLs. Since the 2000/01 season, two areas have closed due to crab bycatch.

One management tool used by ADF&G when setting annual GHRs is evaluation of catch per unit effort (CPUE). Fishery-dependent data such as CPUE is affected by many variables and therefore must be used with caution. CPUE is expressed in two ways, scallop round weight and scallop meat weight. These are standardized to a dredge-hour, which is defined as one dredge towed for 60 minutes. Round weight represents the retained weight in pounds of the live or whole animals. The round weight of retained scallops is estimated by the vessel operator for each tow by counting the number of bushels of retained scallops and multiplying by an estimated average weight per bushel. Processed product (scallop meat in the form of adductor muscles) is typically weighed directly during the case-up process. Therefore, CPUE based on scallop meat weight vs an estimate of round weight, provides a more standard measure of fishery performance

across the fleet. Estimated round weight is used in conjunction with weighed scallop meats to determine estimated recovery rates.

OBSERVER PROGRAM

The Alaska Scallop Fishery Management Plan, 5 AAC 38.076 (g), allows ADF&G to require a vessel, in a scallop fishery with a guideline harvest range established by regulation, to carry an onboard observer unless the department determines that carrying an observer in that fishery will not serve the purpose of the onboard observer program. The primary purposes of the onboard scallop observer program are to collect a variety of biological and fishery-based data, monitor bycatch, and provide for regulatory enforcement. Data are collected on crab and halibut bycatch, discarded scallop catch, retained scallop catch, catch composition, CPUE, scallop meat-weight recovery, and location, area and depth fished (Barnhart and Rosenkranz 2003). Onboard observers report scallop harvest, number of tows, area fished, and crab bycatch to ADF&G tri-weekly during the season by radio, email, or satellite phone. Observer-collected data are used to manage the fishery in-season and to set GHRs for the following season. Data are provided to local advisory committees, BOF, NPFMC, NMFS and the public to help answer a myriad of questions pertaining to the weathervane scallop fishery. These data have been invaluable for preparing EFH and HAPC documents. For analyzing fine-scale spatial and temporal impacts of the fishery, observer data are critical.

Onboard observer coverage is funded by industry through direct payments to independent contracting agents (Barnhart 2003). Independent contracting agents provide personnel that are trained at the University of Alaska North Pacific Fisheries Observer Training Center (OTC) in Anchorage, Alaska.

INDUSTRY

Prior to the 2000/01 regulatory season, six of the nine LLP owners formed a cooperative under authority of the Fishermen's Cooperative Marketing Act, 48 Stat. 1213 (1934), 15 U.S.C. § 521. No federal or state regulations established the cooperative, nor is it managed by the ADF&G or any federal agency. The cooperative is a voluntary association of vessels with no legal harvest allocation. That is, there is no direct harvest allocation under state or federal regulations. Within the cooperative, vessel owners allocate themselves shares of the scallop GHRs and CBLs based on historic participation in the fishery. The majority of the owners opted to remove their boats from the fishery and arranged for their co-op shares to be caught by others members of the cooperative. The formation of the cooperative extended the fishing season over a longer time period compared to the pre-cooperative fishery.

Vessel owners and operators within the cooperative have taken an active role in developing measures aimed at reducing crab bycatch. Vessel operators provide their confidential inseason fishing information to an independent consulting company contracted by the cooperative. The independent consultant reviews the crab bycatch data, fishing location information, and scallop harvest, allowing for real-time identification of any high crab abundance areas discovered during the fishery. If at any time, an area of high crab abundance is identified, the co-op fleet is provided with location information and directed to avoid fishing in that area. This mechanism only works if vessel operators submit their fishing data and crab bycatch to the consultant in a timely fashion.

Vessel operators also voluntarily release their confidential fishing information to ADF&G so that it can be used in this and other reports to help the BOF make informed decisions on management issues in areas where few fishermen participate.

YAKUTAT REGISTRATION AREA

The Yakutat Registration Area is defined as Area D, described in 5 AAC 38.160, and all waters of District 16 as described in 5 AAC 31.105(p). These descriptions include those waters in the GOA north of the latitude of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and east of the longitude of Cape Suckling at 144° W. long. For management purposes these waters are divided into two management areas – Area D and District 16 (Figure 3). The waters of Yakutat Bay east of a line from the easternmost tip of Ocean Cape at 59°32.05' N. lat., 139°52.03' W. long. to the southernmost tip of Point Manby at 59°41.07' N. lat., 140°18.06' W. long. are closed to the taking of scallops (Figure 3).

HISTORIC BACKGROUND

The earliest years of the fishery occurred in Area D and were very productive. Previously unfished biomass supported harvests of over 900,000 pounds in 1968 and over 800,000 pounds in 1969 (Table 5). These years were followed by two decades of reduced effort and harvests. In late spring of 1991, Yakutat Bay was closed to commercial scallop dredging by the Board of Fisheries. A statewide trend of increasing interest and participation in scallop fisheries in the early 1990s culminated in a peak harvest of over one million pounds in Area D in 1992 (Table 5). In 1993, guideline harvest ranges were first established under the Interim Management Plan for Commercial Scallop Fisheries in Alaska for registration areas where scallop fishing traditionally occurred. This included the Yakutat Registration Area.

Season closures also went into effect in 1993, with separate winter and summer fisheries in 1993 and 1994 (Table 5). The Board of Fisheries formally changed the opening date for the winter fishery in late 1994 from January 1 to January 10, and from a split season to a single winter season. The single winter season lasted through 1997. At the Board of Fisheries meeting in 1997 the regulatory season was changed to July 1-February 15.

The fisheries in District 16 started in 1980 as stocks in Area D to the north and west were fished down (Table 5). Interest and harvests have been generally low and intermittent. District 16 stocks have been spared much of the roller coaster highs and lows prior to implementation of the ASFMP in 1993. Only a few vessels fished each season, with a maximum of eight vessels in 1994 (Table 5). The peak harvest of 162,888 pounds occurred in 1990 (Table 5), with an overall historical average of approximately 31,000 pounds in years when effort did occur. Prior to 1993, this fishery was open all year, with an accounting period of January 1 through December 31. Starting in 1993, the statewide management plan was implemented. For Southeast Alaska it specified a split season, with a winter fishery starting on January 1 and a summer fishery starting on July 1. In 1994, because of high anticipated effort and catch levels, the winter season opened and closed after a one-day fishery on January 20. The following summer season, which opened by regulation on July 1 and closed by emergency order on October 31, was not as intense because productive areas in other parts of the state were open concurrently. In 1995, there was only a winter fishery. There were two seasons in 1996. The first one opened in state waters only on January 10 and closed on January 20. The summer fishery opened in federal waters on August

1 and continued through the fall to close on November 29. In 1997, regulations changed so that the season was opened on July 1 and extended to February 15 (Bishop and Stratman 2006).

Mandatory observers are required on each vessel fishing for scallops in the Yakutat Registration Area. The observer program has two main goals: to monitor bycatch and to collect biological and commercial fishing information about the weathervane scallop. Observer sampling of the scallop catch and discarded scallops allows determination of the stock size composition. In addition, shells are collected for ageing in order to determine the age structure population dynamics of Yakutat Registration Area weathervane scallop populations (Bishop and Stratman 2006).

Dungeness and Tanner crab are captured incidentally in scallop dredges in the Yakutat fishery; however, there are no crab bycatch caps established. Although the Alaska State Fishery Management Plan states that bycatch limits may be required for scallop fisheries opened by permit, no bycatch limits have been established to date for the scallop fishery in the Yakutat Registration Area since there is yet no annual survey in existence to estimate the population of Tanner crab (Barnhart and Rosenkranz 2000).

2005/06 FISHERY

The 2005/06 scallop fishing season in the Yakutat Registration Area was open July 1, 2005 through February 15, 2006. Two catcher-processors fished in the Yakutat Registration Area. Recent increases in scallop prices led to increased effort and harvest during the 2005/06 Yakutat scallop fishery, with a total of about 214,000 lbs of scallop meats landed from Area D and District 16 combined (Tables 6 and 7). Yakutat Registration Area-wide CPUE, which averaged 46 lbs meat/dredge hr during the 2000/01–2004/05 seasons, fell to 39 lbs meat/dredge hr for 2005/06.

Based on inseason observer reports, estimated Tanner crab bycatch increased from less than 1,000 crabs during the 2004/05 season to 5,364 crabs during the 2005/06 Yakutat scallop fishery for Area D and District 16 combined. The Tanner crab bycatch rate also increased, moving from about 1/3 crab/dredge hr during 2004/05 to about 1 crab/dredge hr during 2005/06. These rates remain low compared to other scallop fishing areas in the state. An estimated 394 Dungeness crabs and 518 halibut were also incidentally caught in the 2005/06 Yakutat Registration Area scallop fishery.

Area D

Area D has as its western boundary the longitude of Cape Suckling (144° W. long.) and as its southern boundary a line extending seaward from the western tip of Cape Fairweather, at 58°47.89' N. lat., 137°56.68' W. long., to the intersection with the seaward limit of the three-nautical-mile territorial sea at 58°45.91' N. lat., 138°01.53 W. long (Figure 3).

The GHR for Area D was set at zero to 200,000 pounds of scallop meats (Table 7). Two catcher processors participated in the fishery in Area D. Based on indications from observer reports that upper-end harvest caps would be met, Area D was closed by emergency order on January 25, 2006. The Area D scallop harvest as reported on fish tickets totaled 199,351 pounds of scallop meats (Table 7).

Figure 6 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in Area D, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Area D

scallop population. Recruitment to the harvestable population (scallops >100 mm SH) appears to continue. Histograms of shell height distributions for Area D show few changes between the 2004/05 and 2005/06 seasons. Scallops in the 120–130 mm SH range continue to dominate harvests, with few larger animals taken. The average SH of retained scallops in Area D during the 2005/06 season was 123 mm as compared to 124 mm SH during the previous season (Table 7).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 7. The graphs depicting round weight of retained scallops, meat weight of retained scallops, and total dredge hours demonstrate the increased effort seen in the 2005/06 fishery. The graph depicting CPUE shows little change in CPUE from the 2004/05 fishery, and relatively stable catch rates for the previous six seasons.

Stock Status

The weathervane scallop population in Area D of the Yakutat Registration Area is not annually surveyed and no estimate of abundance has been made. As scallop survey technology is advanced, this population will likely be surveyed. The 199,351 pounds of scallop meats harvested in the 2005/06 fishery was the highest harvest taken in the past six seasons (Table 7). However, due to fairly constant catch rates and a large increase in dredge hours (Table 7), it is more likely the increased harvest was due to an increase in effort, rather than an increased abundance of marketable sized scallops.

District 16

District 16 is defined in regulation as waters that are north of a line running west from the southernmost tip of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and south of a line extending seaward from the western tip of Cape Fairweather, at 58°47.89' N. lat., 137°56.68' W. long., to the intersection with the seaward limit of the three-nautical-mile territorial sea at 58°45.91' N. lat., 138°01.53 W. long (Figure 3).

The GHR for District 16 was set at zero to 35,000 pounds of scallop meats (Table 6). Two catcher processors participated in the fishery in District 16. The upper end of the GHR was not reached in District 16 during the 2005/06 season and the fishery was closed by regulation on February 15, 2006. The District 16 scallop harvest as reported on fish tickets totaled 13,650 pounds of scallop meats (Table 6).

Figure 4 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in District 16, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the District 16 scallop population. Recruitment to the harvestable population (scallops >100 mm SH) appears to continue. Histograms of shell height distributions for District 16 show slight changes from the 2004/05 to 2005/06 seasons, with a slightly higher percentage of smaller scallops taken in the 2005/06 season. Scallops in the 110–120 mm SH range continue to dominate harvests, with few larger animals taken. The average SH of retained scallops in District 16 during the 2005/06 season was 119 mm as compared to 120 mm SH during the previous season (Table 6).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour

(meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 5. The graphs depicting round weight of retained scallops, meat weight of retained scallops, and CPUE show a decrease in harvest and CPUE from 2004/05 to the 2005/06 season. The graph depicting total dredge hours in the 2005/06 season shows little change in total effort from the 2004/05 season.

Stock Status

The weathervane scallop population in District 16 of the Yakutat Registration Area is not annually surveyed and no estimate of abundance has been made. As scallop survey technology is advanced, this population will likely be surveyed. The 13,650 pounds of scallop meats harvested in the 2005/06 fishery was a 45% reduction in harvest from the previous season (Table 6). With dredge hours remaining relatively stable between the 2004/05 and 2005/06 seasons, and a corresponding drop in harvest and CPUE between those same seasons (Table 6), it is possible that there was a decrease in abundance of marketable sized scallops in District 16.

PRINCE WILLIAM SOUND REGISTRATION AREA

Prince William Sound (PWS) Registration Area E includes territorial waters of Alaska from 144° 00' W. long. near Cape Suckling, to Cape Fairfield at 148°50.25' W. long. (Figure 8). The PWS Area is comprised of the Inside and Outside Districts. The Outside District is subdivided into the Eastern and Western Sections at 147° W. long. Only the Eastern Section of the Outside District is open to scallop fishing.

HISTORIC BACKGROUND

The commercial fishery for weathervane scallops in the PWS Area occurs in the proximity of Kayak Island and typically more than 3 miles from shore (Figure 8). From 1992 through 2004 total scallop harvests in the PWS area have ranged 18,000 lb in 1997-98 to 208,000 lb in 1992, while participation has ranged from 1 to 7 vessels (Table 8).

The initial scallop fishery in the PWS Area occurred in 1992. A harvest level of 64,000 lb for waters east of 147° 00' W. long. was determined in season using area-swept methods and a 10% harvest rate (unpublished survey data). The fishery began in February and closed in April with a harvest total of approximately 209,000 lb of meats by 4 vessels (Table 9). The discrepancy between the 1992 intended harvest level and actual harvest was attributed to a lack of timely and accurate catch reporting and insufficient data about the scallop biomass.

In 1993, the Interim Management Plan for Commercial Scallop Fisheries in Alaska established the GHR for weathervane scallops in Area E as 0-50,000 lb of scallop meats. The 1993 season opened July 15 with a 50,000 lb GHR cap and closed July 18 with seven vessels landing 63,068 lb of meats.

The Alaska Scallop Fishery Management Plan (BOF adopted in 1994) changed the season opening date from July 1 to January 10 with closure by emergency order. In addition, closure areas in eastern PWS and along the Copper River Delta to protect depressed Tanner crab and Dungeness crab stocks were identified. The 1994 commercial scallop season did not open due to the change in the season opening date as it would have resulted in doubling the harvest in a single cycle.

The 1995 weathervane scallop fishery opened January 10 and closed January 26 when the 50,000 lb GHR cap was attained. Subsequent to the closure, an unlicensed vessel fished in federal waters off of Kayak Island and harvested an additional 58,000 lb of scallop meats. Federal

fisheries managers subsequently closed all scallop fisheries in federal waters off Alaska. In August 1995, ADF&G initiated a fishery-independent scallop survey in waters east of Kayak Island to assess stock condition and effects of the postseason harvest.

The January 1996 commercial scallop season remained closed while federal fisheries regulations were restructured. However, ADF&G conducted a systematic area-swept assessment survey in the proximity of Kayak Island using an 8-ft New Bedford style dredge donated by the scallop industry. The dredge was equipped with a liner to maximize retention of scallops of all sizes to facilitate sampling for age, size, and sex. This initial effort established the precedent of a biennial survey to establish GHRs for two consecutive fishing seasons. In March of 1997, the BOF adopted a regulation changing season opening date from January 10 back to July 1.

In 1998, ADF&G expanded its assessment survey to include waters located west of Kayak Island and used these data to establish separate GHRs for waters east and west of Cape Saint Elias (Figure 9). Scallop beds were determined to occupy fairly discrete and limited areas with the highest concentrations occurring in federal waters. Based on results of this survey ADF&G announced a GHR of 6,000 and 14,000 lb of scallop meats for east and west areas respectively.

In March 2000, the BOF adopted regulations restricting the scallop fishery to the Eastern Section of the Outside District. This measure provided the opportunity for some exploration while protecting areas ADF&G did not assess. Based on improved results of the May 2000 assessment survey, GHRs were increased to 9,000 and 21,000 lb of scallop meats for areas east and west of Cape Saint Elias

The GHR for the 2002/03 and 2003/04 season scallop seasons was set at 6,000 lb and 14,000 lb for the east and west harvest areas respectively. During the 2002/03 season the west side closed on February 14 and the east side closed by regulation on February 15 with a harvest total of 15,641 lb from two vessels. Failure of the fishery to achieve the GHR was attributed to scheduling by participants. Catch rates in the fishery were comparable to previous seasons. During the 2003/04 season the west side closed on January 23 and the eastside closed on January 24 with a fishery harvest total of 19,980 lb from a single vessel.

Following the May 2004 assessment survey, The GHRs for the 2004/05 season were established at 26,000 lb and 24,000 lb for waters east and west of Cape Saint Elias. The east side closed on October 22 and the west side closed by regulation on February 15 with a fishery harvest total of 49,320 lb from two vessels.

2005/06 FISHERY

The 2005/06 scallop season opened July 1 with GHRs of 26,000 and 24,000 lb of scallop meats for harvest areas east and west of Cape Saint Elias. Waters west of the longitude of Cape Saint Elias were closed to commercial scallop fishing on August 13. Waters east of the longitude of Cape Saint Elias closed to commercial scallop fishing on August 22. The total harvest from three vessels was 49,205 lb, Tanner crab bycatch estimates were 173 and 234 for the east and west areas.

Figure 10 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in the PWS fishery based on statistical resampling of the discarded and retained SH measurements in equal proportion. The 2005/06 histogram depicts a fairly narrow range of scallop sizes that supported the fishery with scallop SH of 125–140 mm comprising

approximately 77% of the catch sample. However, recruitment to the scallop population SH < 120 mm is better represented by a broader range of sizes than in other years.

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge-hours, and CPUE expressed in lb of scallop meats per dredge hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 11. The 2005/06 fishery CPUE of 100 meat lb/drg-hr is slightly below average. However, a decline in CPUE was anticipated as two vessels each fished with a single six-ft dredge.

STOCK STATUS

The Central Region commercial fisheries research staff conducts scallop surveys via a systematic area-swept assessment. The survey conducts 1 nautical mile tows with an 8-foot scallop dredge equipped with a fine mesh liner to maximize retention of scallop samples that are used for assessing age and size composition and sexual maturity. Central Region staff is also conducting a dredge catchability study using cameras on the dredge and combining it with some preliminary video scallop work. Fishery-independent surveys of the east and west scallop beds adjacent to Kayak Island (Figure 9) were conducted in 1996, 1998, 2000, 2002 and 2004.

The 2002 assessment survey yielded poor results. Available age composition data indicated poor recruitment for this population. A decline in stock biomass would be expected given the relatively poor recruitment observed in recent years. However, it is likely that population biomass estimates were artificially low due to difficulties with the survey gear. As a precaution, ADF&G applied the GHR from the 1998 assessment levels to the 2002/03 and 2003/04 season scallop seasons.

Results of the 2004 assessment survey were substantially improved and GHRs of 26,000 lb and 24,000 lb for waters east and west of Cape Saint Elias were established by applying harvest rates of 5.2% and 5.3% to the respective population estimates. The combined GHRs are currently at the limit of the guideline harvest range cap established in regulation (0 - 50,000 lb). The GHL established in regulation appears to be appropriate for a long-lived species such as weathervane scallops with a maximum age in excess of 20 years.

Survey age composition has ranged from age-1 zero to age-20. The progression of strong cohorts is somewhat difficult to see in the data. The dominant age classes in most years are between seven and 12 years old, but the full range of age and size classes are observed in the survey data (Table 10). In 67% of the surveys, weighted age composition data indicated that well over ½ of the surveyed population was between ages seven and 12; however the catch of younger and older scallops is still good (Table 10). Such diversity in the age composition of the survey catch as well as in the fishery indicates relatively strong resilience to population disturbances.

COOK INLET REGISTRATION AREA

The Cook Inlet Management Area (Area H) as it applies to the commercial scallop fishery, is defined as those waters of Cook Inlet and the outer Kenai Peninsula located north of the latitude of Cape Douglas (58° 51.10' N. lat.) on the Alaska Peninsula and west of the longitude of Cape Fairfield (148° 50.25' W. long.) (Figure 12). The management area is divided into seven shellfish districts: Northern, Central, Kamishak, Southern, Barren Islands, Outer, and Eastern.

HISTORIC BACKGROUND

The commercial Pacific weathervane scallop fishery in the Cook Inlet Management Area dates to 1983 when the department first issued commissioner's permits for fishing (Table 11). Permits stipulated fishing in the Kamishak District only, with a single 6-foot dredge with 4-inch rings, logbooks, contact with ADF&G prior to and at the completion of each trip, and accommodation of a department observer upon request. By 1984, the dredge and ring size restrictions and a Southern District scallop closure were in regulation. In 1985, the BOF established an August 15 through October 31 regulatory season in the Kamishak District and a GHR of 10,000 to 20,000 pounds of scallop meats. Currently, the Southern District is closed to scallop fishing by regulation to protect crab stocks, while the Outer and Eastern Districts are open to exploratory fishing under a permit issued by ADF&G.

With the exception of a single landing from the Outer District in 1987, the "north" scallop bed, located east of Augustine Island in the Kamishak District produced all harvests from 1983 through 2001 (Table 11; Figure 13). Beginning in 2002 the "south bed" accounted for some or all of a given year's harvest.

2005 FISHERY

The 2005 scallop season in the Cook Inlet Area opened at noon August 15 with a 7,000 lb GHR. Fishing was restricted to the north bed based upon the May 2005 survey results that indicated a stable biomass for this area from the previous survey. The south bed remained closed due to a sharp decline in biomass apparent from the 2005 survey. Bycatch caps of 35,000 Tanner crab and 60 king crab were set based upon the dredge survey's Tanner crab catches and a static king crab bycatch level. Two vessels participated and catch data are confidential. The season closed at 0730 hours August 31 based upon catch projections indicating the GHR would be achieved at that time.

Kamishak District

The Kamishak Bay District is defined as all waters enclosed by a line from 59° 46.15' N. lat., 153° 00.70' W. long., then east to 59° 46.15' N. lat., 152° 20.00' W. long., then south to 59° 03.42' N. lat., 152° 20.00' W. long., then southwesterly to Cape Douglas (58° 51.10' N. lat.; Figure 12).

Initial fishing in the Kamishak District began in 1983. In 1987, ADF&G closed the Kamishak scallop fishery by emergency order when the stock declined dramatically. Although the fishery reopened in 1988, no commercial effort occurred in Cook Inlet from 1988 through 1992 because fishermen anticipated poor fishery performance would result in further closure of the fishery. In 1993, the fishery "redeveloped" when three boats harvested 20,115 lb. Logbooks, shell samples, and fishery performance data revealed a small, but healthy, stock of scallops in the Kamishak District.

In early 1995, efforts of a single vessel commercially fishing scallops off the Prince William Sound Management Area exposed a regulatory loophole that resulted in a scallop fishing closure in all federal waters for the balance of 1995. This action effectively closed the Kamishak Bay fishery, which occurs almost exclusively in federal waters. Based on the 1995 closure and results of a 1996 survey, ADF&G set a 1996 fishery GHR of 28,000 lb. Subsequent fishery GHRs from 1997 to 2002 remained at the maximum 20,000 lb level and with the exception of 1998, when inclement weather restricted fishing by the single participating vessel, have been achieved prior to the regulatory

closure date (Table 12). ADF&G has monitored the fishery via logbooks, shell samples, onboard observations, and skipper interviews. Fishery CPUE in pounds of scallop meats caught per hour towed (lb/hr), increased steadily from approximately 50 lb/hr in 1996 to 1998 to a high of 73 lb/hr in 2000 and declined again in 2001. Effort has ranged from one to five vessels. Tanner crab bycatch caps, equal to 0.5% of the estimated Tanner crab abundance, have been set annually and have ranged from 20,000 to 35,000 crab. For king crab, the annual bycatch level has been set at 60, due to continued depression of those stocks. Annual crab bycatch has ranged from 205 to 10,200 Tanner crab and 9 to 53 king crab.

During the 2002 fishery, CPUE declined dramatically to 25 lb/hr and the incidence of “cluckers”, dead scallops with the valves connected but lacking soft tissues, increased to a level previously unobserved in Cook Inlet. Ages of cluckers sampled in the commercial fishery ranged from 2 to 16 years with the majority being age 6 to 8 years. Although age distributions of cluckers compared to live samples appeared similar, a Chi-square test showed a statistically significant difference ($\chi^2 < .01$, 15 d.f.). This difference may be partially attributable to the small sample size of cluckers ($n = 110$) relative to the live scallop sample size ($n = 476$) and natural mortality.

Scallops sampled from the 2002 fishery and analyzed by ADF&G’s pathology laboratory provided no conclusive explanation for the increased mortality in the stock but did suggest infestation by a polychaete worm *Polydora sp.* that can burrow through the scallop shell and cause toxic mortality. Typically, this occurs through formation of a “mud blister” or pustular abscess along the inner layer of the shell. Anecdotal information suggests that fishermen observed a greater incidence of mud blisters during the 2002 season. Salinity, water temperature, and substrate composition appear to be the determining factors in worm abundance.

Due to a low fishery CPUE and the time-intensive process of sorting live from dead scallops, fishery participants shifted to the “south” bed, located southeast of Augustine Island (Figure 13). Still within the Kamishak District, but previously unsurveyed by ADF&G, the new bed yielded a slightly higher CPUE of 33 lb/hr and a lower incidence of cluckers, reducing the catch sorting time. Age structure in the newly fished area was older with 50% of the scallop fishery samples being older than age 11. In response to the decline in CPUE, the unexplained mortality in the traditional fishing area, and the lack of assessment data for the new bed, ADF&G reduced the 2002 fishery GHL to 9,000 lb.

Following a survey and stock assessment of both beds in May 2003, ADF&G announced the entire 20,000 lb GHL would be harvested from the south bed (Table 12). This harvest level equated to approximately a 5.5% harvest rate. Although harvest data are confidential, catch rates in the fishery were approximately half those observed in 2002. In 2004, the fishery was also managed for a 20,000 lb GHL. Although both beds were open to fishing, a maximum allowable harvest of 6,500 lb of meat was set for the north bed. In the preseason news release, ADF&G announced intent to use this opportunity to assess the status of scallops in the north bed. Catch rates in the north bed were less than half those observed in 2002 and fishing closed on August 19, approximately 4 days after opening. Fishing in the south bed closed September 9 due to catch rates below those observed in the 2003 fishery.

STOCK STATUS

Fishery-independent surveys of the north and south scallop beds in Kamishak Bay (Figure 13) were conducted in 2003, and 2005. In the years prior to 2003 (1984, 1996, 1998, 1999 and

2001), the survey covered only the north scallop bed (as the south bed had not yet been detected).

The survey conducts 1 nautical mile tows with an 8-foot scallop dredge equipped with a fine mesh liner to maximize retention of scallop samples that are used for assessing age and size composition and sexual maturity (Bechtol and Gustafson 2002). The survey involves a quasi-adaptive systematic sampling design using a grid of 1.0 by 1.0 nautical mile squares placed over a chart of the northern and southern weathervane scallop beds located directly east of Augustine Island (Figure 13). This survey is now conducted on a biennial basis with the next survey in 2007, and upcoming modifications to the sampling design will allow extrapolation of dredge tow data to be expanded to a standardized area.

The 2005 scallop biomass estimate for the north bed was 2.7 million lb and for the south bed, 1.37 million lb. Meat recoveries were 6.9% of whole scallop weight. The steep decline in biomass experienced by Kamishak District scallops has been reflected in both ADF&G's survey and fishery CPUE. The north bed declined by approximately 67% between the 2001 and 2003 surveys and appeared to stabilize based upon the 2005 survey. Similarly, the south bed declined by approximately 75% between the 2003 and 2005 surveys.

Survey age composition has ranged from young-of-the-year age zero to age 24 (Bechtol 2000; Bechtol and Gustafson 2002). The progression of strong cohorts can be seen growing across some calendar years, and young age classes tend to be the most abundant age classes in the survey. In 56% of the surveys, weighted age composition data indicated that over ½ of the surveyed population were between ages zero and seven; however the catch of older scallops is still quite good (Table 13). Such diversity in the age composition of the survey catch as well as in the fishery indicates relatively strong resilience to population disturbances. This is likely due to the fact that: (1) the population is supported by a wide range of age classes; and (2) the fishery is not strictly dependent upon recruitment pulses. Size-at-age indicates asymptotic growth for the Kamishak Bay scallop population. The greatest annual growth in height occurs during the first 5 years of life, with growth rates decreasing rapidly to less than 1% per year after about age 13. Annual growth in weight is greatest from about age 2 to age 5.

The regulatory maximum GHL for the Kamishak Bay scallop fishery is 20,000 lb of meats. A retrospective analysis using a preliminary age-structured model suggested that harvest rates of the Kamishak Bay population ranged from 2.6 to 4.7% of the estimated population (Bechtol 2000). These harvest rates are substantially less than the instantaneous natural mortality rate of 14% estimated by the age-structured model, and also less than the median natural mortality estimate of 15% calculated by several methods for weathervane scallops off Alaska. Thus, the 20,000 lb GHL established in regulation is moderately conservative, which is probably appropriate for a long-lived species such as weathervane scallops with a maximum age in excess of 20 years.

All other Districts

Aside from some exploratory fishing in the Outer District in 1987, there has been no interest in fishing for scallops in districts other than the Kamishak District. No concentrations of scallops have been identified during either department surveys or in anecdotal reports from fishermen. Although regulations provide for a permit fishery in the Outer and Eastern Districts, including an observer requirement, it is unlikely ADF&G would issue a permit for exploratory fishing without first

obtaining information on scallop abundance. ADF&G does not anticipate any interest in fishing these districts.

KODIAK REGISTRATION AREA

The Kodiak Registration Area (Area K) includes the waters of the Pacific Ocean south of the latitude of Cape Douglas (58° 51.10' N lat.), east of the longitude of Cape Kumlik (157° 27' W long.) and west of 149° W long. (Figure 16). The Kodiak Registration Area is comprised of the Northeast, Shelikof, and Semidi Island Districts. Extensive areas are closed to scallop fishing to protect crab habitat.

HISTORIC BACKGROUND

In 1967, when commercial fishing for weathervane scallops originated in Alaska, vessel operators targeted fishing grounds along the east side of Kodiak Island. By 1968, 734,084 lb of scallop meats were landed from eight vessels (Table 14). The Kodiak scallop fishery peaked in 1970 when 1.4 million lb of scallop meats were landed from seven vessels. Catches declined by the mid-1970s with no participation in 1977 or 1978. Since 1979, landings have fluctuated from 24,826 lb to 689,497 lb of scallop meats, excluding 1995/96 when all federal waters within Alaska were closed to scallop fishing by federal emergency rule and state waters of the Kodiak Registration Area were closed by an ADF&G emergency order.

When the Alaska weathervane scallop fishery began in 1967, there were no closed seasons. Within two years from inception of the scallop fishery, concerns about dredging impacts on crab resources, specifically red king crab, began to develop. In 1969, by emergency order, the ADF&G closed extensive areas off the south end of Kodiak Island as well as Marmot Bay at the north end of Kodiak Island, to scallop fishing. These areas were closed due to concerns about crab bycatch and conflict with other gear types. Subsequently, the BOF adopted the department's recommendation, and closed both areas by regulation. During the early 1970s, to protect spawning, molting, or softshell red king crab, regulatory season opening dates of either June 1 or July 15 (depending upon geographical area) through March 31 were established by the BOF (Barnhart 2003). In 1990, to protect depressed red king and Tanner crab populations, the BOF closed scallop fishing in Kodiak's westside bays which had been previously closed to non-pelagic trawling. With development of the interim Alaska Scallop Fishery Management Plan in 1993, crab bycatch limits were developed for the Kodiak Area. In 1994, with passage of the Alaska Scallop Fishery Management Plan, the regulatory season for weathervane scallops in the Westward Region was established by the BOF as July 1 through February 15.

2005/06 FISHERY

The 2005/06 scallop fishing season was open July 1, 2005 through February 15, 2006. Two catcher-processors fished in the Kodiak Registration Area. To facilitate distribution of fishing effort and crab bycatch limits, red king crab districts as described in 5 AAC 34.405 were utilized.

Northeast District

The Northeast District (Figure 16) of the Kodiak Registration Area as applied to the scallop fishery includes all waters northeast of a line extending 180° from the easternmost tip of Cape Barnabas, east of a line from the northernmost tip of Inner Point on Kodiak Island to the southernmost tip of Afognak Point, east of 152° 30' W long. in Shuyak Strait, and east of the longitude of the northernmost tip of Shuyak Island at 152° 20' W. long.

The GHR for the Northeast District was set at zero to 80,000 lb of scallop meats (Table 15). For a second consecutive year, the GHR for the Northeast District of the Kodiak Registration Area was subdivided into harvest caps by individual statistical area or group of statistical areas. A statistical area is a defined block 30' of latitude by 1° of longitude in offshore waters, and smaller irregular areas inshore which are used as catch reporting areas for shellfish harvest (Urban 1996). The harvest cap in statistical area 525702 was 30,000 lb of scallop meats while the harvest cap in statistical area 525630 was 25,000 lb of scallop meats. The remaining 25,000 lb of the overall GHR was allocated to any other waters open to scallop fishing in the Northeast District.

Three catcher-processors participated in the fishery with initial effort in early July. Based on inseason observer reports, an estimated 28,543 Tanner crabs and no red king crabs were caught from a bycatch limit of 449,403 Tanner crabs and 45 red king crabs. Based on indications from observer reports that upper-end harvest caps would be met, statistical area 525630 was closed on December 11, 2005, the remainder of the Northeast District except statistical area 525702 was closed on December 19, 2005, and statistical area 525702 was closed on January 17, 2006. The Northeast District scallop harvest as reported on fish tickets, totaled 79,990 lb of scallop meats (Table 15).

Figure 17 depicts the estimated SH distributions of the retained and discarded scallop catch in the Northeast District, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Northeast District scallop population with above average recruitment in 2005/06, based on the estimated frequency of scallops <115 mm SH in the size distribution. A broad range of scallop sizes supports the fishery. The average SH of retained scallops in the Northeast District during the 2005/06 season was 139 mm as compared to 144 mm SH during the previous season (Table 16).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 18. Between the 1999/2000 and 2004/05 seasons, the fishery in this district was characterized by relatively steady effort (dredge hours), level harvest of meats, and stable to increasing fishery performance as measured by CPUE in meat lb/drg-hr. However, during the 2005/06 season, dredge hours increased and CPUE decreased with the entry of a participant unfamiliar with the fishing grounds.

Stock Status

The weathervane scallop population in the Northeast District of the Kodiak Registration Area is not currently surveyed and no estimate of abundance has been made. As scallop survey technology is advanced, this population will likely be surveyed. Since the 1999/2000 season, the commercial catch has remained level, ranging from 77,119 to 80,470 lb of scallop meats (Table 16). Over the same time period, the estimated round weight of the retained scallop catch ranged from 681,192 lb to 952,972 lb (Table 17).

Shelikof District

The Shelikof District of the Kodiak Registration Area includes all waters north of a line from the westernmost tip of Cape Ikolik to the southernmost tip of Cape Kilokak, west of a line from the northernmost tip of Inner Point on Kodiak Island to the southernmost tip of Afognak Point, west

of 152° 30' W long. in Shuyak Strait, and west of the longitude of the northernmost tip of Shuyak Island at 152° 20' W long. (Figure 16).

The GHR for the Shelikof District was set at zero to 160,000 lb of scallop meats (Table 18). The district was divided into north and south zones at the latitude of Cape Chiniak, 58° 30' N lat., with a harvest cap in the north zone of 130,000 lb of scallop meats and a harvest cap in the south zone of 30,000 lb of scallop meats. Two catcher-processors participated in the fishery with initial effort in early-July. Based on inseason observer reports, an estimated 17,149 Tanner crabs and no red king crabs were caught from a bycatch limit of 51,822 Tanner crabs and 1,345 red king crabs. Based on indications from observer reports that upper-end harvest caps would be met, the north zone was closed on December 9, 2005. The remainder of the district including the south zone, closed on December 11, 2005. The Shelikof District scallop harvest as reported on fish tickets, totaled 159,941 lb of scallop meats (Table 16, 18).

Figure 19 depicts the estimated SH distributions of the retained and discarded scallop catch in the Shelikof District, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Shelikof District scallop population with below average recruitment in 2005/06 based on the estimated frequency of scallops <115 mm SH in the size distribution. A broad range of scallop sizes has historically supported the fishery. The average SH of retained scallops in the Shelikof District during the 2005/06 season of 136 mm was similar to the average SH of 137mm recorded during the previous season. Since the 1993/94 season, the average annual SH has ranged from 128 mm to 140 mm (Table 16).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE (meat lb/drg-hr) in the Shelikof District from 1994/95 through 2005/06 is depicted in Figure 20. CPUE increased from 50 meat lb/drg-hr during the 2004/05 season to 70 meat lb/drg-hr in 2005/06 season (Table 18).

Stock Status

The weathervane scallop population in the Shelikof District of the Kodiak Registration Area is not currently surveyed. Experimental scallop video research was conducted in the Shelikof District in 2004. A scallop video stock assessment is planned for 2007. Between the 1998/1999 and 2003/04 seasons, the commercial catch remained level, as the department allowed the annual harvest to reach the upper limit of the GHR, set at 180,000 lb of scallop meats. However, in 2004/05, the season was closed prior to reaching the GHR cap due to the attainment of the CBL, and in the 2005/06 season, the GHR cap was lowered from 180,000 lb of scallop meats to 160,000 lb of scallop meats. The estimated round weight of the retained scallop catch between 1998/1999 and 2005/06 ranged from 1,454,806 lb to 2,129,025 lb, averaging 1,788,673 lb each season (Table 17).

Semidi Island District

The Semidi Island District of the Kodiak Registration Area includes all Pacific Ocean waters west of the longitude of Cape Kilokak (156° 20.22' W long.) and east of the longitude of Cape Kumlik at 157° 27' W long. (Figure 16). A GHR has not been developed for this district.

State waters of the Semidi Island District were closed to scallop dredging by the BOF at the March 2000 meeting; however, federal waters (EEZ) remain open. No fishing activity occurred

in the Semidi Island District during the 2005/06 fishing season, although it was open from July 1, 2005 to February 15, 2006.

Since the 1993/94 season, harvest has ranged from zero to 55,487 lb of scallop meats (Table 16, 19). Considering years when fishing occurred, CPUE ranged from 16 to 37 meat lb/drg-hr, which is lower than any other registration area or district within the Westward Region (Table 16, 19).

Stock Status

The weathervane scallop population in the Semidi Island District is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population. No fishing effort has occurred since the BOF closed state waters to scallop fishing in 2000.

ALASKA PENINSULA REGISTRATION AREA

The Alaska Peninsula Registration Area (Area M) includes waters of the Pacific Ocean west of the longitude of Cape Kumlik (157° 27' W long.) and east of the longitude of Scotch Cap Light at 164° 44' W long. (Figure 21).

Areas closed to fishing include all state waters and offshore waters of Unimak Bight and Mitrofanina Island. Justification for the Unimak Bight closure adopted in the early 1970s was to protect king crab habitat. Closing the area to weathervane scallop fishing removed potential conflict with other gear types such as crab pots. The Mitrofanina Island closure was adopted in the mid-1980s to protect Tanner crabs.

HISTORIC BACKGROUND

Historic fishing effort for scallops in the Alaska Peninsula Registration Area was sporadic. Most catch and effort information prior to 1993 is confidential because few fishermen participated in any given year. However, the average annual harvest during the nine years of participation prior to 1993 was 41,888 lb of scallop meats. The highest harvest occurred in 1982 when a reported 205,691 lb of scallop meats were landed from six vessels (Table 18). Since the 1993/94 season, CPUE has ranged from 24 to 61 meat lb/drg-hr (Table 19). Commercial harvest data from this registration area was misreported in the 1980s as evidenced in logbooks seized by Fish and Wildlife Protection agents. The extent of misreporting in the 1980s is unknown, but may have lead to artificially high catch data attributed to the Alaska Peninsula Registration Area in some years.

2005/06 FISHERY

In the Alaska Peninsula Registration Area, the historically important scallop grounds between 160° W long. and 161° W long. were open for a small exploratory fishery with a GHR of 0 to 10,000 lb of scallop meat (Table 19). The GHR for the remainder of the registration area, outside of 160° W long. and 161° W long. was 0 to 10,000 lb of scallop meat, for a total GHR of 0 to 20,000 lb for the area (Table 21).

There was no effort in this fishery during the 2005/06 season (Table 20).

STOCK STATUS

The weathervane scallop population in the Alaska Peninsula Registration Area is not currently surveyed and no estimate of abundance has been made. There are currently no plans to survey this population.

BERING SEA REGISTRATION AREA

The Bering Sea Registration Area (Area Q) includes waters of the Bering Sea north of a line extending from the latitude of Cape Sarichef at 54° 36' N lat. to 171° W long., north to 55° 30' and west to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990 (Figure 22). Large portions of the eastern Bering Sea shelf and the Pribilof Islands Habitat Conservation Area are closed to scallop fishing to protect blue king crab *Paralithodes platypus*, red king crab, juvenile Pacific halibut *Hippoglossus stenolepis*, and to provide for habitat conservation.

HISTORIC BACKGROUND

ADF&G records indicate that scallops were first harvested from the Bering Sea in 1987, and then again in 1990 and 1991 (Table 22). During those years, few fishermen participated in any given year, so catch and effort information is confidential. However, the average annual catch for the three confidential years was 68,189 lb of scallop meats. No additional landings were made from this area until calendar year 1993 (January 1-June 30, 1993 and 1993/94 regulatory seasons combined) when 605,953 lb of scallop meats were landed from ten different vessels. During the 1994/95 fishery, 505,439 lb of scallop meats were landed from eight different vessels. The 1995/96 fishery was closed by federal emergency rule which closed all federal waters within Alaska. Between the 1993/94 and 1999/2000 regulatory seasons, scallop catches were constrained by Tanner crab or snow crab CBLs. Over this same time period, catches averaged 127,000 lb of scallop meats per season. Since the 2000/01 season, the Bering Sea fishery has not been constrained by CBLs.

2005/06 FISHERY

The GHR for the Bering Sea Registration Area was set at zero to 50,000 lb of scallop meat (Table 23). One catcher-processor participated in the Bering Sea fishery during December 2005. Inseason observer reports showed that an estimated 16,618 Tanner crabs, 5,532 snow and hybrid crabs, and zero red king crabs were caught from a bycatch limit of 65,000 Tanner crabs, 150,000 snow and hybrid crabs and 500 red king crabs. The 2005/06 fishery closed by regulation on February 15, 2006. The Bering Sea scallop harvest as reported on fish tickets, totaled 23,220 lb of scallop meats (Table 22, 23).

Figure 23 depicts the estimated SH distributions of the retained and discarded scallop catch in the Bering Sea Registration Area, based on statistical resampling of the discarded and retained SH measurements in equal proportion. With exception of the 1998/99 and 2001/02 seasons, there has been little recruitment to the population. Predominately large, old animals support the fishery. Since the 1993/94 season when onboard observers began collecting data, average scallop SH has ranged from 141 mm to 154 mm (Table 16). The 2005/06 average SH of 154 mm is the largest since record keeping began in 1993. Bering Sea scallops are among the largest scallops harvested in the Westward Region.

A summary of the scallop catch in round weight (lb) of retained scallops, scallop meat weight (lb) of retained scallops, dredge hours, and CPUE (meat lb/drg-hr) is depicted in Figure 24. The 2005/06 season CPUE of 39 meat lb/drg-hr was slightly higher than the previous season's CPUE of 36 meat lb/drg-hr, the lowest since onboard data collection was initiated during the 1993/94 season (Table 23).

STOCK STATUS

Experimental scallop video stock assessment research was conducted in May 2003. The video stock assessment survey methodology is in a developmental phase; however, there are some interesting results with regard to scallop distribution in the Bering Sea. Typically, scallop beds in the Gulf of Alaska are elongated, have well defined margins and are oriented in a north-south direction consistent with the prevailing coastal currents. However, the Bering Sea scallop bed does not exhibit those same characteristics. The margins are not well defined; nor is it oriented in a north-south direction. The scallops are distributed over a large area at low densities; however, at least one weathervane scallop was counted from each video tow. This is consistent with the low CPUE in this fishery. Small scale aggregations of weathervane scallops necessary for successful broadcast spawning were infrequently observed on the video. This is consistent with data collected from the onboard observer program.

The 2005/06 harvest of 23,220 lb of scallop meats was double that of the previous season, when the harvest was the lowest since observers began collecting data (Table 23). The highest catch occurred in calendar year 1993 when 605,953 lb of scallop meats were harvested. Calendar year 1993 includes the pre-scallop management plan harvest of 321,539 lb taken from January 1, 1993 – June 30, 1993 and the post-scallop management plan harvest of 284,414 lb beginning July 1, 1993 (recorded as the 1993/94 regulatory season; Table 22).

Since inception of the onboard observer program in July 1993 (1993/94 season), the estimated round weight of the retained scallop catch ranged from 129,220 lb in 2004/05 to 5,942,912 lb in 1994/95 (Table 17).

DUTCH HARBOR REGISTRATION AREA

The Dutch Harbor Registration Area (Area O) includes Aleutian Island waters west of the longitude of Scotch Cap Light (164° 44' W long.), east of 171°W. long. and south of the latitude of Cape Sarichef at 54° 36' N lat. (Figure 25).

HISTORIC BACKGROUND

In the Dutch Harbor Registration Area, closed waters were established in 1986 to protect crab nursery areas (Figure 25). Prior to the 1993 season, the registration area was open year-round to scallop dredging. At the March 1994 BOF meeting, the regulatory season date for this registration area was established as July 1 through February 15.

The first harvest of weathervane scallops from the Dutch Harbor Registration Area was in 1982 when 62,105 lb of scallop meats were landed from five vessels (Table 24). Catch data for most years between 1985 and 1992 is confidential, because few vessels participated; however, the average annual catch for those years was 203,695 lb of scallop meats. Commercial harvest data from this registration area was misreported in the 1980s as evidenced in logbooks seized by Fish and Wildlife Protection agents. The extent of misreporting in the 1980s is unknown, but may have lead to artificially high catch data attributed to the Dutch Harbor Registration Area in some years. In addition, productive grounds that contributed significantly to the overall harvest were closed by 1986. Since the 1993/94 season, catches have ranged from zero to 46,432 lb of scallop meats per regulatory season (Table 25). Scallop fishing was limited to state waters during the 1995/96 season because federal waters statewide were closed to scallop fishing by federal emergency rule.

2005/06 FISHERY

The Dutch Harbor Registration Area remained closed for stock conservation.

STOCK STATUS

The Dutch Harbor Registration Area was open one season, 2002/03, out of the last six seasons (Table 24, 25). During that open season one vessel participated, but stopped fishing due to low catches, prior to achieving the upper-end of the GHR. The Dutch Harbor Registration Area may remain closed for up to five years to allow adequate time for juvenile scallops to mature and spawn prior to reopening the fishery under a conservative GHR.

The weathervane scallop population in the Dutch Harbor Registration Area is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population.

ADAK REGISTRATION AREA

The Adak Registration Area (Area R) includes Aleutian Island and Bering Sea waters west of 171°W. long., and east of the U.S.- Russia Convention Line of 1867 and south of 55° 30' N. lat. (Figure 26).

HISTORIC BACKGROUND

ADF&G records indicate that weathervane scallops were first harvested from the Adak Registration Area in 1979, and then again in 1992, and 1995. During those years few fishermen participated in any given year, so catch and effort information is confidential. Little is known about scallop populations in this area.

The Petrel Bank, between 51°30' N lat. and 54° 30' N lat., west of 179° W long. and east of 179° E long. was closed by emergency order on March 21, 1991 due to concerns about king crab bycatch in the pink scallop *Chlamys* fishery (Figure 26). On November 1, 1991, before the initial emergency order expired, a second emergency order was issued closing this area until June 1, 1994. This allowed time for ADF&G to bring the conservation concerns to the attention of the BOF. In 1993, the BOF adopted the department's recommendation, and closed the area by regulation.

2005/06 FISHERY

The 2005/06 fishery opened July 1, 2005 and closed by regulation on February 15, 2006. The GHR for the Adak Registration Area was set at zero to 75,000 lb of scallop meat. No vessels participated in the fishery during 2005/06 season.

STOCK STATUS

The weathervane scallop population in the Adak Registration Area is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population. The continental shelf adjacent to the Aleutian Islands is narrow, providing limited weathervane scallop habitat.

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TABLES AND FIGURES

Table 1.—Historic statewide commercial weathervane scallop number of vessels, number of landings, and harvest, 1967–2005/06.

| Year | Number Vessels | Number Landings ^a | Harvest ^b |
|-------------------|----------------|------------------------------|------------------------|
| 1967 | 2 | 6 | 778 |
| 1968 | 19 | 125 | 1,677,268 |
| 1969 | 19 | 157 | 1,849,947 |
| 1970 | 7 | 137 | 1,440,338 |
| 1971 | 5 | 60 | 931,151 |
| 1972 | 5 | 65 | 1,167,034 |
| 1973 | 5 | 45 | 1,109,405 |
| 1974 | 3 | 29 | 504,438 |
| 1975 | 4 | 56 | 435,672 |
| 1976 | 7 | 21 | 264,788 |
| 1977 | | No Effort | |
| 1978 | | No Effort | |
| 1979 | 1 | 4 | 24,826 ^c |
| 1980 | 8 | 56 | 616,717 ^c |
| 1981 | 18 | 101 | 924,441 |
| 1982 | 13 | 120 | 913,996 |
| 1983 | 5 | 30 | 192,310 |
| 1984 | 6 | 52 | 383,512 |
| 1985 | 7 | 47 | 615,564 |
| 1986 | 8 | 74 | 667,258 |
| 1987 | 4 | 54 | 599,947 ^d |
| 1988 | 4 | 47 | 341,070 |
| 1989 | 7 | 55 | 534,763 |
| 1990 | 9 | 144 | 1,481,136 |
| 1991 | 6 | 136 | 1,136,649 |
| 1992 | 8 | 136 | 1,785,673 |
| 1993 ^c | 7 | 51 | 568,077 |
| 1993/94 | 15 | 111 | 984,583 |
| 1994/95 | 15 | 104 | 1,229,384 ^d |
| 1995/96 | 10 | 29 | 410,753 ^d |
| 1996/97 | 9 | 30 | 732,424 |
| 1997/98 | 9 | 31 | 818,913 |
| 1998/99 | 8 | 35 | 820,845 |
| 1999/2000 | 10 | 22 | 838,046 |

-continued-

Table 1.—Page 2 of 2

| Year | Number Vessels | Number Landings ^a | Harvest ^b |
|---------|----------------|------------------------------|----------------------|
| 2000/01 | 8 | 20 | 750,617 |
| 2001/02 | 6 | 26 | 572,838 |
| 2002/03 | 6 | 28 | 509,455 |
| 2003/04 | 4 | 32 | 500,379 |
| 2004/05 | 5 | 22 | 431,594 |
| 2005/06 | 4 | 23 | 532,741 |

AVERAGE 1990-1994/95 was 136 deliveries per year. January 1-June 30, 1993 deliveries were combined with 1993/94 deliveries and considered a single year. AVERAGE 1995/96-2002/03 was 28 deliveries per year.

^a Prior to and including 1994/95, reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of off-loads. An off-load typically includes multiple fish tickets, normally one fish ticket per week.

^b Pounds of shucked scallop meats.

^c Deliveries of unshucked scallops were converted to shucked meats using a 10% conversion factor.

^d Includes illegal harvest of 59,720 pounds.

^e January 1 through June 30.

Table 2.—Federal and State Weathervane Scallop Permits, 2005/06.

| <u>Federal Scallop License Limitation Permits</u> | | | |
|---|--------------------|-------------------------|---|
| <u>License Holder</u> | <u>Vessel Name</u> | <u>MLOA^a</u> | <u>Dredge-Size Restriction</u> |
| Ocean Fisheries, LLC ^b | Ocean Hunter | 102 | None |
| Alaska Scallop, LLC ^c | Provider | 96 | None |
| Forum Star, Inc. | Forum Star | 97 | None |
| Hogan, Thomas C. | Kilkenny | 75 | 2 scallop dredges combined width less than or equal to 20 feet (6.1m) |
| Hulse, Max et al. | Wayward Wind | 79 | 2 scallop dredges combined width less than or equal to 20 feet (6.1m) |
| Gilmartin, Thomas ^d | Arctic Storm | 70 | None |
| Provider, Inc | Provider | 124 | None |
| Pursuit, Inc | Pursuit | 101 | None |

| <u>State Scallop Limited Entry Vessel Permits^e</u> | | | |
|---|--------------------|----------------------|------------------------------|
| <u>License Holder</u> | <u>Vessel Name</u> | <u>Vessel Length</u> | <u>Permitted Vessel Size</u> |
| Ocean Fisheries, LLC | Ocean Hunter | 102 | Over 80' |
| Provider, Inc | Provider | 123 | Over 80' |
| Carolina Boy, Inc | Carolina Boy | 95 | Over 80' |
| Forum Star, LLC | Forum Star | 96 | Over 80' |
| Future Fisheries | Pursuit | 101 | Permit Cancelled |
| La Brisa, Inc | Wayward Wind | 79 | 80' or less |
| Hogan, Thomas C. | Kilkenny | 75 | 80' or less |
| Gilmartin, Thomas | Arctic Storm | 57 | 80' or less |

^a Maximum length overall measured in feet

^b Original permit holder was Carolina Boy, Inc.

^c Original permit holder was Carolina Girl, Inc.

^d Original permit holder was Oceanic Research Services

^e State limited entry vessel permits do not have gear restrictions. Gear restrictions are contained in Alaska Administrative Code Chapter 38.

Table 3.—Crab bycatch limits by registration area and district, in percent of the crab abundance estimate or number of crab.

| Scallop Registration Areas | Red King Crab | Tanner Crab | Snow Crab |
|--------------------------------------|------------------------|----------------------------|-----------------|
| Yakutat (D) | | | |
| District 16 | ^a | ^a | NA |
| Remainder of Area D | ^a | ^a | NA |
| Prince William Sound (E) | | | |
| Eastern Section of outside District | ^a | East = 2,700; West = 8,700 | NA |
| Cook Inlet (H) | | | |
| Kamishak District | 60 crabs ^b | 0.5% | NA |
| Outer/Easter/Barren Island Districts | ^a | ^a | NA |
| Kodiak (K) | | | |
| Northeast District | 0.5% or 1.0% | 0.5% or 1.0% | NA |
| Shelikof District | 0.5% or 1.0% | 0.5% or 1.0% | NA |
| Semidi District | Regulated inseason | Regulated inseason | NA |
| Alaska Peninsula (M) | 0.5% or 1.0% | 0.5% or 1.0% | NA |
| Bering Sea (Q) | 500 crabs ^b | 3 Tier Approach | 3 Tier Approach |
| Dutch Harbor (O) | 0.5% or 1.0% | 0.5% or 1.0% | NA |
| Adak (R) | 50 ^c | 10,000 ^c | NA |

^a Bycatch caps not established.

^b Based on 0.5% of the Tanner crab population estimated from the 2000 scallop assessment survey

^c Bycatch limit set to allow scallop fleet opportunity to explore and harvest scallop stocks while protecting the crab resource.

NA = Not applicable

Table 4.— Historic commercial catch, effort, and value of weathervane scallops, Yakutat, Area D, 1969–2005/06.

| Season | Number Vessels | Number Landings ^a | Commercial | Average | First Wholesale | | |
|-------------------|----------------|------------------------------|-------------------------|---------------------------|------------------|----------------------|--------------------------|
| | | | Catch (lb) ^b | Landing (lb) ^c | Average Price/lb | Est. Value (dollars) | Number Tows ^d |
| 1969 | 14 | 59 | 837,087 | 14,188 | 0.85 | 711,524 | ^e |
| 1970 | 2 | 2 | 22,726 | 11,363 | 1.00 | 22,726 | ^e |
| 1971 | 3 | 10 | 84,948 | 8,475 | 1.05 | 89,195 | ^e |
| 1972 | 4 | 6 | 128,241 | 21,374 | 1.15 | 147,477 | ^e |
| 1973 | 4 | 4 | 173,700 | 43,425 | 1.20 | 208,440 | ^e |
| 1974 | 2 | 15 | 356,493 | 23,766 | 1.30 | 463,441 | ^e |
| 1975 | 6 | 11 | 122,853 | 11,168 | 1.40 | 171,994 | ^e |
| 1976 | 6 | 15 | 189,543 | 12,636 | 1.59 | 301,373 | ^e |
| 1977 | 2 | 3 | 22,121 | 7,374 | ^e | ^e | ^e |
| 1978 | | | | No Effort | | | |
| 1979 | 1 | 1 | 30 | 30 | 2.78 | 83 | ^e |
| 1980 | 6 | 22 | 255,667 | 18,262 | 3.60 | 920,401 | ^e |
| 1981 | 10 | 36 | 455,858 | 12,663 | 4.00 | 1,823,432 | ^e |
| 1982 | 6 | 26 | 181,939 | 7,015 | 3.25 | 591,302 | ^e |
| 1983 | | | | No Effort | | | |
| 1984 | 2 | | | Confidential | | | |
| 1985 | 2 | | | Confidential | | | |
| 1986 | 2 | | | Confidential | | | |
| 1987 | 1 | | | Confidential | | | |
| 1988 | 1 | | | Confidential | | | |
| 1989 | 1 | | | Confidential | | | |
| 1990 | 8 | 48 | 428,046 | 8,918 | 3.43 | 1,468,198 | 3,203 |
| 1991 | 5 | 55 | 402,571 | 7,319 | 3.82 | 1,537,821 | 3,849 |
| 1992 | 7 | 60 | 1,063,838 | 17,731 | 3.96 | 4,212,798 | 8,023 |
| 1993 ^f | 5 | 7 | 122,770 | 17,539 | 5.15 | 632,266 | 1,039 |
| 1993 ^g | 8 | 9 | 141,423 | 15,714 | 5.15 | 728,328 | 1,160 |
| 1994 | 11 | 18 | 253,060 | 14,059 | 5.79 | 1,465,217 | 2,096 |
| 1995 | 10 | 18 | 242,491 | 13,472 | ^e | ^e | 2,597 |
| 1996 | 4 | 15 | 238,736 | 15,916 | 6.30 | 1,504,037 | 2,102 |
| 1997 | 4 | 8 | 242,940 | 30,368 | 6.50 | 1,579,110 | 1,958 |
| 1998/99 | 8 | 49 | 241,678 | 4,932 | 6.40 | 1,546,739 | 2,193 |
| 1999/2000 | 3 | 22 | 249,681 | 11,349 | 6.25 | 1,560,506 | 1,720 |
| 2000/01 | 3 | 34 | 195,699 | 5,756 | 5.50 | 1,076,345 | 2,111 |

-continued-

Table 4.—page 2 of 2.

| Season | Number Vessels | Number Landings ^a | Commercial | Average | First Wholesale | | |
|---------|-------------------|---------------------------------|----------------------------|------------------------------|---------------------|-------------------------|-----------------------------|
| | | | Catch (lb) ^b | Landing (lb) ^c | Average Price/lb | Est. Value (dollars) | Number Tows ^d |
| 2001/02 | 2 ^h | 20 | 103,800 | 5,190 | 5.50 | 570,900 | 1,096 |
| 2002/03 | 2 ^h | 20 | 122,718 | 6,136 | 5.20 | 638,134 | 1,243 |
| 2003/04 | 2 ^h | 23 | 160,918 | 6,996 | 5.25 | 844,820 | 1,716 |
| 2004/05 | 2 ^h | 16 | 86,950 | 5,434 | 5.50 | 478,225 | 1,194 |
| 2005/06 | 2 ^h | 38 | 199,351 | 5,246 | 8.50 | 1,694,484 | 2,585 |

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Pounds of scallop meats.

^d July 1, 1993-2005/06, number of tows are from vessel logbook data contained in the observer database.

^e Not available.

^f January 1, 1993-June 30, 1993, prior to onboard observer requirement.

^g July 1, 1993-December 31, 1993.

^h Confidential data voluntarily released by vessel operators.

Table 5.—Historic commercial catch, effort, and value of weathervane scallops, Yakutat, District 16, 1980–2005/06.

| Season | Number Vessels | Number Landings ^a | Commercial Catch (lb) ^b | Average Landing (lb) ^c | Average Price/lb | First Wholesale Est. Value (dollars) | Number Tows ^d |
|-------------------|----------------|------------------------------|------------------------------------|-----------------------------------|------------------|--------------------------------------|--------------------------|
| 1980 | 2 | 2 | 5,850 | 2,925 | e | e | e |
| 1981 | 1 | 1 | 7,693 | 7,693 | e | e | e |
| 1982 | 2 | 3 | 26,915 | 8,972 | e | e | e |
| 1983 | 1 | | | Confidential | | | |
| 1984 | 2 | | | Confidential | | | |
| 1985 | | | | No Effort | | | |
| 1986 | | | | No Effort | | | |
| 1987 | | | | No Effort | | | |
| 1988 | | | | No Effort | | | |
| 1989 | | | | No Effort | | | |
| 1990 | 4 | 9 | 162,888 | 18,099 | 3.43 | 558,706 | 718 |
| 1991 | 3 | 9 | 39,817 | 4,424 | 3.82 | 152,101 | 665 |
| 1992 | 2 | | | Confidential | | | |
| 1993 ^f | 1 | | | Confidential | | | |
| 1993 | 1 | | | Confidential | | | |
| 1994 | 8 | 10 | 27,613 | 2,761 | 5.79 | 159,879 | 241 |
| 1995 | 7 | 8 | 33,302 | 4,163 | e | e | 599 |
| 1996 | 2 ^g | 4 | 34,060 | 8,515 | 6.30 | 214,578 | 554 |
| 1997 | 4 | 5 | 22,890 | 4,578 | 6.50 | 148,785 | 299 |
| 1998/99 | 3 | 6 | 34,153 | 5,692 | 6.40 | 218,579 | 359 |
| 1999/2000 | 2 ^g | 5 | 34,624 | 6,925 | 6.25 | 216,400 | 291 |
| 2000/01 | 3 | 11 | 30,904 | 2,809 | 5.50 | 169,972 | 244 |
| 2001/02 | 2 ^g | 7 | 20,398 | 2,914 | 5.50 | 112,189 | 193 |
| 2002/03 | 2 ^g | 3 | 3,685 | 1,228 | 5.20 | 19,162 | 55 |
| 2003/04 | 2 ^g | 2 | 1,072 | 536 | 5.25 | 5,628 | 12 |
| 2004/05 | 2 ^g | 6 | 24,430 | 4,072 | 5.50 | 134,365 | 213 |
| 2005/06 | 2 ^g | 4 | 13,650 | 3,413 | 8.50 | 116,025 | 197 |

^a Reported number of landings equals number of fish tickets.

^b Pounds of shucked scallop meats as reported on fish tickets.

^c Pounds of shucked scallop meats.

^d 1994-2005/06, number of tows are from vessel operator logbook/observer database.

^e Not available.

^f January 1, 1993-June 30, 1993, prior to onboard observer requirement.

^g Confidential data voluntarily released by vessel operators.

Table 6.--Yakutat, District 16 scallop fishery summary statistics, 1993-2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Commercial | | | CPUE (lb meat per dredge hr) | Estimated round weight of scallop catch | CPUE (Estimated round weight of scallops per dredge hr) | Average Shell Height ^d |
|-----------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|---|---|-----------------------------------|
| | | | | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) | round weight of scallop catch | | | | |
| 1993 | 1 | 35,000 | | | | | Confidential | | | |
| 1994 | 7 ^f | 35,000 | 408 | 27,613 | 68 | 239,867 | 587 | 147 ^f /151 ^g | | |
| 1995 | 6 ^e | 35,000 | 1,095 | 33,302 | 30 | 447,469 | 409 | 132 | | |
| 1996 | 2 ^h | 35,000 | 917 | 34,060 | 37 | 422,064 | 460 | 126 ^f /133 ^g | | |
| 1997 | 4 | 35,000 | 561 | 22,890 | 41 | 265,882 | 474 | 128 | | |
| 1998/99 | 3 | 35,000 | 702 | 34,153 | 49 | 384,286 | 547 | 123 | | |
| 1999/2000 | 2 ^h | 35,000 | 674 | 34,624 | 51 | 292,625 | 434 | 125 | | |
| 2000/01 | 3 | 35,000 | 476 | 30,904 | 65 | 310,370 | 652 | 118 | | |
| 2001/02 | 2 ^h | 35,000 | 417 | 20,398 | 49 | 245,319 | 588 | 119 | | |
| 2002/03 | 2 ^h | 35,000 | 100 | 3,685 | 37 | 60,928 | 609 | 120 | | |
| 2003/04 | 2 ^h | 35,000 | 18 | 1,072 | 59 | 16,780 | 839 | 121 | | |
| 2004/05 | 2 ^h | 35,000 | 419 | 24,430 | 58 | 326,228 | 780 | 120 | | |
| 2005/06 | 2 ^h | 35,000 | 407 | 13,650 | 34 | 209,487 | 515 | 119 | | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell heights (SH) in mm.

^e One additional vessel fished by waiver without an observer; data not included.

^f Winter season.

^g Summer season.

^h Confidential data voluntarily released by vessel operator.

Table 7.—Yakutat, Area D scallop fishery summary statistics, 1993–2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Commercial | | | CPUE (Estimated) | | Average Shell Height ^d |
|-------------------|-----------------|------------------------------------|---------------------------|------------------------------|------------------------------|---|--|------------------------------------|-----------------------------------|
| | | | | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) | Estimated round weight of scallop catch | round weight of scallops per dredge hr | | |
| 1993 ^e | 7 ^f | 250,000 | 1,999 | 141,423 | 71 | 2,082,824 | 1,042 | 118 | |
| 1994 | 10 ^f | 250,000 | 4,130 | 253,060 | 61 | 3,337,283 | 808 | 121 ^g /122 ^h | |
| 1995 | 8 ⁱ | 250,000 | 4,730 | 242,491 | 51 | 3,214,968 | 680 | 124 | |
| 1996 | 4 | 250,000 | 4,438 | 238,736 | 54 | 3,195,254 | 720 | 121 ^g /122 ^h | |
| 1997 | 4 | 250,000 | 3,956 | 242,940 | 61 | 3,282,860 | 830 | 119 | |
| 1998/99 | 8 | 250,000 | 4,192 | 241,678 | 58 | 3,475,996 | 829 | 123 | |
| 1999/2000 | 3 | 250,000 | 3,840 | 249,681 | 65 | 3,119,103 | 812 | 124 | |
| 2000/01 | 3 | 250,000 | 4,241 | 195,699 | 46 | 2,734,559 | 645 | 123 | |
| 2001/02 | 2 ^j | 200,000 | 2,406 | 103,800 | 43 | 1,521,537 | 632 | 121 | |
| 2002/03 | 2 ^j | 200,000 | 2,439 | 122,718 | 50 | 1,541,867 | 632 | 123 | |
| 2003/04 | 2 ^j | 200,000 | 3,358 | 160,918 | 48 | 1,939,004 | 577 | 126 | |
| 2004/05 | 2 ^j | 200,000 | 2,134 | 86,950 | 41 | 1,262,499 | 592 | 124 | |
| 2005/06 | 2 ^j | 200,000 | 5,089 | 199,351 | 39 | 2,662,031 | 523 | 123 | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell height (SH) in mm.

^e July 1, 1993–December 31, 1993, after onboard observer requirement.

^f One additional vessel fished by waiver without an observer; data not included.

^g Winter season.

^h Summer season.

ⁱ Two additional vessels fished by waiver without observers; data not included.

^j Confidential data voluntarily released by vessel operators.

Table 8.—Historic commercial catch, effort, and value of weathervane scallops, Prince William Sound Registration Area, 1992–2005/06.

| Season | Number Vessels | Number Landings ^a | Commercial | Average | First Wholesale | | |
|-------------------|--|------------------------------|-------------------------|---------------------------|------------------|----------------------|--------------------------|
| | | | Catch (lb) ^b | Landing (lb) ^c | Average Price/lb | Est. Value (dollars) | Number Tows ^d |
| 1992 | 4 | 14 | 208,836 | 52,209 | 3.96 | 826,991 | 1,925 |
| 1993 ^e | | | No Effort | | | | |
| 1993 ^f | 7 | 7 | 63,068 | 9,009 | 5.15 | 324,800 | 379 |
| 1994/95 | Season closed due to regulatory change | | | | | | |
| 1995/96 | 3 | 5 | 108,000 ^g | 21,600 ^h | | ^h | 243 |
| 1996/97 | Season closed due to overharvest in 1995/96 from illegal fishing | | | | | | |
| 1997/98 | 1 ⁱ | 1 | 18,000 | 18,000 | 6.50 | 117,000 | 99 |
| 1998/99 | 2 ⁱ | 2 | 19,650 | 9,825 | 6.40 | 125,760 | 104 |
| 1999/2000 | 2 ⁱ | 2 | 20,410 | 10,205 | 6.25 | 127,562 | 65 |
| 2000/01 | 3 | 8 | 30,266 | 3,783 | 5.50 | 166,463 | 201 |
| 2001/02 | 1 ⁱ | 7 | 30,090 | 4,299 | 5.50 | 165,495 | 138 |
| 2002/03 | 2 ⁱ | 5 | 15,641 | 3,128 | 5.20 | 81,333 | 150 |
| 2003/04 | 1 ⁱ | 4 | 19,980 | 4,995 | 5.25 | 104,895 | 114 |
| 2004/05 | 2 ⁱ | 6 | 49,320 | 8,220 | 5.50 | 271,260 | 336 |
| 2005/06 | 3 | 9 | 49,205 | 5,467 | 8.50 | 418,242 | 549 |

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Pounds of scallop meats.

^d July 1, 1993–2005/06, number of tows are from vessel logbook data contained in the observer database.

^e January 1, 1993–June 30, 1993, prior to onboard observer requirement.

^f July 1, 1993–December 31, 1993.

^g Catch includes illegal harvest by one vessel; effort data not available for that vessel.

^h Not available.

ⁱ Confidential data voluntarily released by vessel operators.

Table 9.—Prince William Sound Registration Area scallop fishery summary statistics, 1992–2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Commercial | | | Estimated | | Average Shell Height ^d |
|-------------------|----------------|------------------------------------|---------------------------|------------------------------|--|------------------------------|-------------------------------|---|-----------------------------------|
| | | | | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) | CPUE (lb meat per dredge hr) | round weight of scallop catch | CPUE (Estimated round weight of scallops per dredge hr) | |
| 1992 ^e | 4 | f | g | 208,836 | | | | | g |
| 1993 ^h | 1 | | | | No Effort | | | | |
| 1993 ⁱ | 7 | 50,000 | 638 | 63,068 | 99 | 850,718 | 1,333 | | 124 |
| 1994/95 | | | | | Season closed due to regulatory change | | | | |
| 1995/96 | 3 | 50,000 | j | 108,000 ^k | j | | j | | 125 |
| 1996/97 | | | | | Season closed due to overharvest in 1995/96 from illegal fishing | | | | |
| 1997/98 | 1 ^l | 17,200 | 171 | 18,000 | 105 | 257,230 | 1,504 | | 123 |
| 1998/99 | 2 ^l | 20,000 | 179 | 19,650 | 110 | 334,152 | 1,867 | | 132 |
| 1999/2000 | 2 ^l | 20,000 | 149 | 20,410 | 137 | 211,140 | 1,417 | | 132 |
| 2000/01 | 3 | 30,000 | 221 | 30,266 | 137 | 361,032 | 1,634 | | 131 |
| 2001/02 | 1 ^l | 30,000 | 263 | 30,090 | 114 | 511,761 | 1,946 | | 136 |
| 2002/03 | 2 ^l | 20,000 | 122 | 15,641 | 121 | 231,140 | 1,895 | | 131 |
| 2003/04 | 1 ^l | 20,000 | 216 | 19,980 | 93 | 261,720 | 1,212 | | 136 |
| 2004/05 | 2 ^l | 50,000 | 614 | 49,320 | 80 | 407,617 | 664 | | 134 |
| 2005/06 | 3 | 50,000 | 491 | 49,205 | 100 | 818,741 | 1,667 | | 131 |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell height (SH) in mm.

^e Prior to onboard observer requirement.

^f Not established.

^g Not available.

^h January 1, 1993–June 30, 1993, prior to onboard observer requirement.

ⁱ July 1, 1993–December 31, 1993

^j Confidential.

^k Catch includes illegal harvest by one vessel.

^l Confidential data voluntarily released by vessel operators.

Table 10.—Assigned ages of weathervane scallops from research surveys at Kayak Island, Prince William Sound Management Area, 1996-2004.

| Year | Bed | Number Aged | Number of scallops at age (years) ^a | | | | | | | | | | | | | | | |
|------|------|-------------|--|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-----|-----|-----|-----|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16+ |
| 1996 | East | 5,050 | 198 | 7 | 13 | 115 | 24 | 149 | 682 | 1,609 | 1,844 | 177 | 72 | 66 | 31 | 25 | 12 | 26 |
| 1998 | East | 2,564 | 290 | 8 | 12 | 3 | 11 | 15 | 37 | 77 | 405 | 707 | 529 | 175 | 113 | 59 | 65 | 58 |
| 1998 | West | 2,953 | 47 | 8 | 40 | 42 | 144 | 264 | 277 | 392 | 687 | 598 | 312 | 63 | 45 | 13 | 9 | 12 |
| 2000 | East | 5,240 | 418 | 58 | 165 | 94 | 25 | 28 | 71 | 123 | 203 | 791 | 1,339 | 1,090 | 566 | 114 | 109 | 46 |
| 2000 | West | 9,701 | 32 | 43 | 140 | 69 | 101 | 186 | 513 | 899 | 1,467 | 1,607 | 2,196 | 1,835 | 494 | 61 | 17 | 41 |
| 2002 | East | 697 | 4 | 34 | 10 | 12 | 19 | 7 | 1 | 6 | 3 | 33 | 43 | 123 | 126 | 161 | 100 | 15 |
| 2002 | West | 3,168 | 7 | 8 | 6 | 19 | 124 | 28 | 63 | 105 | 111 | 353 | 588 | 601 | 619 | 378 | 129 | 29 |
| 2004 | East | 593 | 12 | 24 | 12 | 53 | 54 | 12 | 19 | 9 | 13 | 24 | 29 | 42 | 60 | 63 | 85 | 82 |
| 2004 | West | 465 | 57 | 26 | 3 | 5 | 14 | 3 | 9 | 5 | 22 | 23 | 50 | 57 | 63 | 57 | 33 | 38 |

^a Survey ages were assigned to all measured scallops using a height-at-age matrix developed from aged shells, except for scallops in 2004. Scallops in 2004 are only those that were aged.

Table 11.—Historic commercial catch, effort, value of weathervane scallops, Cook Inlet Registration Area, 1983–2005.

| Season | Number Vessels | Number Landings ^a | Commercial Catch (lb) ^b | Estimated deadloss discarded at sea (lb) ^c | Average Landing (lb) ^d | Average Price/lb | Est. Value (dollars) | Number Tows |
|--------|----------------|------------------------------|---|---|-----------------------------------|------------------|----------------------|--------------|
| 1983 | | | | Confidential | | | | |
| 1984 | 3 | 9 | 6,305 | ^e | 701 | 3.64 | 22,950 | ^e |
| 1985 | | | | Confidential | | | | |
| 1986 | 3 | 12 | 15,364 | ^e | 1,280 | 6.34 | 97,408 | ^e |
| 1987 | | | | Confidential | | | | |
| 1988 | | | | No Effort | | | | |
| 1989 | | | | No Effort | | | | |
| 1990 | | | | No Effort | | | | |
| 1991 | | | | No Effort | | | | |
| 1992 | | | | No Effort | | | | |
| 1993 | 3 | 15 | 20,115 | ^e | 1,341 | 4.63 | 93,132 | 543 |
| 1994 | 4 | 11 | 20,431 | ^e | 1,857 | 5.85 | 119,521 | 467 |
| 1995 | | | Federal waters closed - no effort in State waters | | | | | |
| 1996 | 5 | 21 | 28,228 | ^e | 1,344 | 7.00 | 197,596 | 514 |
| 1997 | 3 | 10 | 20,336 | ^e | 2,034 | 6.16 | 125,270 | ^e |
| 1998 | | | | Confidential | | | | |
| 1999 | 3 | 14 | 20,086 | 229 | 1,435 | 7.82 | 157,072 | 304 |
| 2000 | 3 | 5 | 20,030 | 486 | 4,006 | 3.94 | 78,918 | 249 |
| 2001 | | | | Confidential | | | | |
| 2002 | 3 | 5 | 8,383 | 208 | 1,677 | 6.39 | 53,567 | 219 |
| 2003 | | | | Confidential | | | | |
| 2004 | 3 | 6 | 5,891 | 226 | 982 | 9.58 | 56,436 | 180 |
| 2005 | | | | Confidential | | | | |

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Estimated pounds of scallop meats based on an estimate of broken-shell scallops discarded at sea, not included in Commercial Catch column.

^d Pounds of scallop meats.

^e Not available.

Table 12.—Cook Inlet Registration Area scallop fishery summary statistics, 1993–2005.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^{c,d} | Estimated deadloss discarded at sea (lb meat) ^e | CPUE (lb meat per dredge hr) |
|--------|----------------|--|---------------------------|--------------------------------|--|------------------------------|
| 1993 | 3 | f | 529 | 20,115 | e | 38 |
| 1994 | 4 | f | 454 | 20,431 | e | 45 |
| 1995 | | Federal waters closed, no effort in State waters | | | | |
| 1996 | 5 | 28,000 | 534 | 28,228 | e | 53 |
| 1997 | 3 | 20,000 | 394 | 20,336 | e | 52 |
| 1998 | 1 | 20,000 | | | Confidential | |
| 1999 | 3 | 20,000 | 333 | 20,086 | 229 | 60 |
| 2000 | 3 | 20,000 | 276 | 20,030 | 486 | 73 |
| 2001 | 2 | 20,000 | | | Confidential | |
| 2002 | 3 | 20,000 | 311 | 8,383 | 208 | 27 |
| 2003 | 2 | 20,000 | | | Confidential | |
| 2004 | 3 | 20,000 | 364 | 5,891 | 226 | 16 |
| 2005 | 2 | 7,000 | | | Confidential | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Does not include estimated deadloss discarded at sea.

^d Pounds of scallop meats as reported on fish tickets.

^e Estimated pounds of scallop meats based on an estimate of broken-shell scallops discarded at sea.

^f Not available.

Table 13.—Assigned ages of weathervane scallops from research surveys in Kamishak Bay, Cook Inlet Management Area, 1984-2005.

| Year | Heights | | Number of scallops at age (years) ^a | | | | | | | | | | | | | | | | | | |
|------------|--------------|----------------|--|-----|-----|-----|-------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | No. measured | Mean (mm) | No. Aged | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18+ |
| 1984 | 1,989 | not calculated | 1,999 | 256 | 302 | 787 | 91 | 3 | 13 | 82 | 65 | 18 | 41 | 62 | 99 | 86 | 58 | 18 | 15 | 2 | 1 |
| 1996 | 1,942 | 120.6 | 798 | 769 | 227 | 846 | 948 | 341 | 70 | 129 | 197 | 231 | 316 | 473 | 692 | 507 | 178 | 74 | 38 | 55 | 83 |
| 1998 | 2,770 | 139.8 | 323 | 32 | 69 | 481 | 381 | 306 | 360 | 236 | 123 | 62 | 87 | 89 | 99 | 155 | 105 | 95 | 44 | 16 | 30 |
| 1999 | 7,424 | 144.3 | 565 | 250 | 154 | 272 | 1,228 | 781 | 1,090 | 713 | 396 | 183 | 282 | 288 | 302 | 464 | 352 | 322 | 167 | 66 | 114 |
| 2001 | 5,402 | 153.3 | 588 | 60 | 129 | 201 | 110 | 156 | 1,128 | 364 | 825 | 443 | 323 | 152 | 252 | 321 | 242 | 245 | 217 | 138 | 96 |
| 2003-North | 1,874 | 144.6 | 518 | 105 | 145 | 52 | 81 | 69 | 82 | 150 | 250 | 193 | 125 | 84 | 100 | 130 | 127 | 59 | 44 | 47 | 20 |
| 2003-South | 3,388 | 136.6 | 552 | 306 | 568 | 115 | 345 | 187 | 147 | 208 | 416 | 307 | 248 | 311 | 219 | 146 | 329 | 326 | 344 | 213 | 225 |
| 2005-North | 2,234 | 149.0 | 600 | 22 | 63 | 134 | 273 | 88 | 128 | 92 | 189 | 291 | 334 | 270 | 152 | 116 | 68 | 87 | 59 | 76 | 74 |
| 2005-South | 2,194 | 110.5 | 420 | 131 | 838 | 189 | 295 | 80 | 88 | 51 | 62 | 80 | 87 | 81 | 85 | 65 | 40 | 59 | 58 | 54 | 85 |

^a In the 1984 survey all scallops caught less 4" (age 1-3) were aged, with up to 20 greater than 4" (age 4 and older) shells per tow were aged. Between 1996-2005 surveys ages were assigned to all measured scallops using height-at-size matrix developed from aged shells.

Table 14.—Historic commercial catch, effort, and value of weathervane scallops, Kodiak Registration Area, 1967–2005/06.

| Year | Number Vessels | Number Landings ^a | Commercial | Average | First Wholesale | | |
|---------------------|----------------|------------------------------|-------------------------|---------------------------|------------------|----------------------|--------------|
| | | | Catch (lb) ^b | Landing (lb) ^b | Average Price/lb | Est. Value (dollars) | Number Tows |
| 1967 ^c | 2 | 6 | 778 | 130 | 0.70 | 545 | ^d |
| 1968 ^c | 8 | 89 | 734,084 | 8,248 | 0.85 | 623,971 | ^d |
| 1969 | 11 | 86 | 1,012,860 | 11,777 | 0.85 | 861,000 | ^d |
| 1970 | 7 | 102 | 1,417,612 | 13,898 | 1.00 | 1,500,000 | ^d |
| 1971 | 5 | 48 | 841,211 | 17,525 | 1.05 | 883,000 | ^d |
| 1972 | 5 | 68 | 1,038,793 | 15,276 | 1.15 | 1,200,000 | ^d |
| 1973 | 4 | 42 | 935,705 | 22,279 | 1.20 | 1,123,000 | ^d |
| 1974 | 3 | 14 | 147,945 | 10,568 | 1.30 | 192,000 | ^d |
| 1975 | 3 | 29 | 294,142 | 10,143 | 1.40 | 412,000 | ^d |
| 1976 | 1 | 6 | 75,245 | 12,541 | 1.59 | 119,000 | ^d |
| 1977 | | | | No Effort | | | |
| 1978 | | | | No Effort | | | |
| 1979 | 1 | 4 | 24,826 | 6,206 | 2.78 | 69,000 | ^d |
| 1980 ^c | 7 | 33 | 355,200 | 10,763 | 3.60 | 1,278,720 | ^d |
| 1981 | 15 | 62 | 439,804 | 7,094 | 4.00 | 1,759,216 | ^d |
| 1982 | 8 | 62 | 435,645 | 7,026 | 3.25 | 1,416,000 | ^d |
| 1983 | 4 | 24 | 147,747 | 6,156 | 5.00 | 739,000 | ^d |
| 1984 | 7 | 37 | 309,502 | 8,365 | 4.00 | 1,238,000 | ^d |
| 1985 | 3 | 10 | 46,971 | 4,697 | 4.00 | 188,000 | ^d |
| 1986 | 5 | 21 | 180,600 | 8,600 | 4.25 | 767,550 | ^d |
| 1987 | 3 | 25 | 253,451 | 10,138 | 3.45 | 874,406 | ^d |
| 1988 | 3 | 21 | 195,811 | 9,324 | 3.68 | 720,584 | ^d |
| 1989 | 5 | 29 | 242,557 | 8,364 | 3.87 | 938,696 | ^d |
| 1990 | 7 | 73 | 689,497 | 9,445 | 3.43 | 2,364,974 | 10,950 |
| 1991 | 4 | 61 | 514,348 | 8,432 | 3.82 | 1,964,809 | 12,884 |
| 1992 | 3 | 43 | 389,854 | 9,066 | 3.96 | 1,543,822 | 8,328 |
| 1993 ^{e,f} | 4 | 16 | 88,279 | 5,517 | 5.15 | 454,637 | 1,708 |
| 1993/94 | 10 | 48 | 315,626 | 6,576 | 5.15 | 1,625,474 | 7,028 |
| 1994/95 | 10 | 32 | 355,628 | 11,113 | 5.79 | 2,052,543 | 6,449 |
| 1995/96 | | | | Closed | | | |
| 1996/97 | 4 | 13 | 268,545 | 20,657 | 6.30 | 1,691,833 | 2,760 |
| 1997/98 | 5 | 14 | 360,339 | 25,739 | 6.50 | 2,342,203 | 4,757 |

-continued-

Table 14.-Page 2 of 2

| Year | Number Vessels | Number Landings ^a | Commercial | Average | Average Price/lb | First Wholesale | |
|-----------|-------------------|---------------------------------|----------------------------|------------------------------|---------------------|-------------------------|----------------|
| | | | Catch (lb) ^b | Landing (lb) ^b | | Est. Value (dollars) | Number Tows |
| 1998/99 | 8 | 12 | 301,600 | 25,133 | 6.40 | 1,930,240 | 3,515 |
| 1999/2000 | 6 | 9 | 266,012 | 29,557 | 6.25 | 1,662,575 | 2,673 |
| 2000/01 | 5 | 7 | 260,052 | 37,150 | 5.50 | 1,430,286 | 1,989 |
| 2001/02 | 4 | 8 | 257,582 | 32,459 | 5.50 | 1,428,196 | 2,439 |
| 2002/03 | 3 | 11 | 260,580 | 23,689 | 5.20 | 1,355,016 | 2,779 |
| 2003/04 | 2 ^g | 13 | 259,976 | 19,998 | 5.25 | 1,364,874 | 2,397 |
| 2004/05 | 2 ^g | 9 | 254,727 | 28,303 | 5.50 | 1,400,998 | 2,454 |
| 2005/06 | 3 | 12 | 239,931 | 19,994 | 5.50 | 1,319,620 | 2,101 |

^a Prior to 1995/96, reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of off-loads.

^b Pounds of scallop meats as reported on fish tickets.

^c Deliveries of unshucked scallops were converted to scallop meats using a 10% conversion factor.

^d Not available.

^e January 1-June 30.

^f Includes harvest from exploratory fishery.

^g Confidential data voluntarily released by vessel operators.

Table 15.—Kodiak Registration Area, Northeast District, scallop fishery summary statistics, 1993/94-2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|-----------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|
| 1993/94 | 10 | ^d | 6,940 | 155,122 | 22 |
| 1994/95 | 7 | ^d | 1,773 | 35,207 | 20 |
| 1995/96 | | | Closed | | |
| 1996/97 | 3 | ^d | 581 | 11,430 | 20 |
| 1997/98 | 3 | ^d | 2,604 | 95,858 | 37 |
| 1998/99 | 4 | ^d | 2,749 | 120,010 | 44 |
| 1999/2000 | 3 | 75,000 | 1,384 | 77,119 | 56 |
| 2000/01 | 4 | 80,000 | 1,101 | 79,965 | 73 |
| 2001/02 | 3 | 80,000 | 1,142 | 80,470 | 70 |
| 2002/03 | 2 ^e | 80,000 | 1,350 | 80,000 | 59 |
| 2003/04 | 2 ^e | 80,000 | 1,248 | 79,965 | 64 |
| 2004/05 | 2 ^e | 80,000 | 1,227 | 80,105 | 65 |
| 2005/06 | 3 | 80,000 | 1,759 | 79,990 | 45 |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

Table 16.—Commercial harvest, average shell height from retained catch, and catch per unit effort from observer data, Westward Region, 1993/94–2005/06.

| Year | REGISTRATION AREA/DISTRICT ^a | | | | | | | | | | | | | | | | | |
|-----------|---|-----|-------------------|---------|-----------------|----|----------------------|-----------------|-------------------|----------------------|-----------------|-------------------|----------------------|-----------------|-------------------|-----------|-----|----|
| | Kodiak Area | | | | | | Alaska Peninsula | | | Bering Sea | | Dutch Harbor | | | | | | |
| | Northeast District | | Shelikof District | | Semidi District | | Harvest ^b | SH ^c | CPUE ^d | Harvest ^b | SH ^c | CPUE ^d | Harvest ^b | SH ^c | CPUE ^d | | | |
| 1993/94 | 155,122 | 144 | 22 | 105,017 | 128 | 42 | 55,487 | 145 | 32 | 112,152 | 119 | 61 | 284,414 | 146 | 49 | 38,731 | 128 | 46 |
| 1994/95 | 35,207 | 151 | 20 | 313,741 | 131 | 36 | ^e | 153 | ^e | 65,282 | 127 | 39 | 505,439 | 147 | 45 | 1,931 | 158 | 24 |
| 1995/96 | Closed | | Closed | | Closed | | Closed | | | Closed | | | Closed | | | | | |
| 1996/97 | 11,430 | 144 | 20 | 219,305 | 136 | 63 | 37,810 | 154 | 37 | 12,560 | 126 | 38 | 150,295 | 147 | 65 | No Effort | | |
| 1997/98 | 95,858 | 140 | 37 | 258,346 | 139 | 47 | 6,135 | 147 | 18 | 51,616 | 135 | 29 | 97,002 | 151 | 43 | 5,790 | 127 | 34 |
| 1998/99 | 120,010 | 127 | 44 | 179,870 | 137 | 44 | 1,720 | 151 | 16 | 63,290 | 128 | 39 | 96,795 | 147 | 42 | 46,432 | 128 | 45 |
| 1999/2000 | 77,119 | 131 | 56 | 187,963 | 130 | 44 | 930 | 152 | 21 | 75,610 | 124 | 37 | 164,929 | 145 | 50 | 6,465 | 134 | 24 |
| 2000/01 | 79,965 | 135 | 73 | 180,087 | 134 | 62 | No Effort | | | 7,660 | 119 | 24 | 205,520 | 142 | 61 | Closed | | |
| 2001/02 | 80,470 | 140 | 70 | 177,112 | 140 | 52 | No Effort | | | Closed | | | 140,871 | 141 | 46 | Closed | | |
| 2002/03 | 80,000 | 140 | 59 | 180,580 | 138 | 48 | No Effort | | | Closed | | | 92,240 | 149 | 45 | 6,000 | 133 | 33 |
| 2003/04 | 79,965 | 145 | 64 | 180,011 | 135 | 55 | No Effort | | | No Effort | | | 42,590 | 148 | 42 | Closed | | |
| 2004/05 | 80,105 | 144 | 65 | 174,622 | 137 | 50 | No Effort | | | No Effort | | | 10,050 | 144 | 36 | Closed | | |
| 2005/06 | 79,990 | 139 | 45 | 159,941 | 136 | 70 | No Effort | | | No Effort | | | 23,220 | 154 | 39 | Closed | | |

^a Confidential data voluntarily released by vessel operators.

^b Harvest in pounds of scallop meats.

^c Average scallop shell height (SH) in mm.

^d Catch per unit effort (CPUE) in pounds of scallop meats per dredge hour.

^e Confidential.

Table 17.—Estimated round weight of the retained commercial scallop catch and catch per unit effort, Westward Region, 1993/94–2005/06.

| Year | REGISTRATION AREA/DISTRICT ^a | | | | | | | | | | | | Total Harvest ^b |
|-----------|---|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------------|
| | Kodiak Area | | | | | | | | | | | | |
| | Northeast District | | Shelikof District | | Semidi District | | Alaska Peninsula | | Bering Sea | | Dutch Harbor | | |
| | Harvest ^b | CPUE ^c | Harvest ^b | CPUE ^c | Harvest ^b | CPUE ^c | Harvest ^b | CPUE ^c | Harvest ^b | CPUE ^c | Harvest ^b | CPUE ^c | |
| 1993/94 | 2,214,427 | 319 | 1,169,664 | 467 | 579,836 | 319 | 1,061,925 | 575 | 3,447,681 | 598 | 432,970 | 517 | 8,906,503 |
| 1994/95 | 389,202 | 220 | 3,522,517 | 404 | ^d | ^d | 619,473 | 372 | 5,942,912 | 535 | 23,590 | 291 | 10,497,694 |
| 1995/96 | Closed | | Closed | | Closed | | Closed | | Closed | | 289,398 | 276 | 289,398 |
| 1996/97 | 147,269 | 253 | 1,878,268 | 537 | 288,117 | 283 | 130,235 | 398 | 1,432,160 | 619 | No Effort | | 3,876,049 |
| 1997/98 | 1,143,926 | 439 | 3,101,152 | 565 | 61,320 | 176 | 654,960 | 374 | 1,082,825 | 482 | 55,725 | 326 | 6,099,908 |
| 1998/99 | 1,365,836 | 497 | 2,129,025 | 522 | 15,806 | 149 | 617,120 | 383 | 1,193,071 | 514 | 427,422 | 417 | 5,748,280 |
| 1999/2000 | 952,972 | 689 | 1,903,345 | 442 | 11,310 | 253 | 781,596 | 386 | 1,851,620 | 562 | 68,070 | 249 | 5,568,913 |
| 2000/01 | 681,192 | 619 | 1,768,376 | 608 | No Effort | | 95,510 | 299 | 2,376,601 | 708 | Closed | | 4,921,679 |
| 2001/02 | 822,110 | 720 | 1,830,265 | 539 | No Effort | | Closed | | 1,700,578 | 554 | Closed | | 4,352,953 |
| 2002/03 | 871,918 | 646 | 1,857,466 | 489 | No Effort | | Closed | | 952,958 | 468 | 59,116 | 322 | 3,741,458 |
| 2003/04 | 747,517 | 600 | 1,724,498 | 529 | No Effort | | No Effort | | 537,552 | 527 | Closed | | 3,009,567 |
| 2004/05 | 848,527 | 692 | 1,641,608 | 473 | No Effort | | No Effort | | 129,220 | 470 | Closed | | 2,619,355 |
| 2005/06 | 831,378 | 473 | 1,454,806 | 638 | No Effort | | No Effort | | 231,700 | 385 | Closed | | 2,517,884 |

^a Confidential data voluntarily released by vessel operators.

^b Harvest in pounds of round scallops.

^c Catch per unit effort (CPUE) in estimated round weight of retained scallops per dredge-hour.

^d Confidential.

Table 18.—Kodiak Registration Area, Shelikof District, scallop fishery summary statistics, 1993/94–2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|-----------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|
| 1993/94 | 5 | ^d | 2,491 | 105,017 | 42 |
| 1994/95 | 11 | ^d | 8,662 | 314,051 | 36 |
| 1995/96 | | | Closed | | |
| 1996/97 | 3 ^e | ^d | 3,491 | 219,305 | 63 |
| 1997/98 | 4 | ^d | 5,492 | 258,346 | 47 |
| 1998/99 | 8 | ^d | 4,081 | 179,870 | 44 |
| 1999/2000 | 6 | 180,000 | 4,304 | 187,963 | 44 |
| 2000/01 | 5 | 180,000 | 2,907 | 180,087 | 62 |
| 2001/02 | 4 | 180,000 | 3,398 | 177,112 | 52 |
| 2002/03 | 3 | 180,000 | 3,799 | 180,580 | 48 |
| 2003/04 | 2 ^f | 180,000 | 3,258 | 180,011 | 55 |
| 2004/05 | 2 ^f | 180,000 | 3,467 | 174,622 | 50 |
| 2005/06 | 2 ^f | 160,000 | 2,280 | 159,941 | 70 |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e One additional vessel fished but data are not available.

^f Confidential data voluntarily released by vessel operators.

Table 19.—Kodiak Registration Area, Semidi Island District, scallop fishery summary statistics, 1993/94–2004/05.

| Season | Number vessels | GHR | | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|-----------|----------------|--------------------------------|---------------------------|------------------------------|------------------------------|
| | | ceiling (lb meat) ^a | Dredge hours ^b | | |
| 1993/94 | 6 ^d | e | 1,819 | 55,487 | 32 |
| 1994/95 | 2 | e | 272 | Confidential | |
| 1995/96 | | | | Closed | |
| 1996/97 | 3 | e | 1,017 | 37,810 | 37 |
| 1997/98 | 1 ^f | e | 349 | 6,135 | 18 |
| 1998/99 | 2 ^f | e | 106 | 1,720 | 16 |
| 1999/2000 | 1 ^f | e | 45 | 930 | 21 |
| 2000/01 | | e | | No Effort | |
| 2001/02 | | e | | No Effort | |
| 2002/03 | | e | | No Effort | |
| 2003/04 | | e | | No Effort | |
| 2004/05 | | e | | No Effort | |
| 2005/06 | | e | | No Effort | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Two additional vessels registered but did not fish.

^e Not established.

^f Confidential data voluntarily released by vessel operators.

Table 20.—Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975–2005/06.

| Year | Number Vessels | Number Landings ^a | Commercial | Average | First Wholesale | | |
|-------------------|----------------|------------------------------|-------------------------|---------------------------|------------------|----------------------|--------------|
| | | | Catch (lb) ^b | Landing (lb) ^b | Average Price/lb | Est. Value (dollars) | Number Tows |
| 1975 | 1 | 1 | 2,508 | 2,508 | 1.40 | 3,511 | ^c |
| 1976 | | | No Effort | | | | |
| 1977 | | | No Effort | | | | |
| 1978 | | | No Effort | | | | |
| 1979 | | | No Effort | | | | |
| 1980 | | | No Effort | | | | |
| 1981 | | | Confidential | | | | |
| 1982 | 6 | 20 | 205,691 | 10,284 | 3.35 | 689,064 | ^c |
| 1983 | | | Confidential | | | | |
| 1984 | | | No Effort | | | | |
| 1985 | | | Confidential | | | | |
| 1986 | | | No Effort | | | | |
| 1987 | | | Confidential | | | | |
| 1988 | | | Confidential | | | | |
| 1989 | | | No Effort | | | | |
| 1990 | | | Confidential | | | | |
| 1991 | | | Confidential | | | | |
| 1992 | | | No Effort | | | | |
| 1993 ^d | | | Confidential | | | | |
| 1993/94 | 8 | 7 | 112,152 | 16,012 | 5.15 | 577,583 | 949 |
| 1994/95 | 7 | 11 | 65,282 | 5,935 | 5.79 | 377,983 | 1,006 |
| 1995/96 | | | Closed | | | | |
| 1996/97 | 2 ^e | 2 | 12,560 | 6,280 | 6.30 | 79,128 | 185 |
| 1997/98 | 4 | 6 | 51,616 | 8,603 | 6.50 | 335,504 | 1,054 |
| 1998/99 | 4 | 4 | 63,290 | 15,822 | 6.40 | 405,056 | 684 |
| 1999/2000 | 5 | 5 | 75,610 | 15,122 | 6.25 | 472,563 | 1,107 |
| 2000/01 | 3 | 3 | 7,660 | 2,553 | 5.50 | 42,130 | 189 |
| 2001/02 | | | Closed | | | | |
| 2002/03 | | | Closed | | | | |
| 2003/04 | | | No Effort | | | | |
| 2004/05 | | | No Effort | | | | |
| 2005/06 | | | No Effort | | | | |

-continued-

Table 20.—Page 2 of 2

^a Prior to 1995/96, the reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of offloads.

^b Pounds of scallop meats.

^c Not available.

^d January 1-June 30.

^e Confidential data voluntarily released by vessel operators.

Table 21.—Alaska Peninsula Registration Area scallop fishery summary statistics.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|----------------------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|
| 1993/94 | 8 | ^d | 1,847 | 112,152 | 61 |
| 1994/95 | 7 | ^d | 1,664 | 65,282 | 39 |
| 1995/96 | | | Closed | | |
| 1996/97 ^e | 2 | 200,000 | 327 | 12,560 | 38 |
| 1997/98 | 4 | 200,000 | 1,752 | 51,616 | 29 |
| 1998/99 | 4 | 200,000 | 1,612 | 63,290 | 39 |
| 1999/2000 | 5 | 200,000 | 2,025 | 75,610 | 37 |
| 2000/01 | 3 | 33,000 | 320 | 7,660 | 24 |
| 2001/02 | | | Closed | | |
| 2002/03 | | | Closed | | |
| 2003/04 ^f | | 10,000 | No Effort | | |
| 2004/05 ^f | | 10,000 | No Effort | | |
| 2005/06 ^g | | 20,000 | No Effort | | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

^f The area between 160° W long. and 161° W long. was closed. The remainder of the registration area was open to fishing.

^g The area between 160° W long. and 161° W long. was open for 0 to 10,000 pounds. The remainder of the district was open to an additional 0 to 10,000 pounds.

Table 22.—Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987–2006/07.

| Year | Number Vessels | Number Landings ^a | Commercial Catch (lb) ^b | Average Landing (lb) ^b | Average Price/lb | First Wholesale Est. Value (dollars) | Number Tows |
|-------------------|----------------|------------------------------|------------------------------------|-----------------------------------|------------------|--------------------------------------|-------------|
| 1987 | | | | Confidential | | | |
| 1988 | | | | No Effort | | | |
| 1989 | | | | No Effort | | | |
| 1990 | | | | Confidential | | | |
| 1991 | | | | Confidential | | | |
| 1992 | | | | No Effort | | | |
| 1993 ^c | 6 | 22 | 321,539 | 14,615 | 5.22 | 1,678,434 | 3,711 |
| 1993/94 | 9 | 16 | 284,414 | 17,776 | 5.22 | 1,484,641 | 3,578 |
| 1994/95 | 8 | 29 | 505,439 | 17,429 | 6.00 | 3,032,634 | 6,619 |
| 1995/96 | | | | Closed | | | |
| 1996/97 | 1 ^e | 2 | 150,295 | 75,147 | ^d | ^d | 952 |
| 1997/98 | 2 ^e | 5 | 97,002 | 19,400 | 7.05 | 683,864 | 1,276 |
| 1998/99 | 4 | 4 | 96,795 | 24,198 | 6.30 | 609,808 | 1,175 |
| 1999/2000 | 2 ^e | 4 | 164,929 | 41,232 | 6.25 | 1,030,806 | 1,736 |
| 2000/01 | 3 | 4 | 205,520 | 51,380 | 5.50 | 1,130,360 | 1,608 |
| 2001/02 | 3 | 5 | 140,871 | 28,174 | 5.25 | 739,572 | 1,406 |
| 2002/03 | 2 ^e | 5 | 92,240 | 18,448 | 5.20 | 479,648 | 1,012 |
| 2003/04 | 2 ^e | 3 | 42,590 | 14,197 | 5.25 | 223,597 | 517 |
| 2004/05 | 2 ^e | 2 | 10,050 | 5,025 | 5.25 | 52,762 | 145 |
| 2005/06 | 1 ^e | 1 | 23,220 | 23,220 | 8.50 | 197,370 | 303 |

^a Prior to 1995/96, reported number of landings is equal to number of fish tickets. After 1995/96, the reported number of landings is equal to the number of off-loads.

^b Pounds of scallop meats.

^c January 1- June 30.

^d Not available.

^e Confidential data voluntarily released by vessel operators.

Table 23.—Bering Sea Registration Area scallop fishery summary statistics, 1993/94–2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|-----------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|
| 1993/94 | 9 | ^d | 5,764 | 284,414 | 49 |
| 1994/95 | 8 | ^d | 11,113 | 505,439 | 45 |
| 1995/96 | | | Closed | | |
| 1996/97 | 1 ^e | 600,000 | 2,313 | 150,295 | 65 |
| 1997/98 | 2 ^e | 600,000 | 2,246 | 97,002 | 43 |
| 1998/99 | 4 | 400,000 | 2,319 | 96,795 | 42 |
| 1999/2000 | 2 ^e | 400,000 | 3,294 | 164,929 | 50 |
| 2000/01 | 3 | 200,000 | 3,355 | 205,520 | 61 |
| 2001/02 | 3 | 200,000 | 3,072 | 140,871 | 46 |
| 2002/03 | 2 ^e | 105,000 | 2,038 | 92,240 | 45 |
| 2003/04 | 2 ^e | 105,000 | 1,020 | 42,590 | 42 |
| 2004/05 | 1 ^e | 50,000 | 275 | 10,050 | 37 |
| 2005/06 | 1 ^e | 50,000 | 602 | 23,220 | 39 |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

Table 24.—Historic commercial catch, effort, and value of weathervane scallops, Dutch Harbor Registration Area, 1982–2005/06.

| Year | Number Vessels | Number Landings ^a | Commercial Catch (lb) ^b | Average Landings (lb) ^b | First Wholesale | | |
|-----------|----------------|------------------------------|------------------------------------|------------------------------------|------------------|----------------------|--------------|
| | | | | | Average Price/lb | Est. Value (dollars) | Number Tows |
| 1982 | 5 | 8 | 62,105 | 7,763 | 3.11 | 193,147 | ^c |
| 1983 | | | | No Effort | | | |
| 1984 | | | | No Effort | | | |
| 1985 | | | | Confidential | | | |
| 1986 | 5 | 37 | 406,642 | 10,990 | 3.50 | 1,423,247 | 8,752 |
| 1987 | | | | Confidential | | | |
| 1988 | | | | Confidential | | | |
| 1989 | | | | Confidential | | | |
| 1990 | | | | Confidential | | | |
| 1991 | | | | Confidential | | | |
| 1992 | | | | Confidential | | | |
| 1993/94 | 3 | 6 | 38,731 | 6,558 | 5.15 | 199,465 | 572 |
| 1994/95 | 3 | 3 | 1,931 | 644 | 5.79 | 11,180 | 52 |
| 1995/96 | 1 ^d | 2 | 26,950 | 13,475 | ^c | ^c | 747 |
| 1996/97 | | | | No Effort | | | |
| 1997/98 | 1 ^d | 1 | 5,790 | 5,790 | 7.05 | 40,819 | 105 |
| 1998/99 | 4 | 5 | 46,432 | 9,286 | 6.30 | 295,522 | 479 |
| 1999/2000 | 1 ^d | 1 | 6,465 | 6,465 | 6.25 | 40,500 | 167 |
| 2000/01 | | | | Closed | | | |
| 2001/02 | | | | Closed | | | |
| 2002/03 | 1 ^d | 1 | 6,000 | 6,000 | 5.20 | 31,200 | 115 |
| 2003/04 | | | | Closed | | | |
| 2004/05 | | | | Closed | | | |
| 2005/06 | | | | Closed | | | |

^a Prior to 1995/96, reported number of landings is equal to number of fish tickets. After 1995/96, the reported number of landings is equal to the number of off-loads.

^b Pounds of scallop meats.

^c Not available.

^d Confidential data voluntarily released by vessel operators.

Table 25.—Dutch Harbor Registration Area scallop fishery summary statistics, 1993/94–2005/06.

| Season | Number vessels | GHR ceiling (lb meat) ^a | Dredge hours ^b | Catch (lb meat) ^c | CPUE (lb meat per dredge hr) |
|-----------|----------------|------------------------------------|---------------------------|------------------------------|------------------------------|
| 1993/94 | 3 | 170,000 | 838 | 38,731 | 46 |
| 1994/95 | 3 | 170,000 | 81 | 1,931 | 24 |
| 1995/96 | 1 ^d | 170,000 | 1,047 | 26,950 | 26 |
| 1996/97 | | 170,000 | | No Effort | |
| 1997/98 | 1 ^d | 170,000 | 171 | 5,790 | 34 |
| 1998/99 | 4 | 110,000 | 1,025 | 46,432 | 45 |
| 1999/2000 | 1 ^d | 110,000 | 273 | 6,465 | 24 |
| 2000/01 | | | | Closed | |
| 2001/02 | | | | Closed | |
| 2002/03 | 1 ^d | 10,000 | 184 | 6,000 | 33 |
| 2003/04 | | | | Closed | |
| 2004/05 | | | | Closed | |
| 2005/06 | | | | Closed | |

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Confidential data voluntarily released by vessel operators.

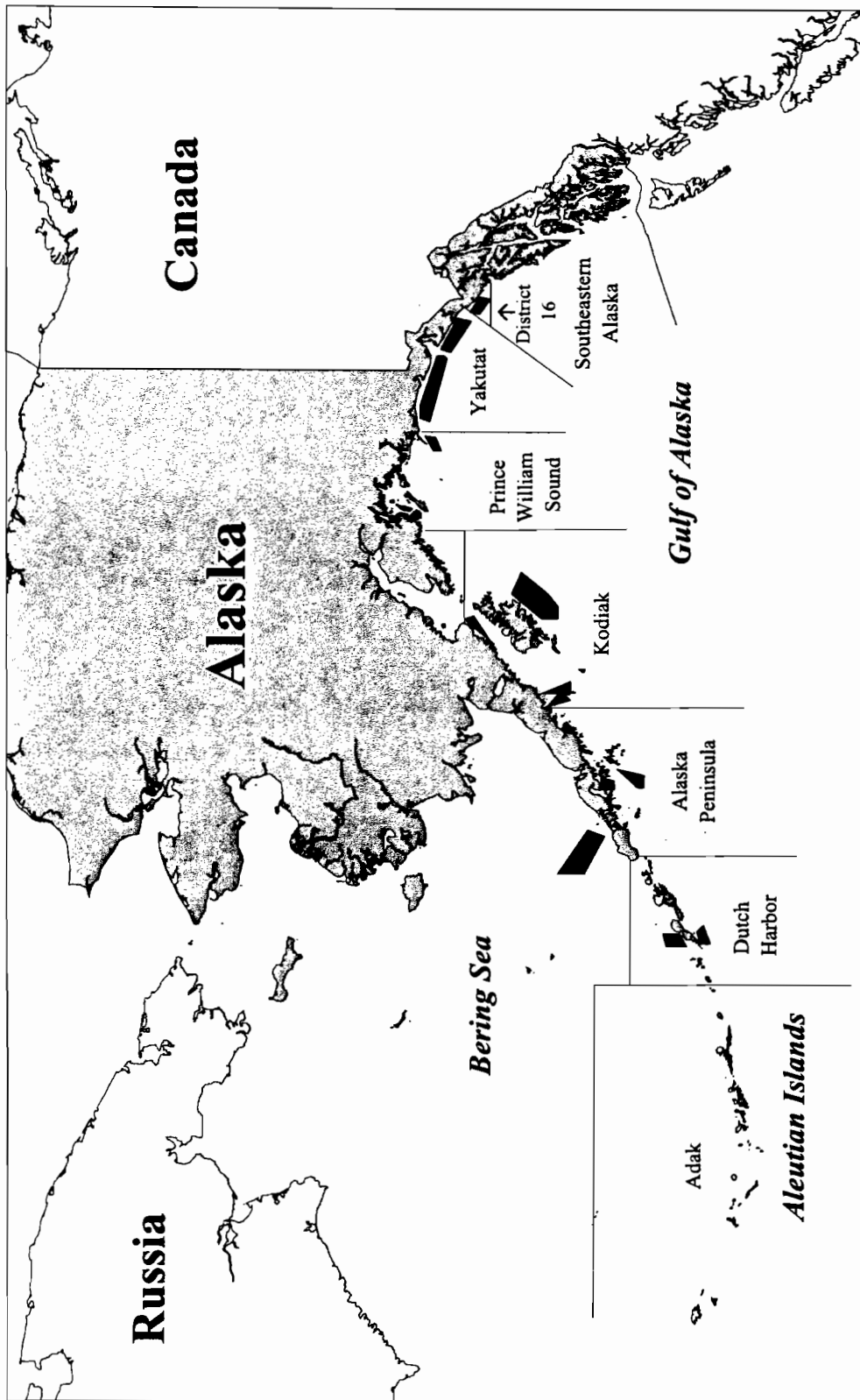


Figure 1.—Major weatherervane scallop fishing locations in coastal waters of Alaska.

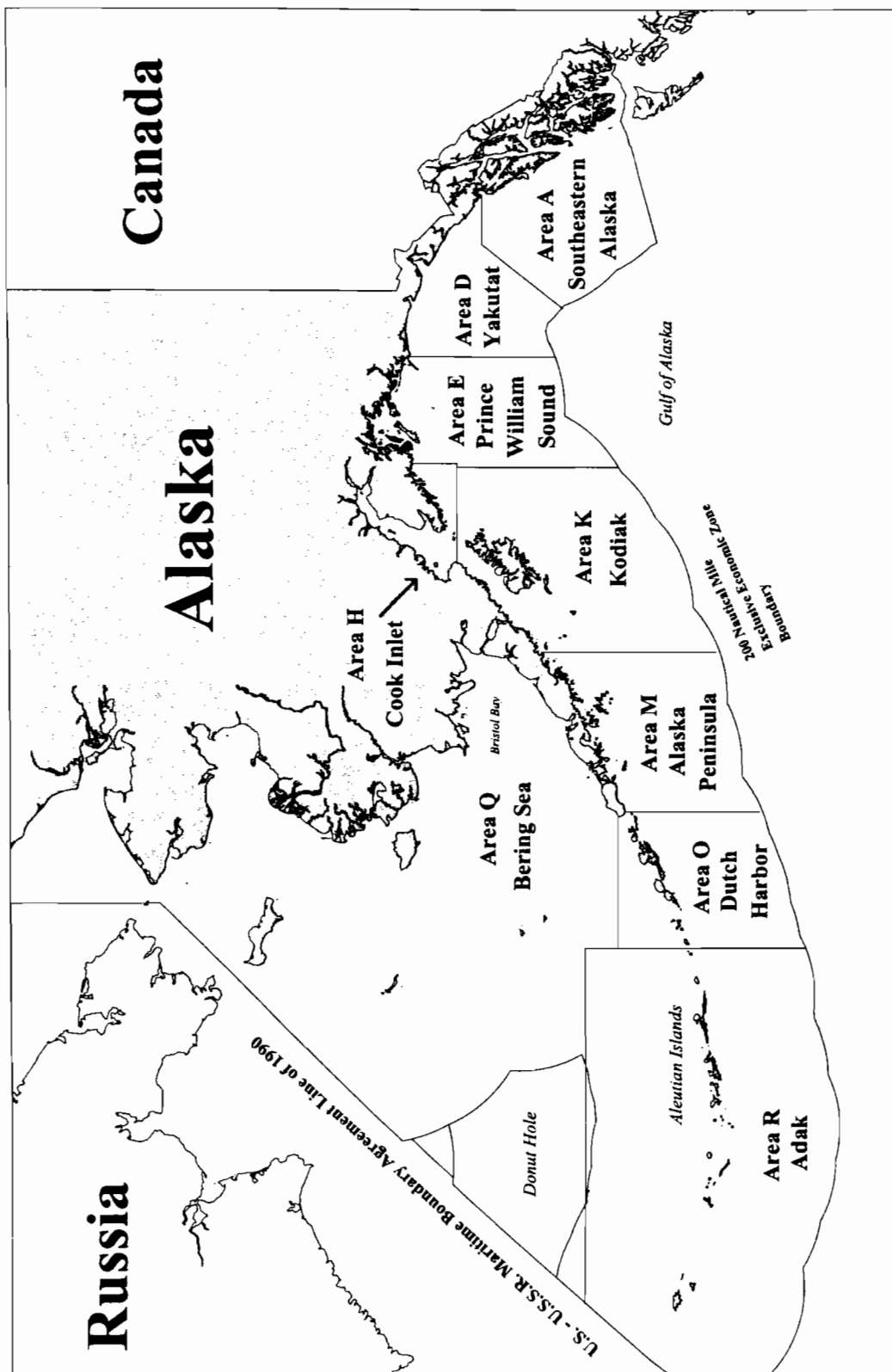


Figure 2.—State of Alaska weathered scallop fishing registration areas.

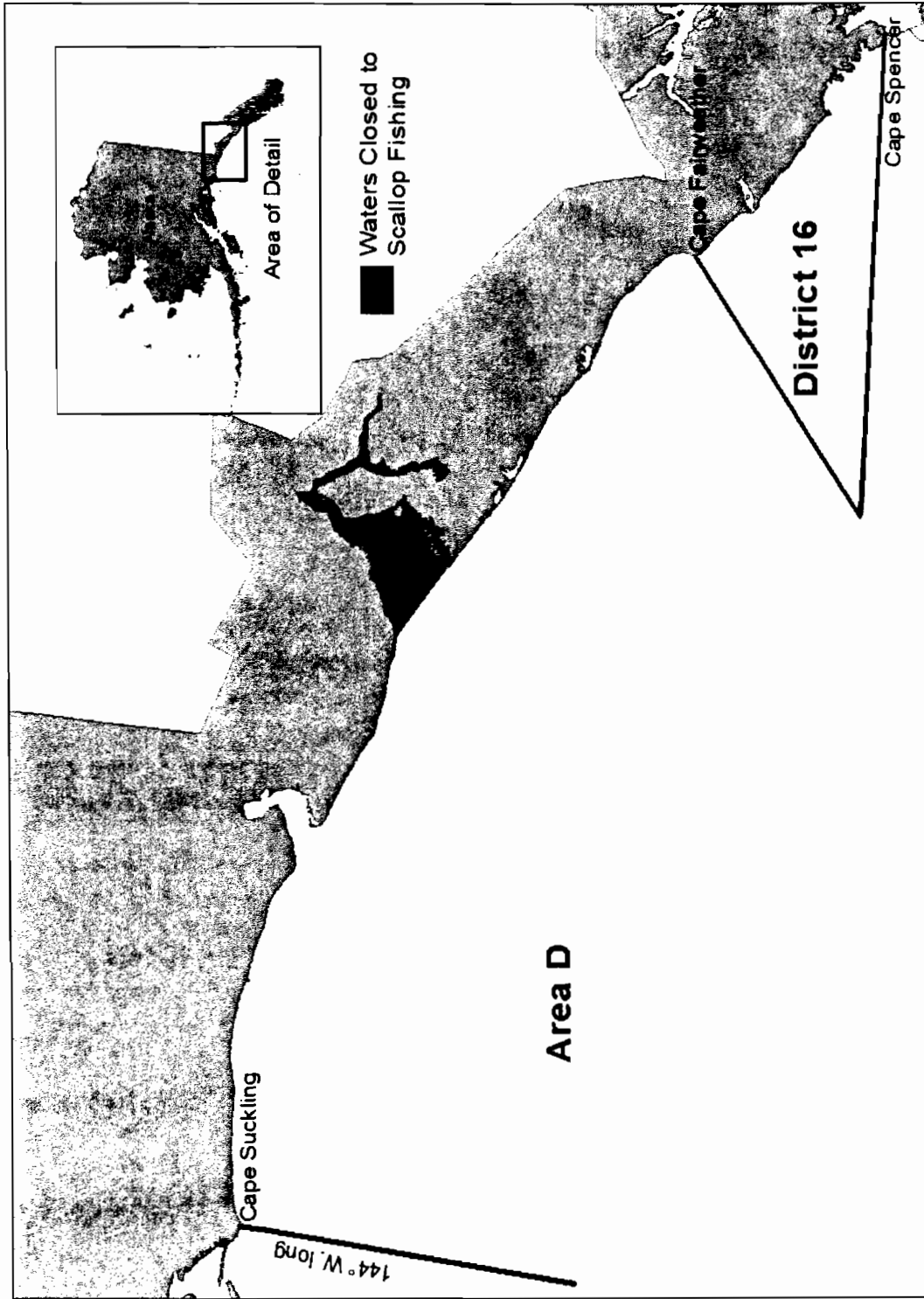


Figure 3.—Yakutat weathervane scallop fishing registration area and closed waters.

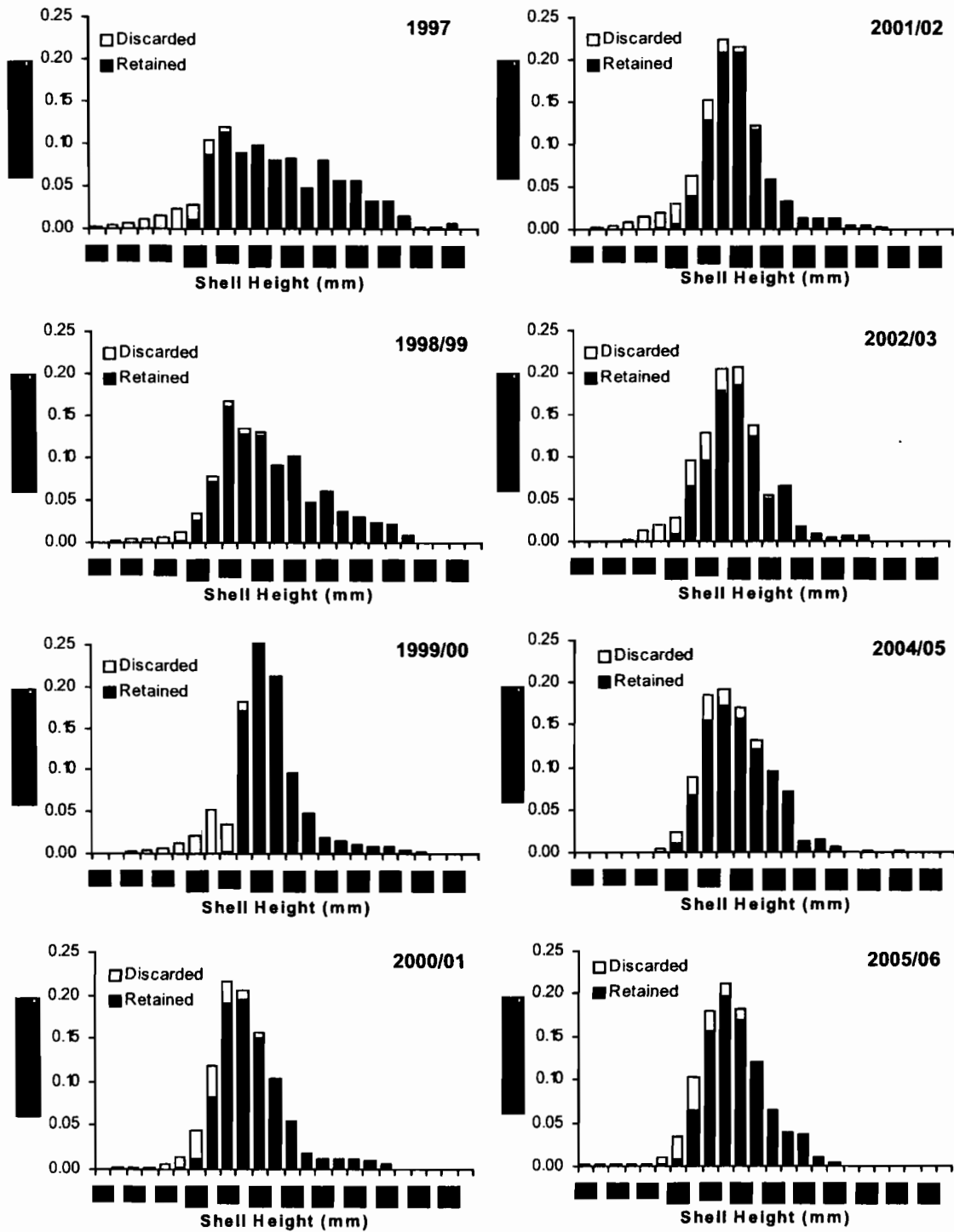


Figure 4.-Yakutat, District 16, scallop shell heights from resampling observer data, 1997-2005/06.

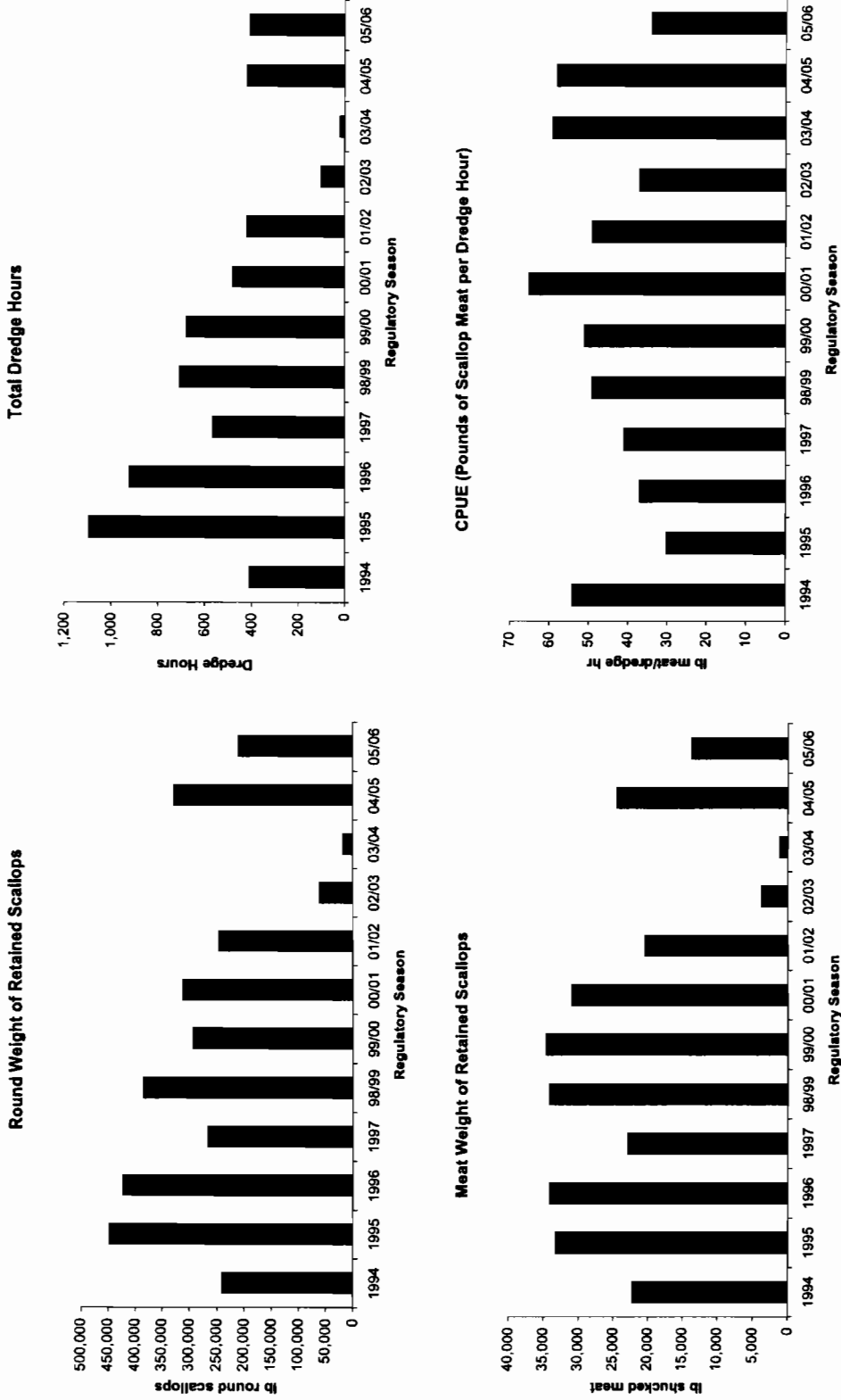


Figure 5.—Weathervane scallop harvest by round weight, dredge hours, and CPUE, District 16, Yakutat Registration Area, 1994–2005/06.

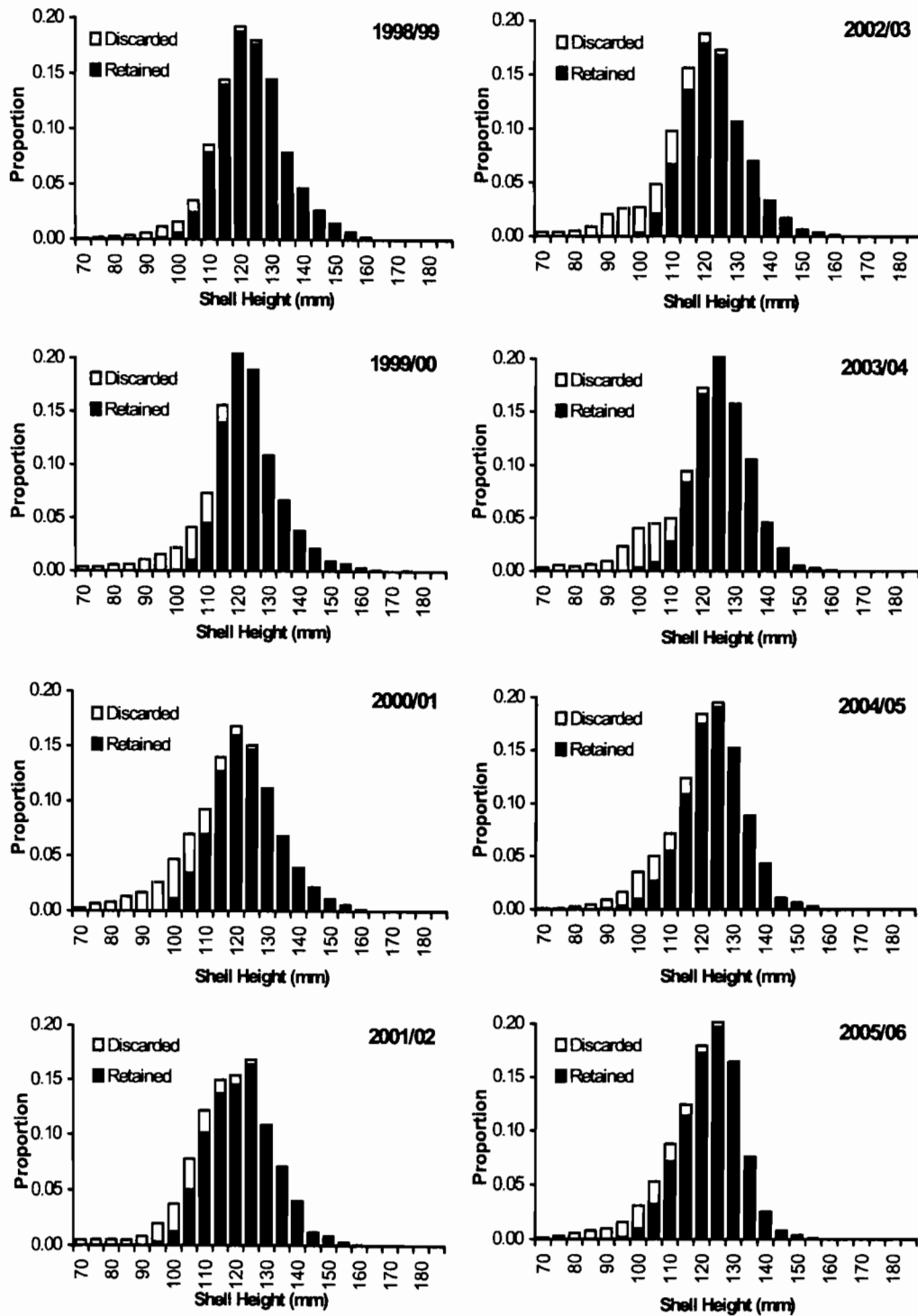


Figure 6.—Yakutat Area D, Scallop shell heights from resampling observer data, 1998/99–2005/06.

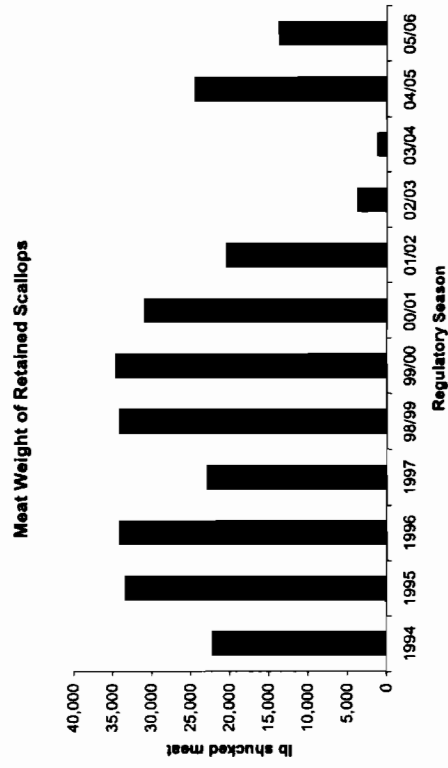
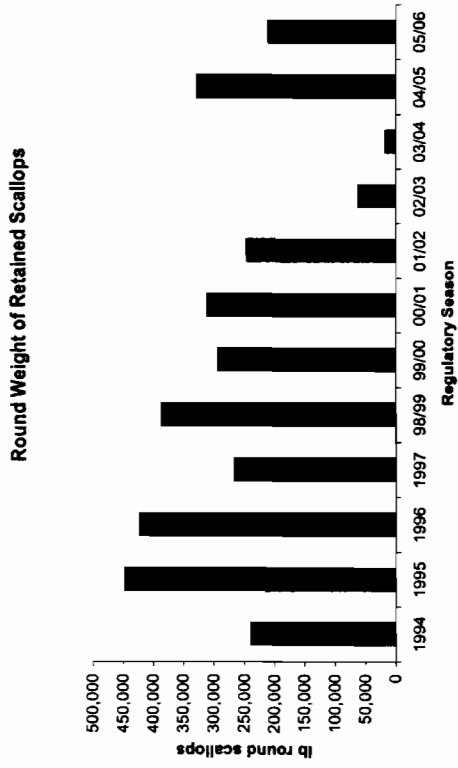
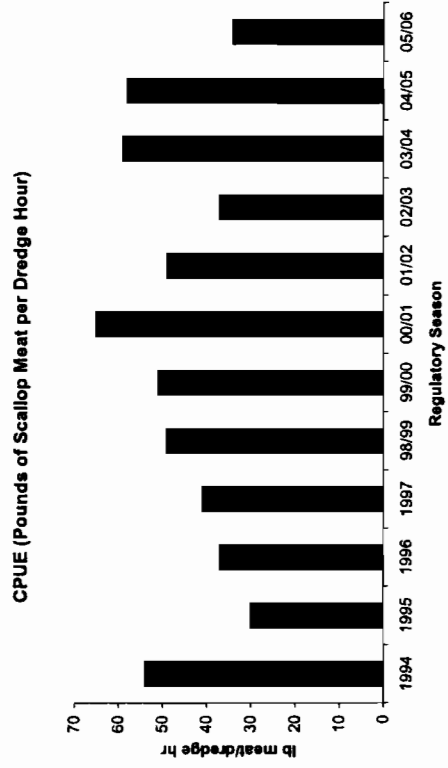
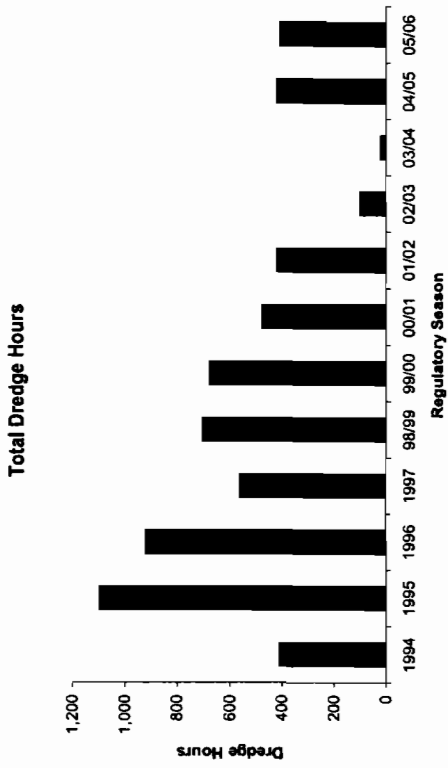


Figure 7.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Area D, Yakutat Registration Area, 1993–2005/06.

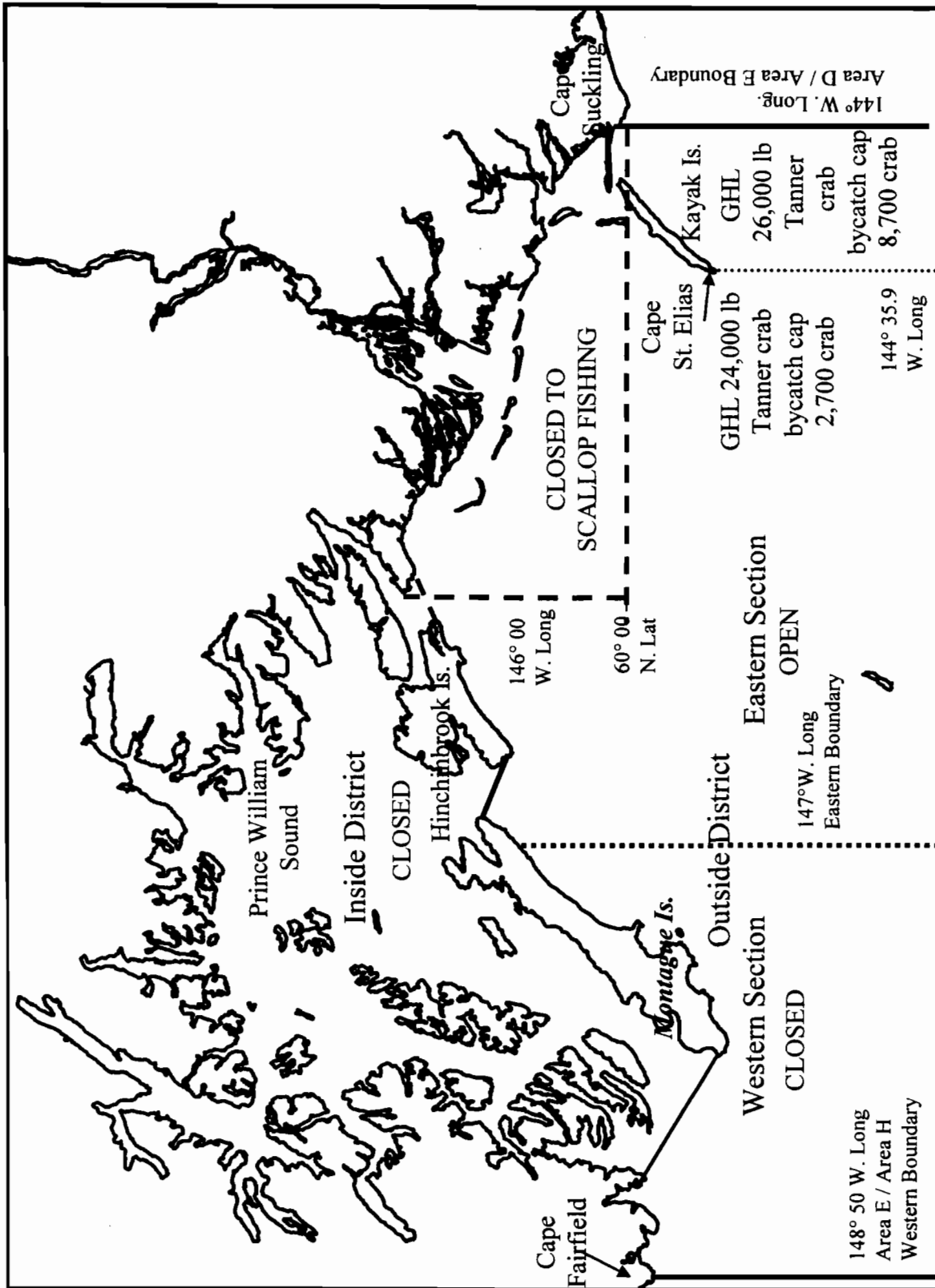


Figure 8.-Prince William Sound scallop fishing registration area and closed waters, 2005/06.

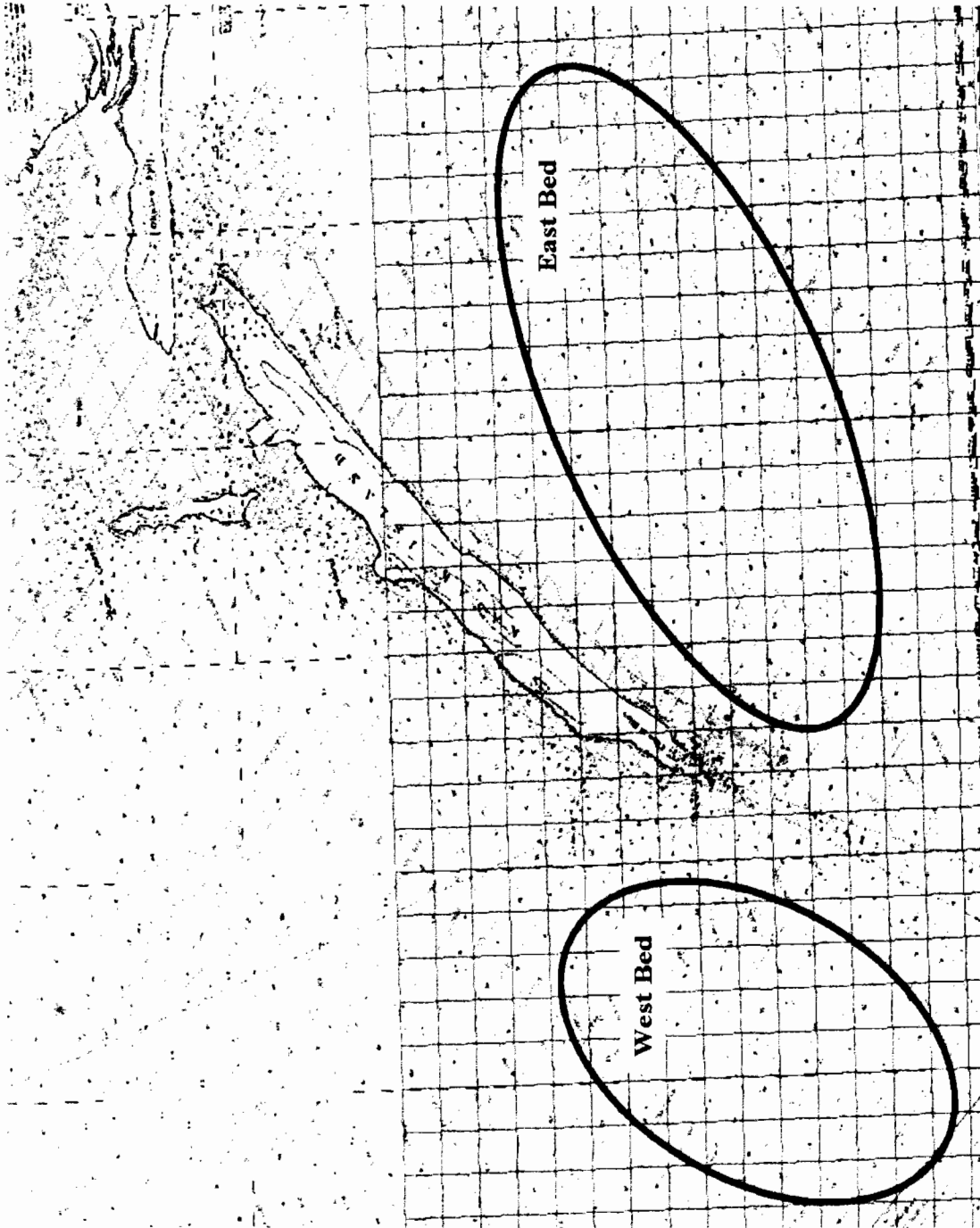


Figure 9.-Approximate location of weathered scallop beds located east and west of Kayak Island, Prince William Sound Management Area.

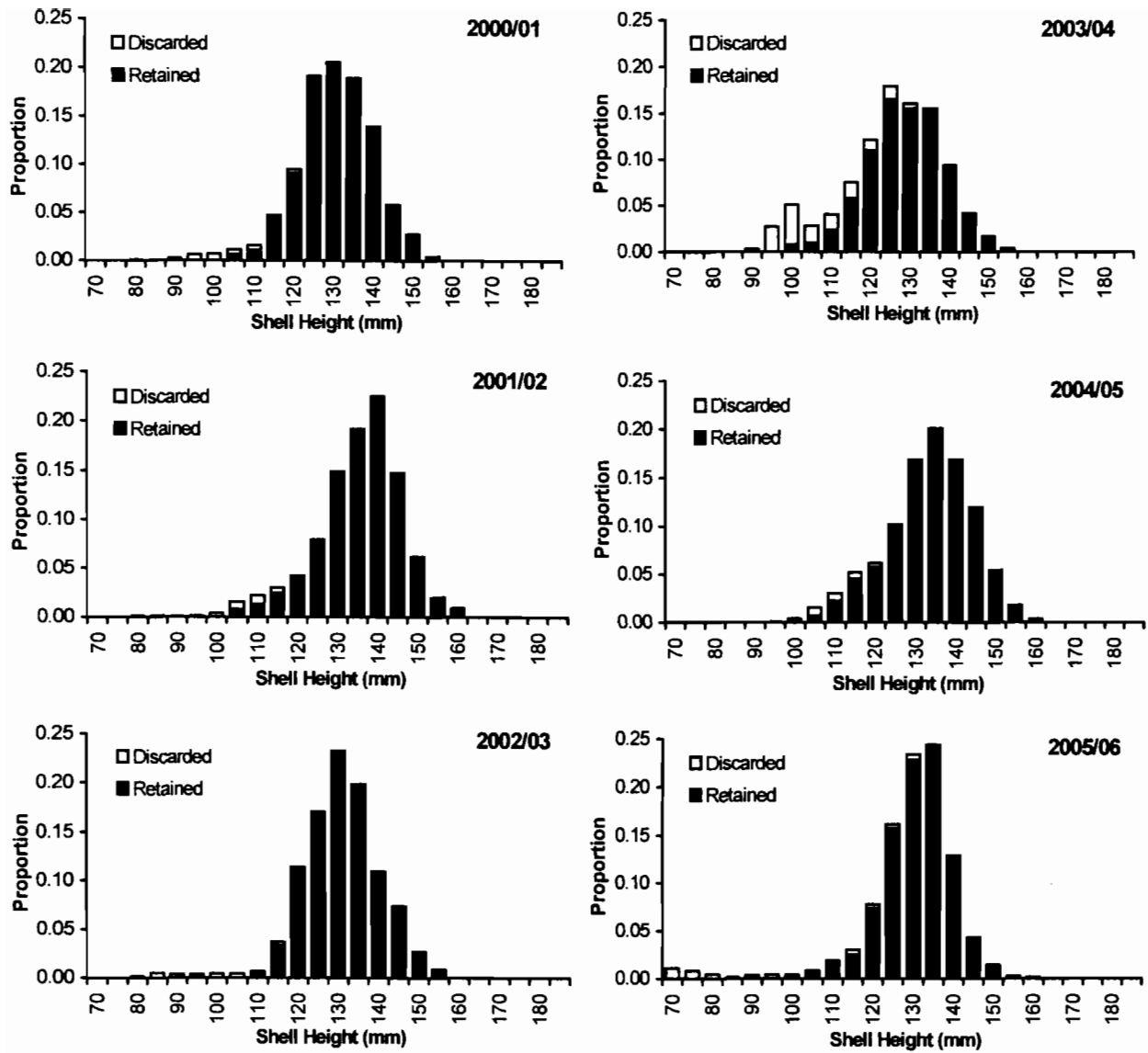
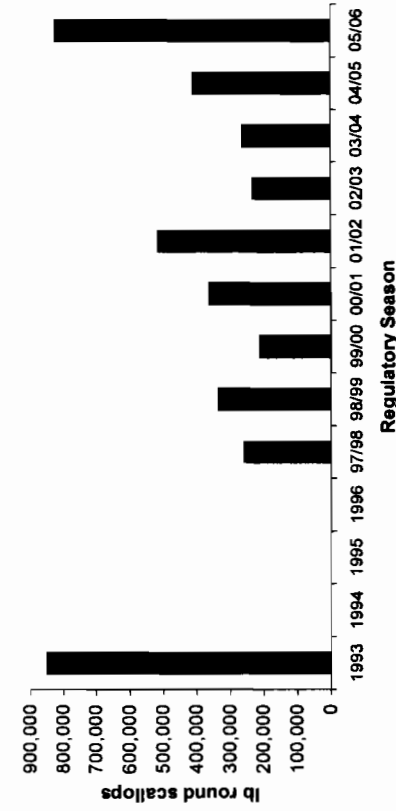
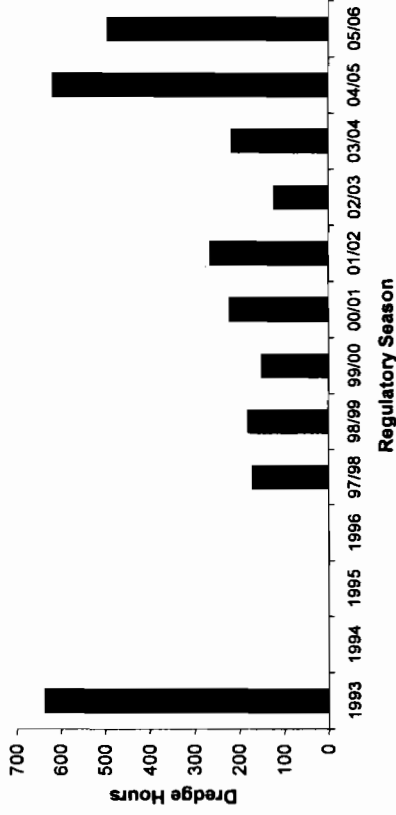


Figure 10.—Prince William Sound Registration Area scallop shell heights from resampling observer data, 2000/01–2005/06.

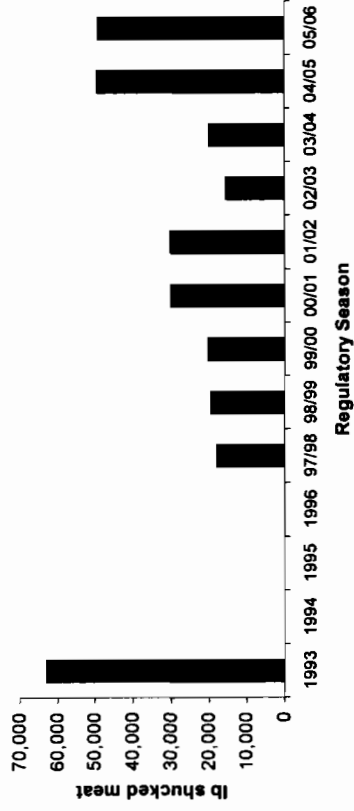
Round Weight of Retained Scallops



Total Dredge Hours



Shucked Meat Weight of Retained Scallops



CPUE (Pounds of Shucked Meat per Dredge Hour)

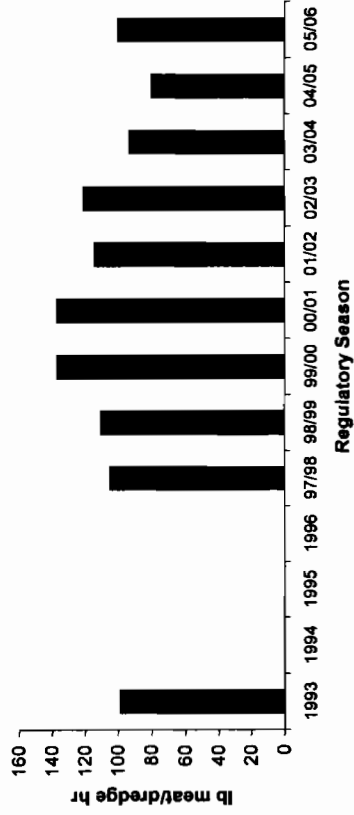


Figure 11.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Prince William Sound Registration Area, 1993–2005/06.

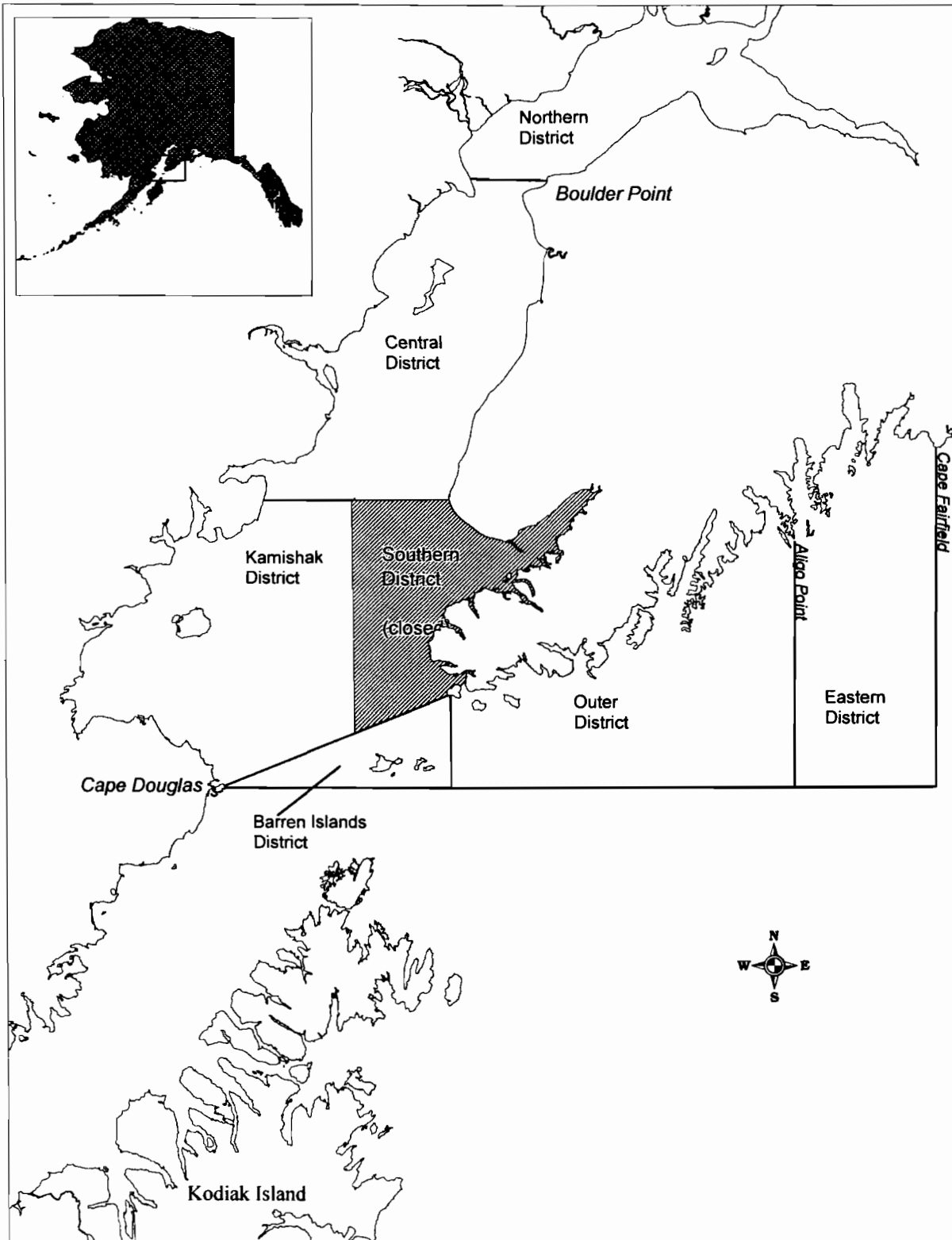


Figure 12.—Cook Inlet weathervane scallop registration area.

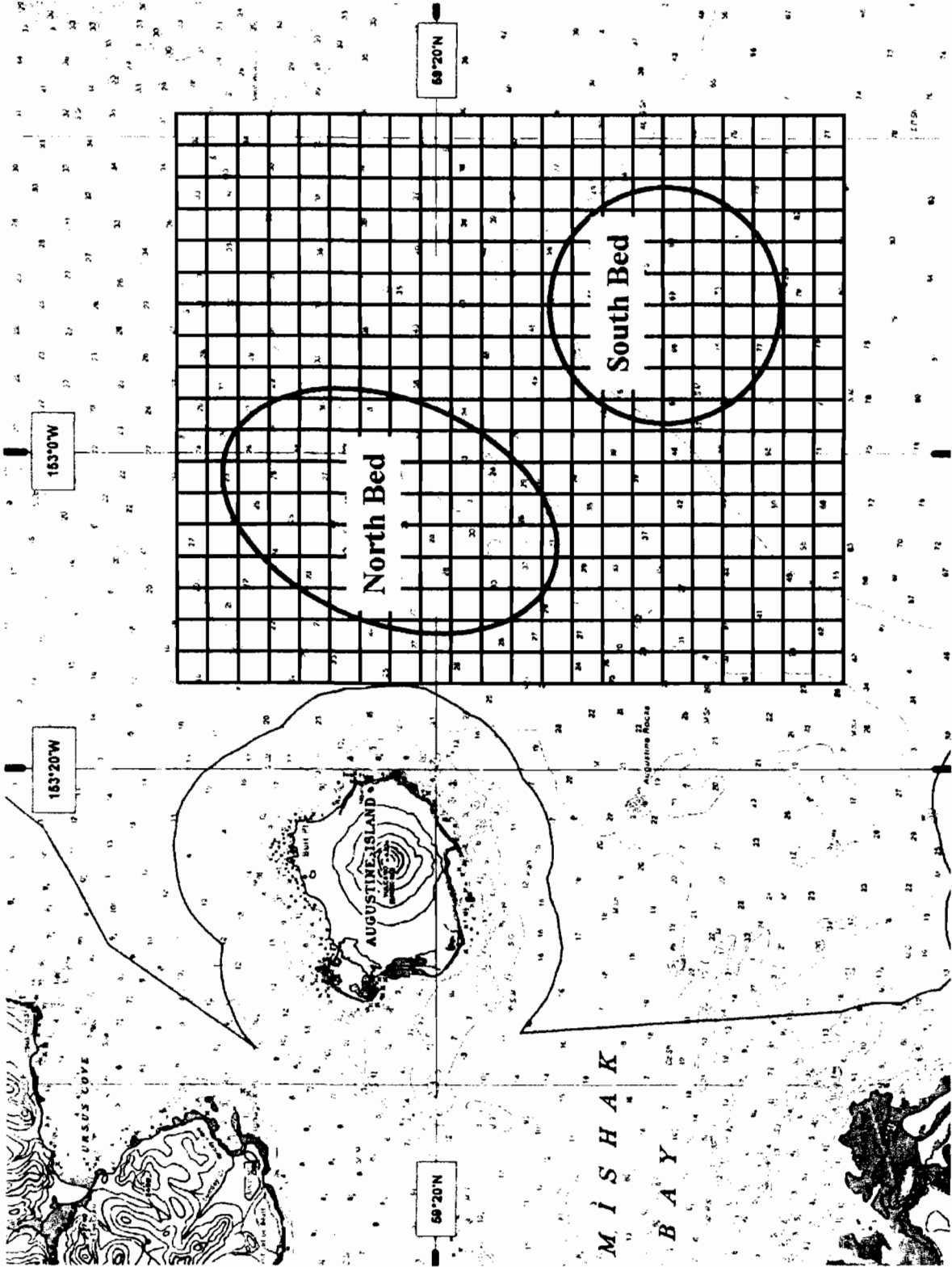


Figure 13.—Approximate locations of the north and south weatheravane scallop beds in the Kamishak District of Cook Inlet.

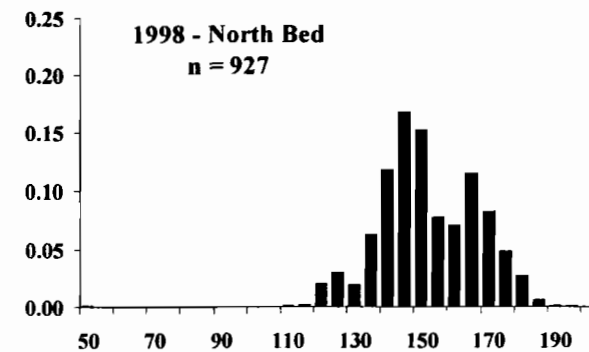
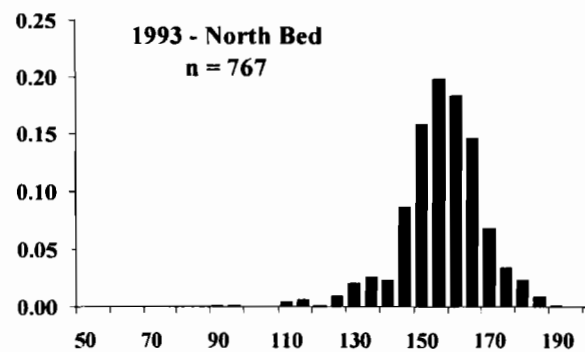
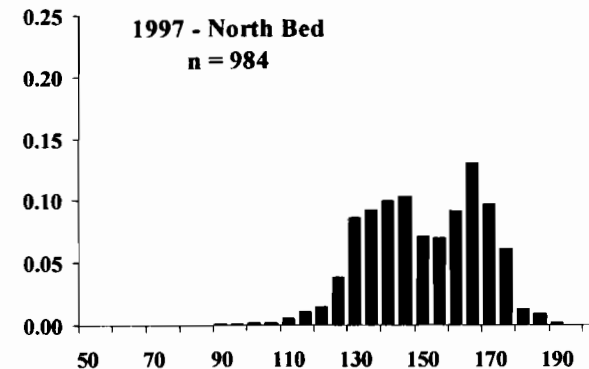
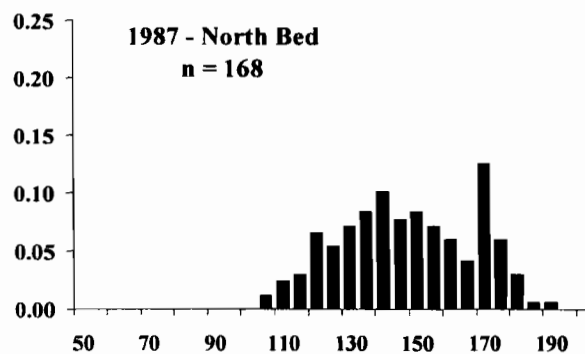
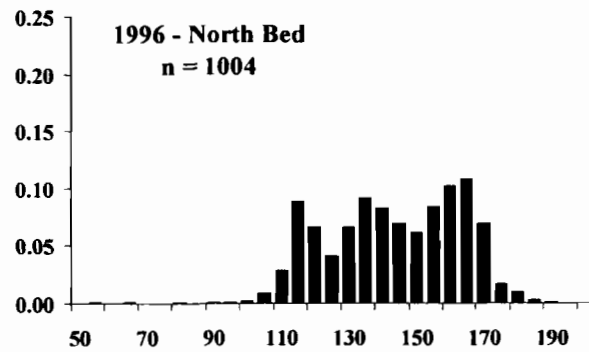
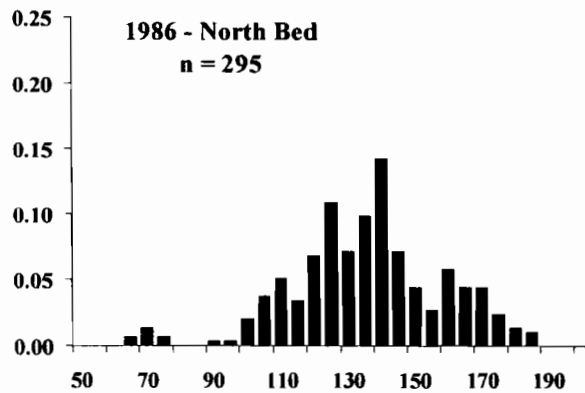
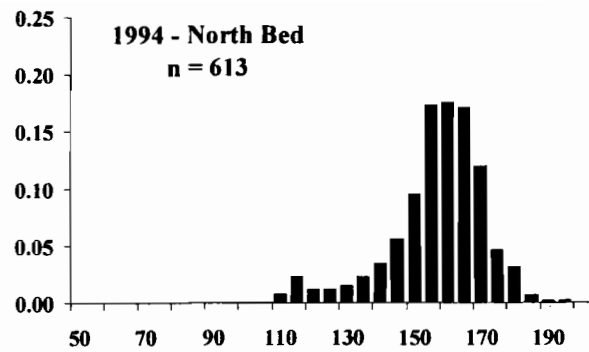
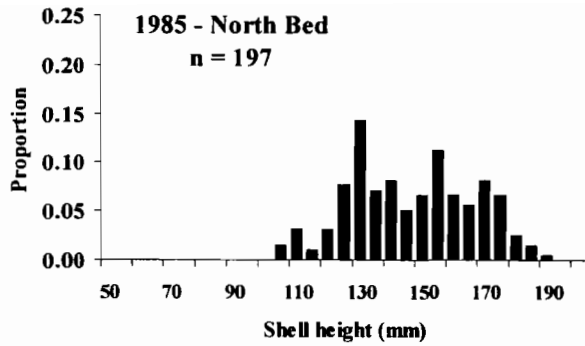


Figure 14.—Shell height frequencies of commercial weathervane scallop harvest samples from the north bed Kamishak District of Cook Inlet, 1983 - 2005.

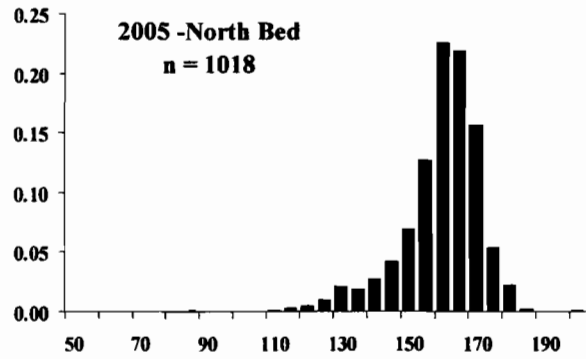
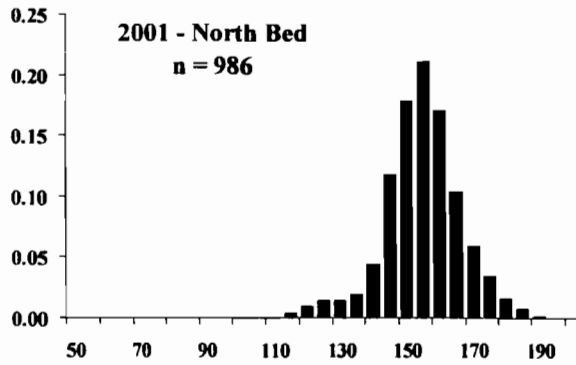
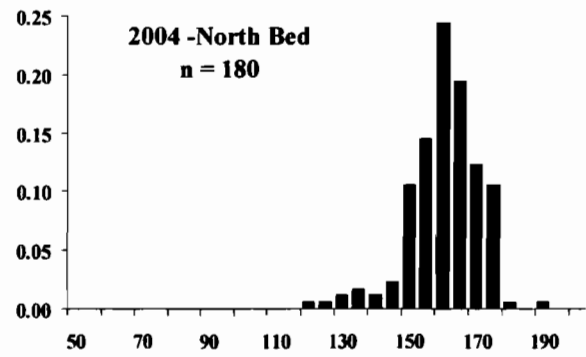
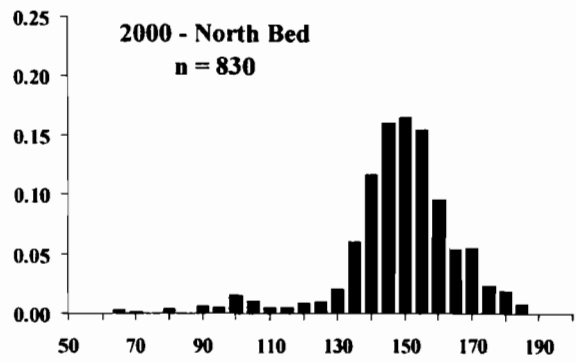
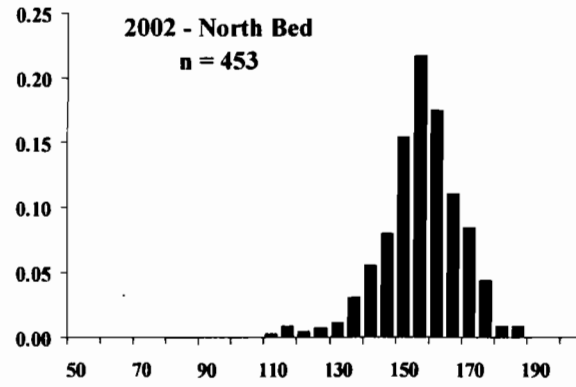
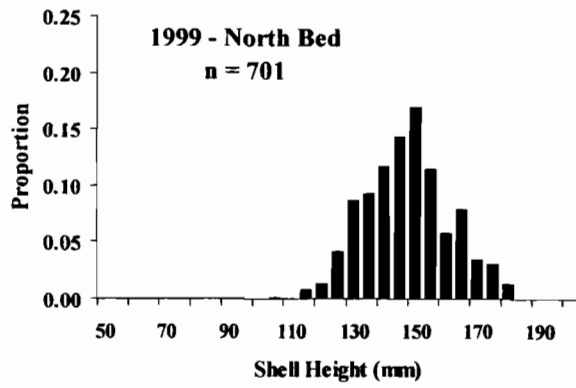


Figure 14.—Page 2 of 2.

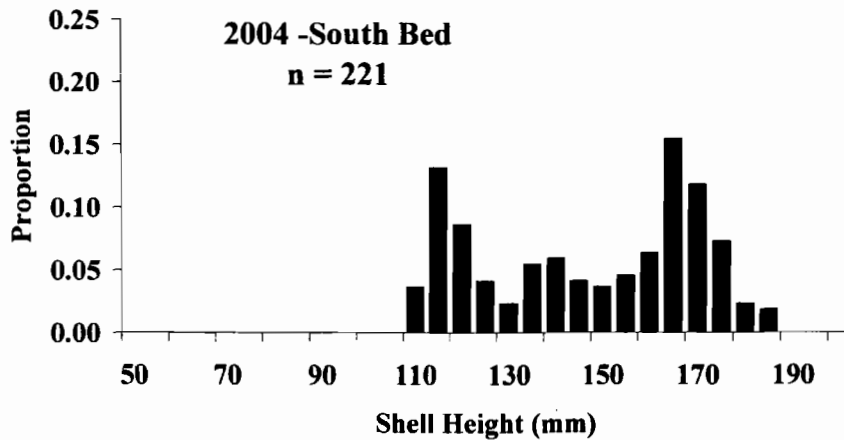
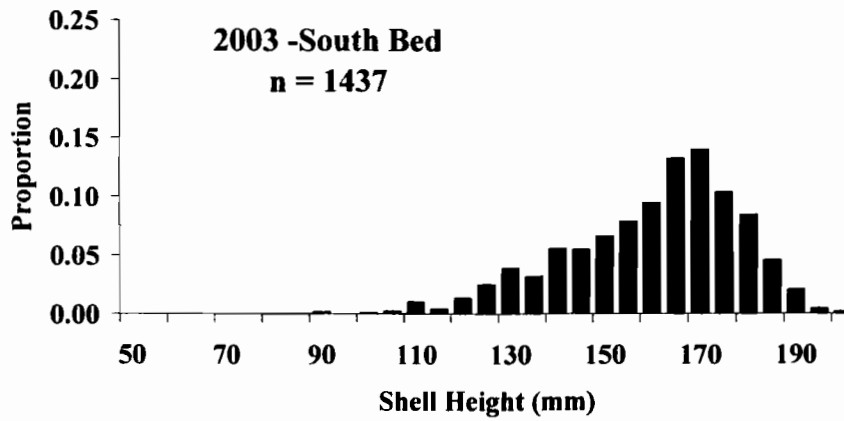
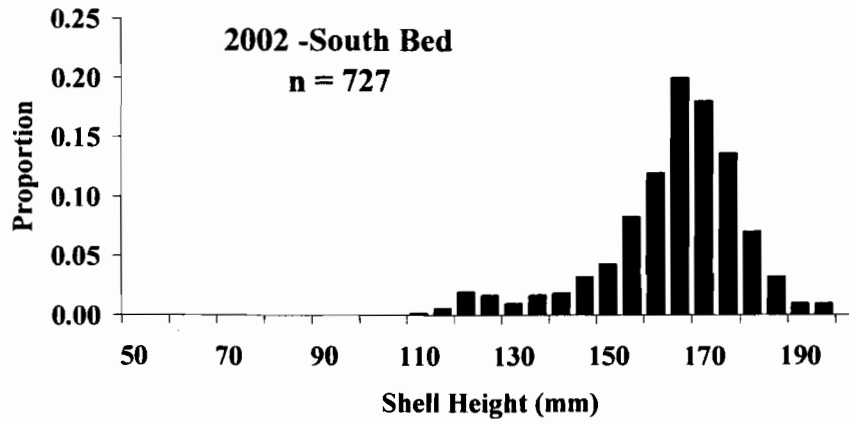


Figure 15.—Shell height frequencies of commercial weathervane scallop harvest samples from the south bed, Kamishak District of Cook Inlet, 2002 - 2004.

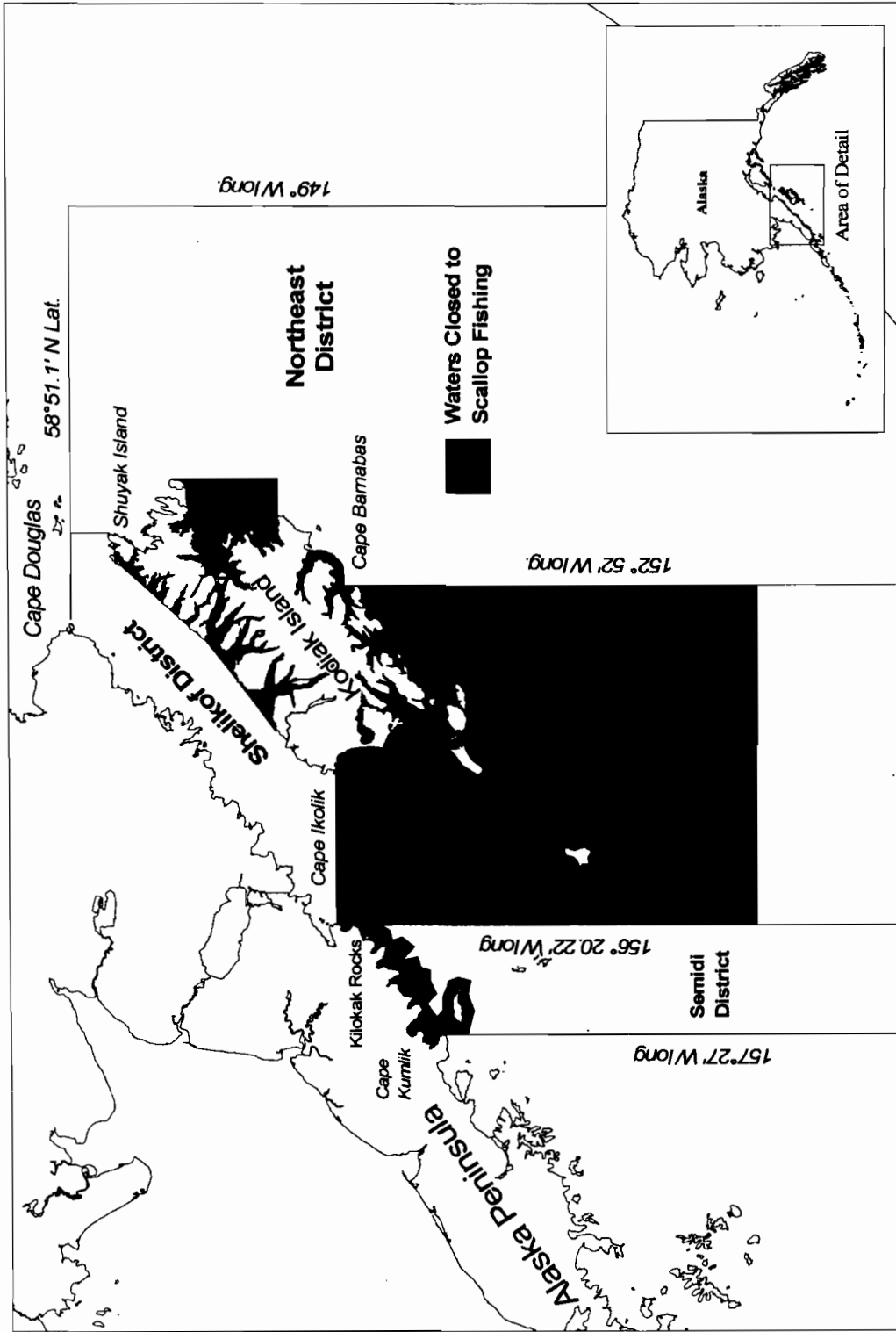


Figure 16.—Kodiak weatherhane scallop registration area and closed waters.

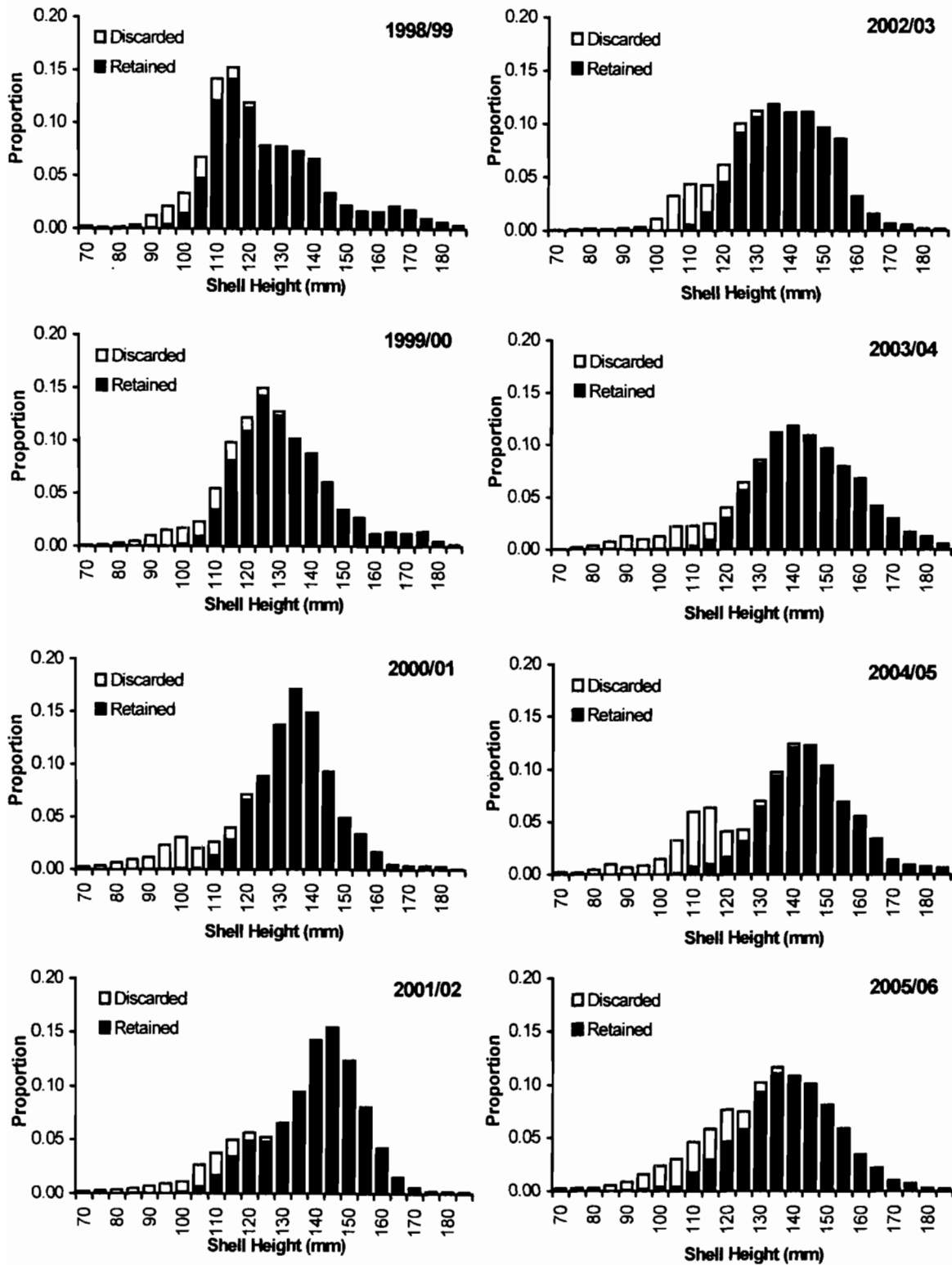
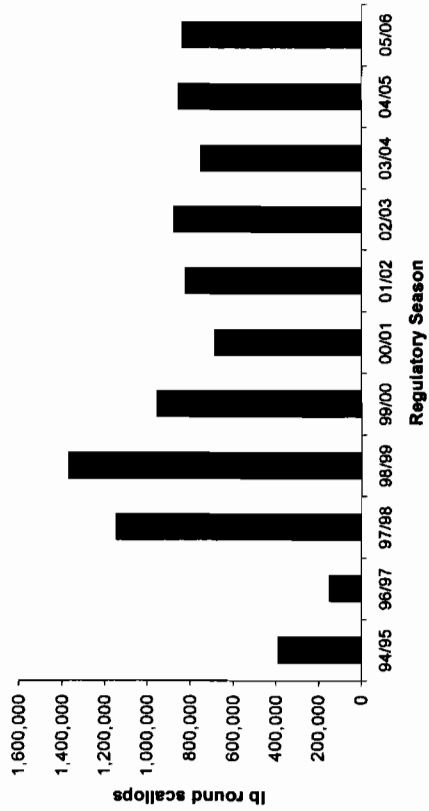
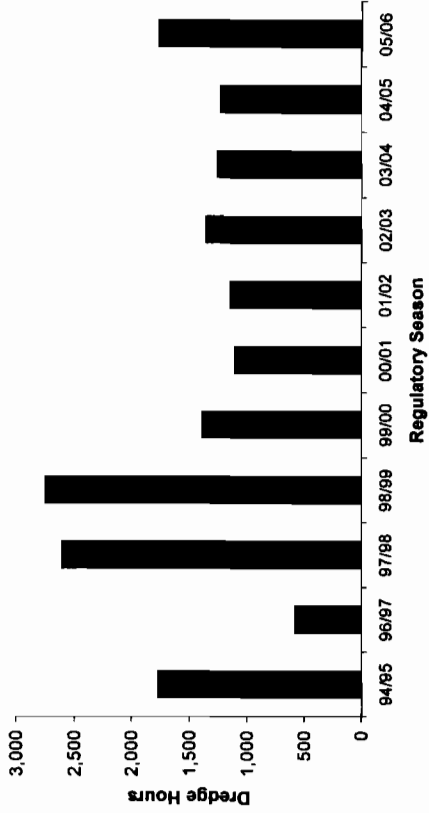


Figure 17.—Kodiak Northeast District scallop shell heights from resampling observer data, 1998/99–2005/06.

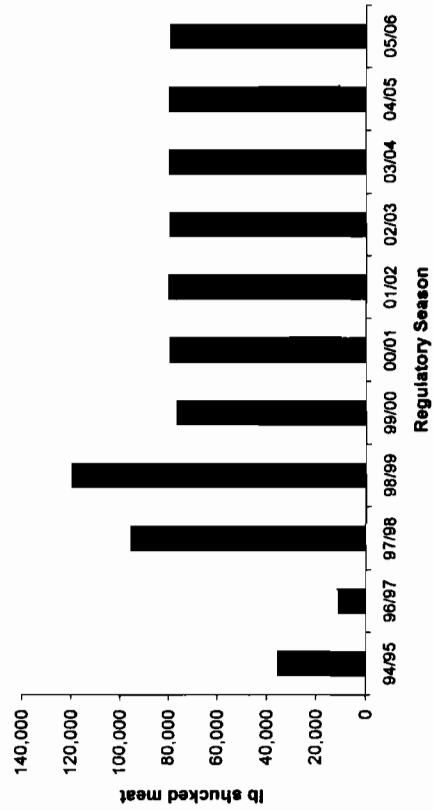
Round Weight of Retained Scallops



Total Dredge Hours



Shucked Meat Weight of Retained Scallops



CPUE (Pounds of Shucked Meat per Dredge Hour)

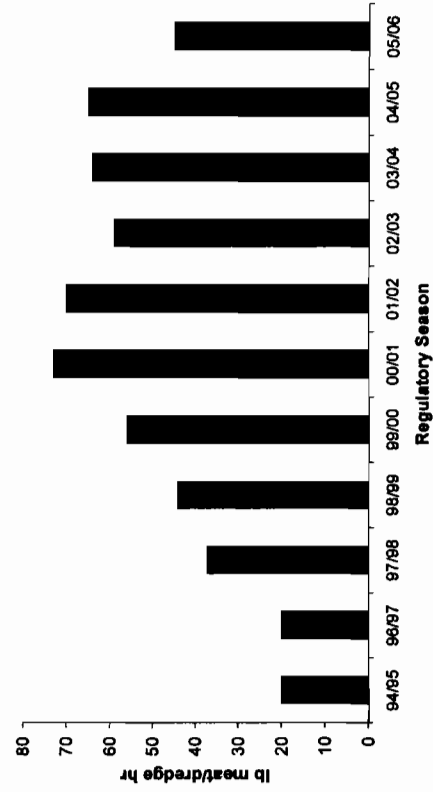


Figure 18.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1994/95–2005/06.

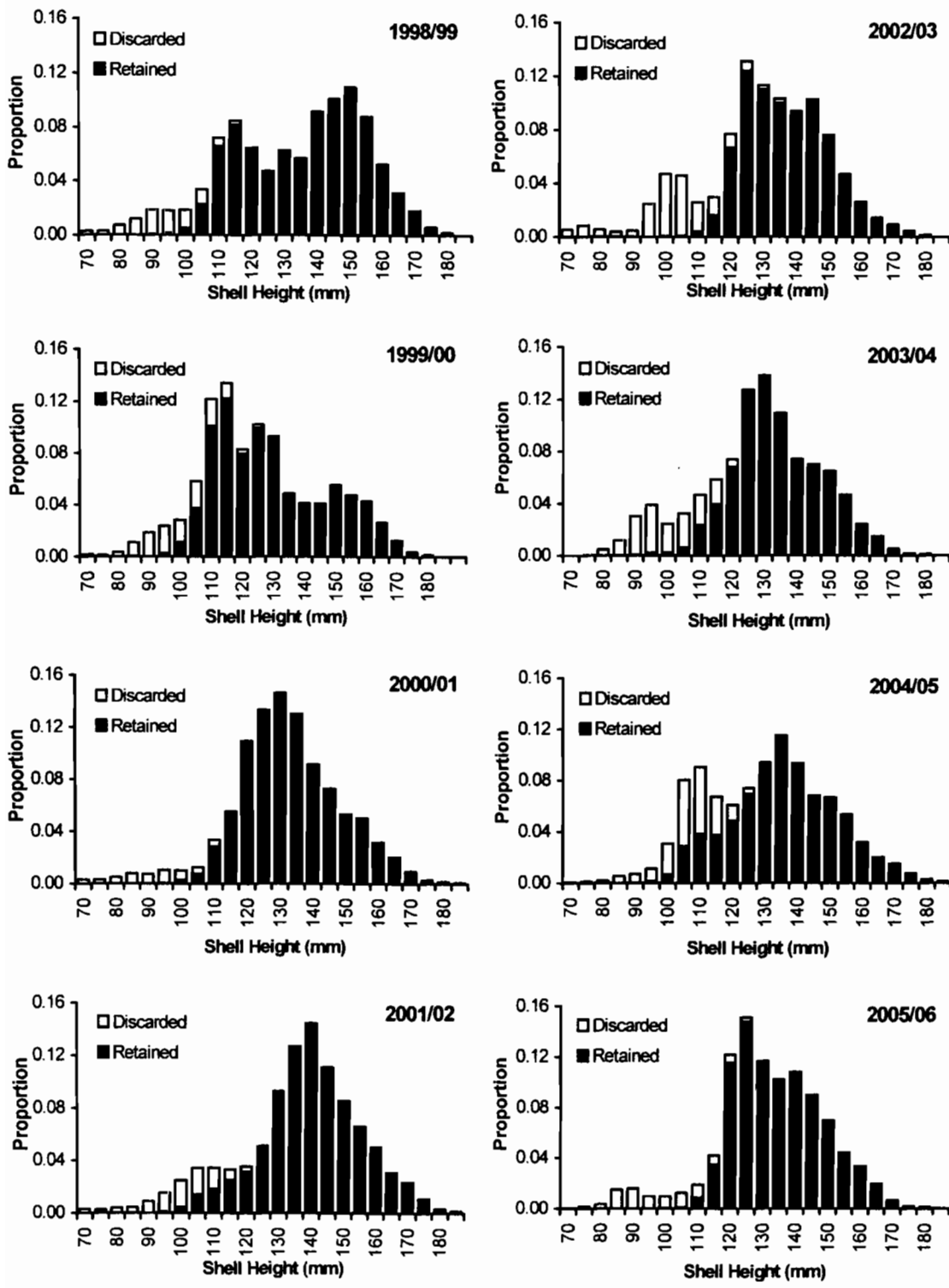


Figure 19.—Kodiak Shelikof District scallop shell heights from resampling observer data, 1998/99–2005/06.

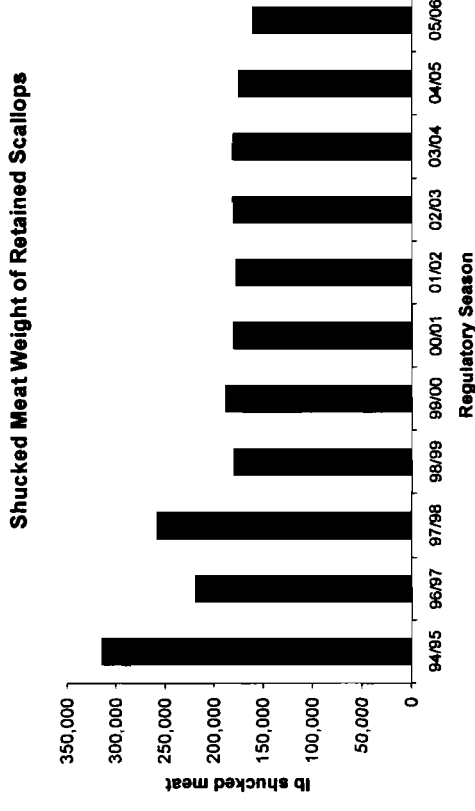
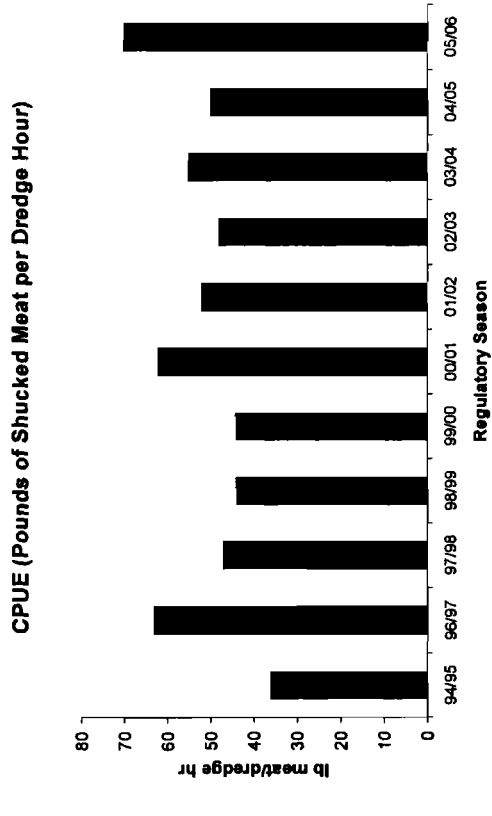
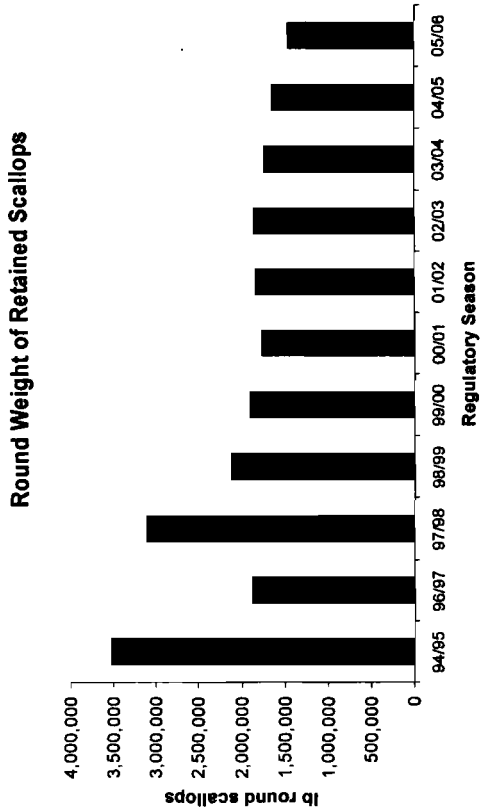
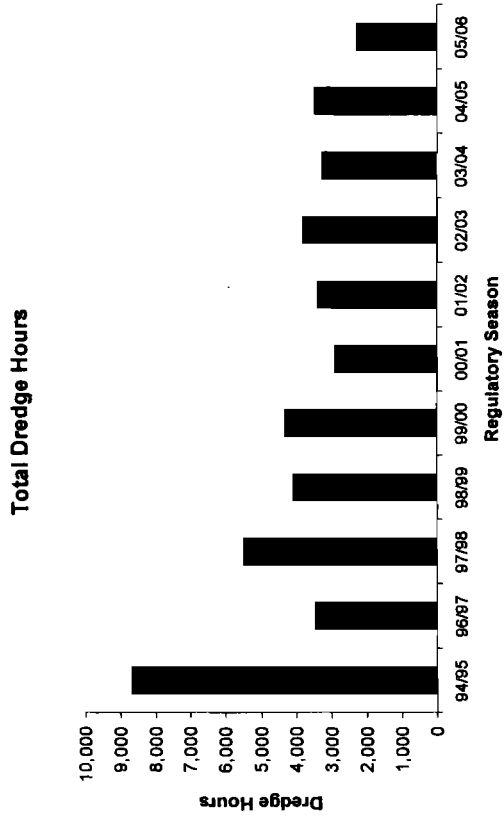


Figure 20.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1994/95–2005/06.

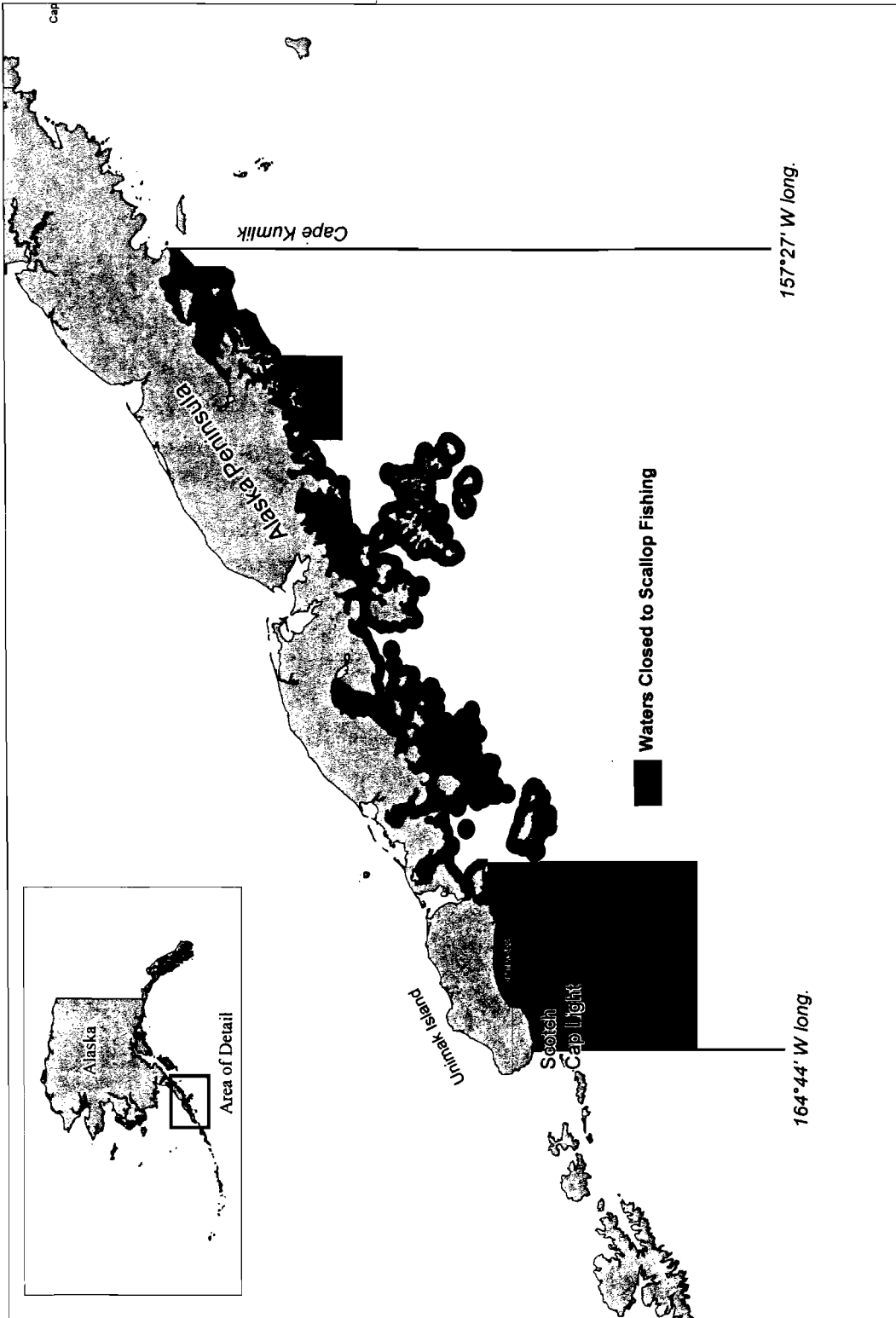


Figure 21.—Alaska Peninsula weathervane scallop registration area and closed waters.

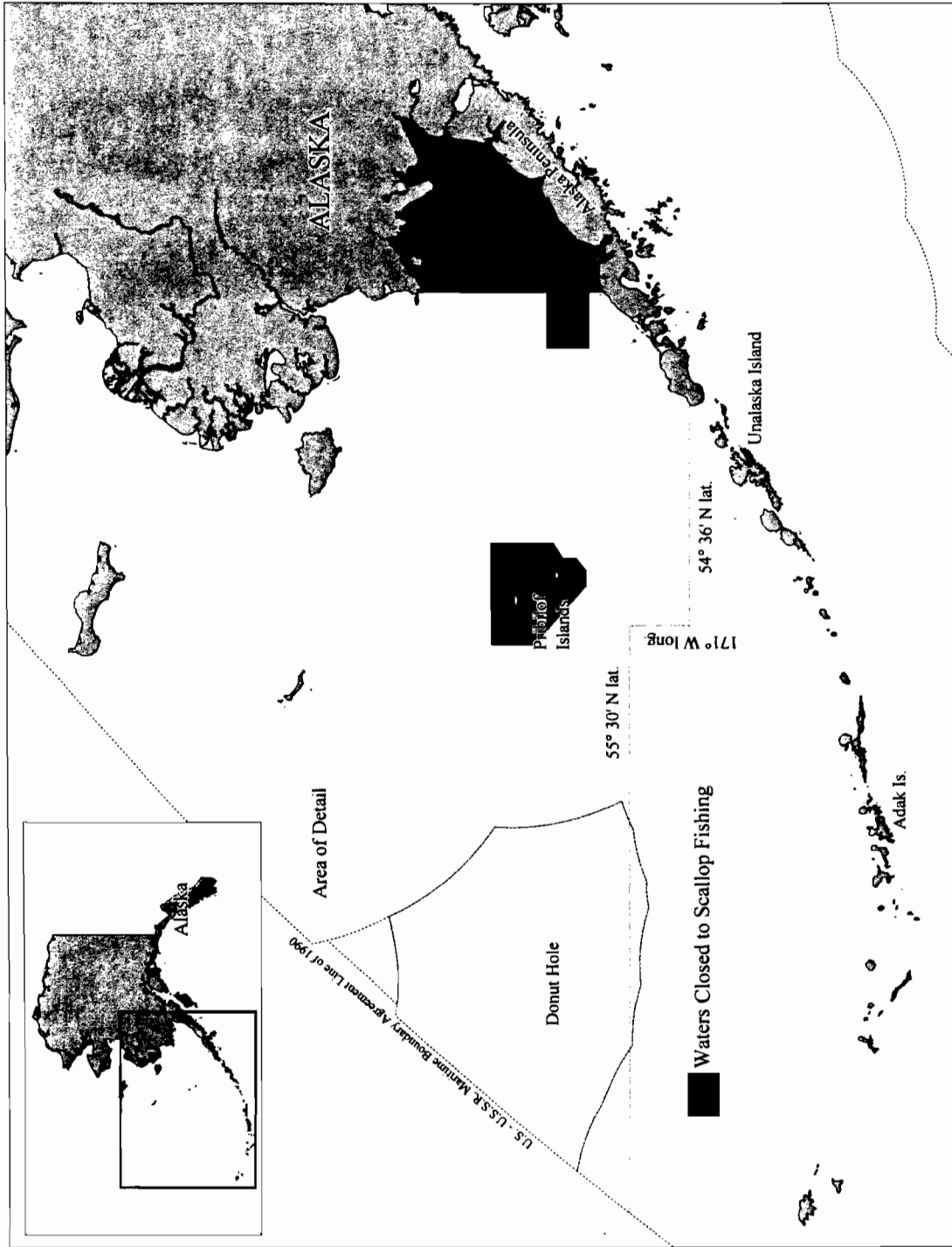


Figure 22.--Bering Sea weathervane scallop registration area and closed waters.

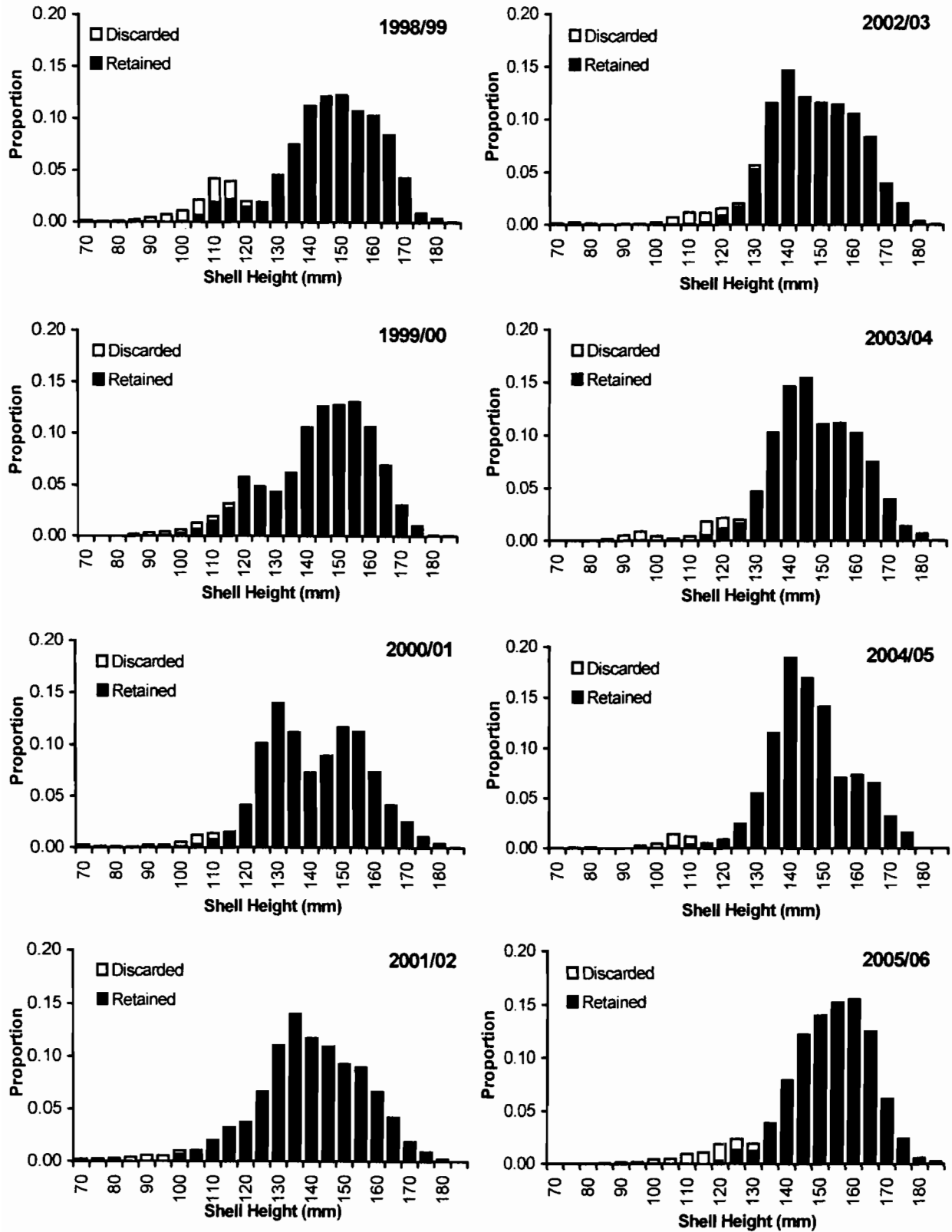


Figure 23.—Bering Sea Registration Area scallop shell heights from resampling observer data, 1998/99–2005/06.

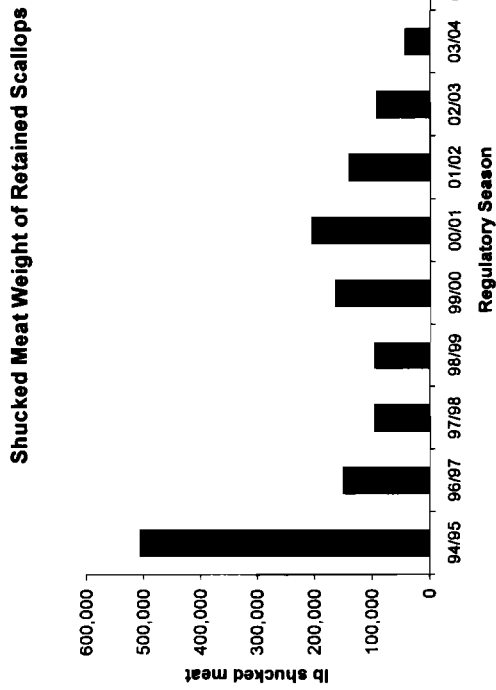
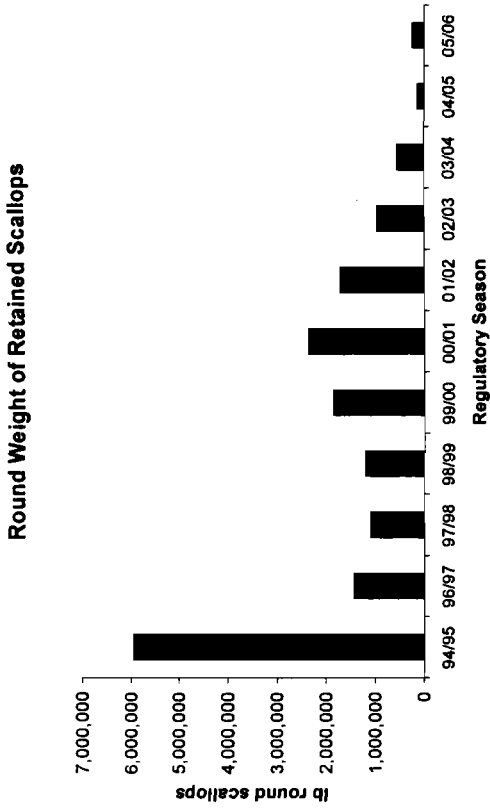
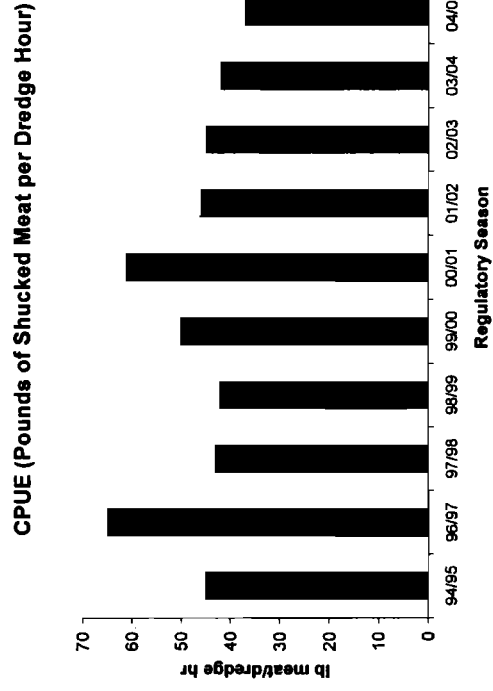
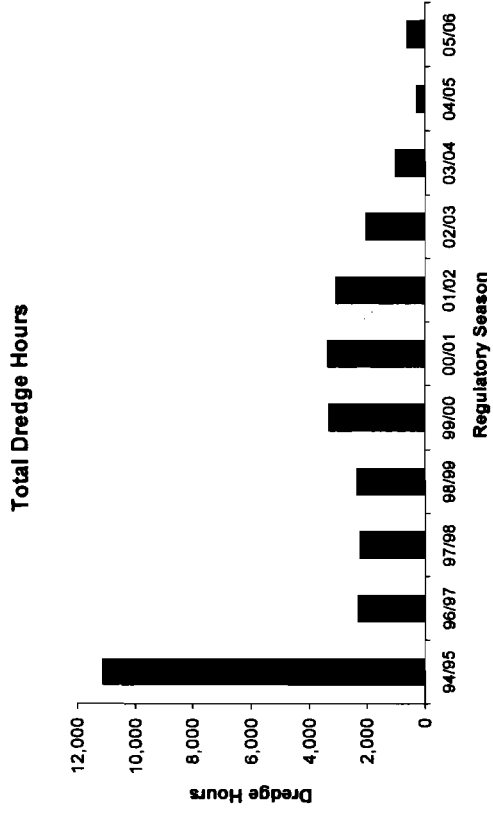


Figure 24.—Weathervane scallop harvest by round weight, meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1994/94–2005/06.

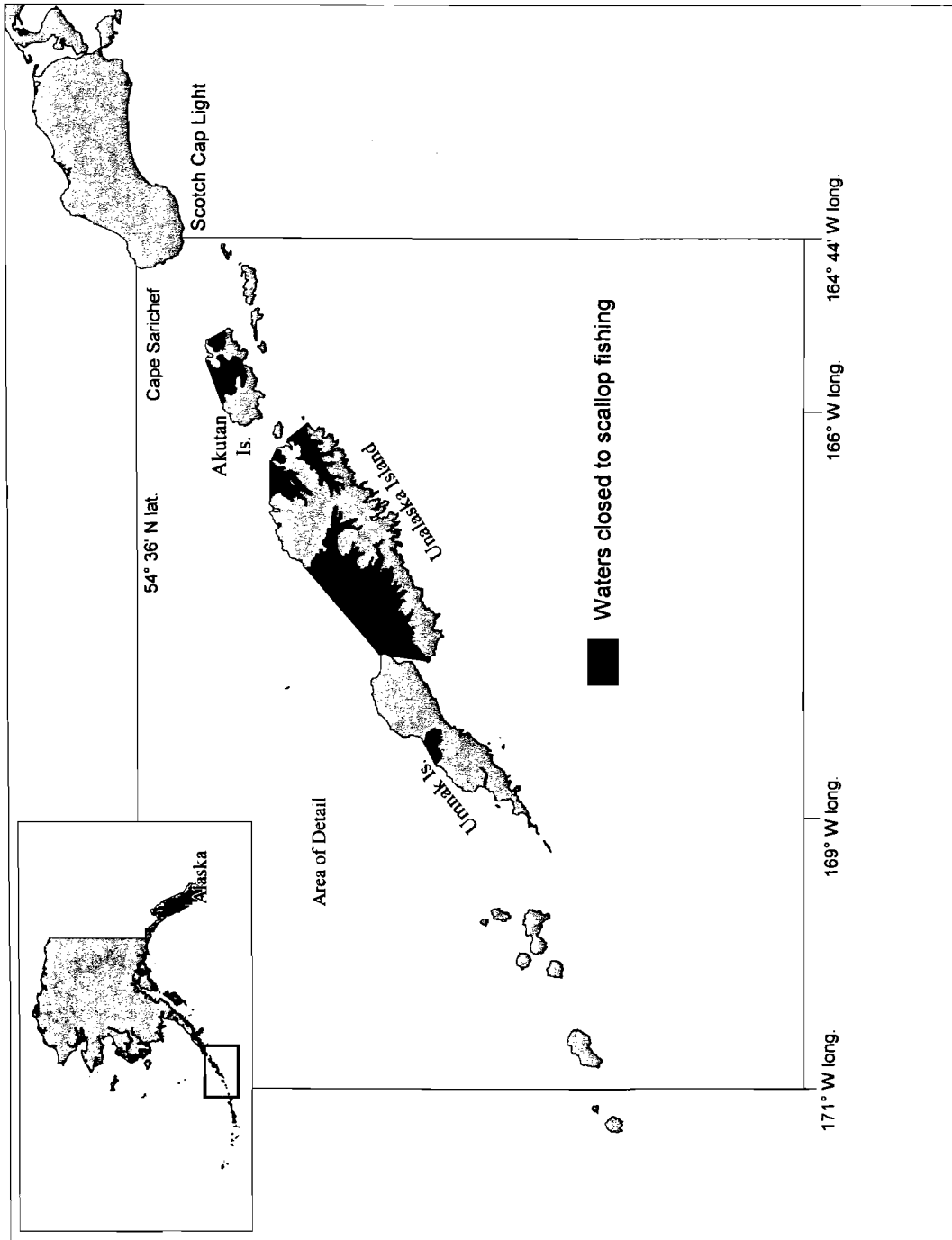


Figure 25.—Dutch Harbor weathervane scallop registration area and closed waters.

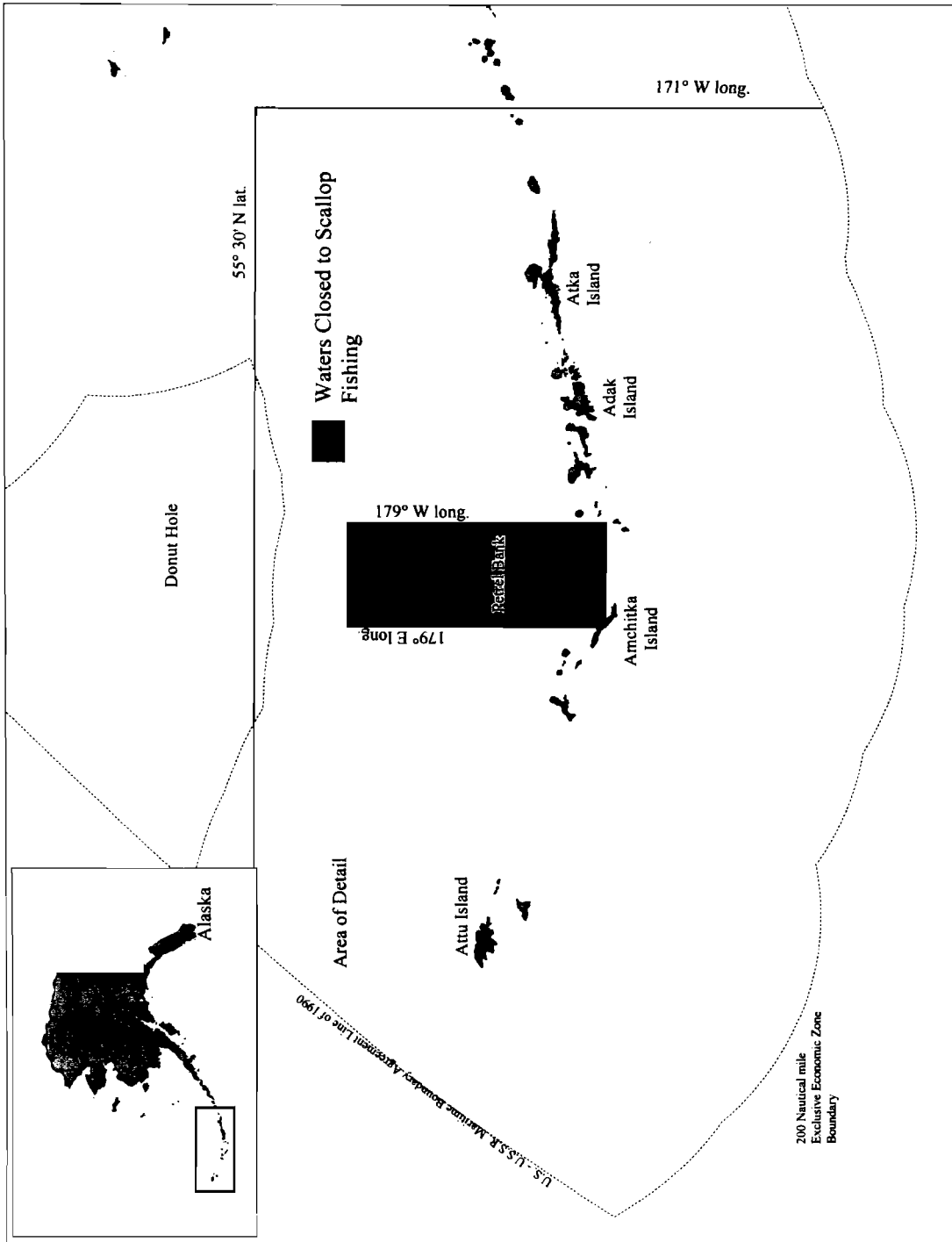


Figure 26.—Adak weathervane scallop registration area and closed waters.

Appendix A1.—Commercial harvests of weathervane scallops from Prince William Sound, 1992–2005.

| Year | No. of Vessels | Harvest ^a (meat lb) | Harvest objective ^b (meat lb) | Season (hours) | Comments |
|------|----------------|-----------------------------------|---|--------------------------|--|
| 1992 | 4 | 208,836 | 64,000 | | |
| 1993 | 7 | 63,068 | 50,000 | 67 | |
| 1994 | | Fishery rescheduled to 1995 | | | Season start date changed. |
| 1995 | 2 | 108,000 | 50,000 | 390 | Additional 60,000 lb of illegal harvest. |
| 1996 | 0 | | 0 | | Closed due to illegal harvest. |
| 1997 | 1 | 18,000 | 17,200 | 141 | |
| 1998 | 2 | 19,650 combined | 6,000 East 14,000 West | 78 | |
| 1999 | 2 | 20,410 combined | 6,000 East 14,000 West | 54 East 84 West | |
| 2000 | 3 | 30,266 combined | 9,000 East 21,000 West | 744 East 783 West | |
| 2001 | 1 | 30,090 combined | 9,000 East 21,000 West | 5,367 East 5,441 West | |
| 2002 | 2 | 15,641 combined | 6,000 East 14,000 West | 5,544 East 5,517 West | |
| 2003 | 1 | 19,980 combined | 6,000 East 14,000 West | 5,004 East 4,984 West | |
| 2004 | 2 | 49,320 combined | 26,000 East 24,000 West | 2,748 East 5,367 West | |
| 2005 | 3 | 49,205 combined | 26,000 East 24,000 West | 1,264 East 1,048 West | |

^a Harvest total for east and west areas combined are provided by provisions of confidentiality releases.

^b Separate GHLs were established for areas east and west of Kayak Island beginning in 1998.

SHELLFISH KEYWORDS

By

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Alaska Department of Fish and Game
Division of Commercial Fisheries
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Kodiak, AK 99615

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¹ The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished division reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

TABLE OF CONTENTS

| | <u>Page</u> |
|------------------------|-------------|
| LIST OF FIGURES | i |
| INTRODUCTION | 1 |
| LITERATURE CITED | 10 |

LIST OF FIGURES

| <u>Figure</u> | <u>Page</u> |
|---|-------------|
| 1. Selected parts of the king crab anatomy..... | 2 |
| 2. Carapace length..... | 2 |
| 3. Carapace width measurements shown on a Tanner crab..... | 2 |
| 4. Chela height of a Tanner crab..... | 3 |
| 5. Single pot setup with main buoy and trailer buoy designated..... | 4 |
| 6. Longline pot setup..... | 4 |
| 7. King and Tanner crab pots with tunnel eye illustrated..... | 4 |

SHELLFISH KEYWORDS

INTRODUCTION

The shellfish keywords listed below are commonly used by shellfish managers, researchers, and the industry in their discussions and reports. The definitions provided with the keywords are intended to assist the Board of Fisheries in their deliberations and should not be interpreted as final, legal, or exclusive. This report was originally issued in 1996 and has been re-issued with several modifications: the addition of CDQ group, LLP, terminal molt and a revision of the figures.

3-S management: Management of a fishery based only on **size** limits, an established **season**, and **sex** restrictions; under 3-S management there is no predetermined level of harvest.

ADF&G number: As a condition of delivering or landing of fish or engaging in any commercial fishing activity, a vessel fishing in state waters is required to have a vessel license (Sec. 16.05.490). The vessel license assigns a permanent number to the vessel, often referred to as the ADF&G number.

biodegradable requirements: Pot gear must incorporate an escape mechanism made of cotton twine which rots or a galvanic device which dissolves in salt water. These are used as specified in 5 AAC 39.145 to create an opening in the mesh of lost pots disabling them.

biomass: *The amount of animals measured in weight is its biomass.*

briefing: A mandatory meeting between ADF&G personnel and the observer to check for necessary equipment and detail specific duties before the observer begins an assignment on a vessel trip (5 AAC 39.143 (b)).

brood year: The year eggs were fertilized is considered the brood year. For Bristol Bay red king crab, a seven year lag occurs between egg fertilization and the recruitment to mature size of the resulting offspring.

brown king crab: A commercially valuable species, *Lithodes aequispina*, found on the slopes of the continental shelf of most Alaskan waters. Brown king crab's marketing name is **golden king crab**.

BSAI: Bering Sea/ Aleutian Islands

buoy sticker or tag: In fisheries where the number of pots per vessel is limited, (for example, 5 AAC 34.125 (g)), the Department issues stickers or tags which must be fastened to the buoys during the fishery in order to control the actual number of pots used by the fisherman.

bycatch: Species caught incidental to the targeted animals are known as bycatch. Prohibited bycatch species (halibut, crab, salmon, etc., also known as **prohibis**) must be immediately discarded at sea. Bycatch is also known as **incidental catch**.

carapace: The main part of the crab shell which covers the body of the crab (Figure 1). **Carapace length** is the biological measurement used to measure king crabs (Figure 2). **Carapace width** is the biological measurement for Tanner and Dungeness crabs (inside the spines) and the legal measurement for all crabs (outside the spines) (Figure 3).

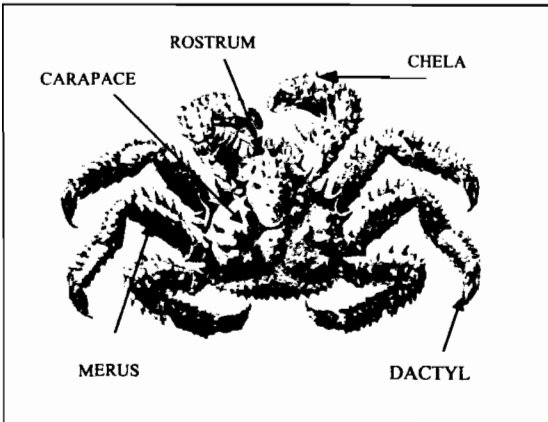


Figure 1. Selected parts of the king crab anatomy, adapted from Dawson and Yaldwyn, 1985.

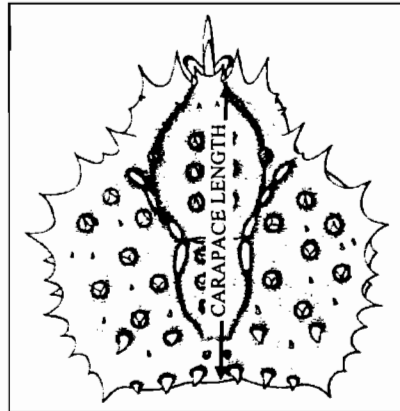


Figure 2. Carapace length, adapted from Marukawa, 1933.

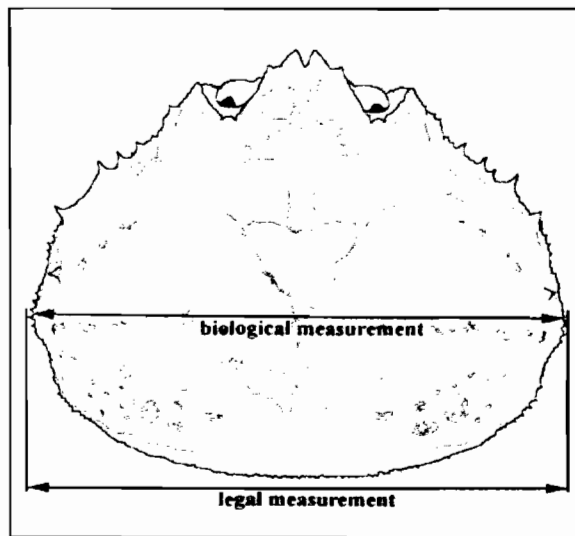


Figure 3. Carapace width measurements shown on a Tanner crab, adapted from Jadamec et al, 1999.

catch: A quantity of animals caught by man, also known as **yield** or **harvest**. It can be measured in either in numbers or weight.

catcher processor: A fishing vessel capable of processing its catch on board.

certified observer: A person that has obtained an observer trainee permit and completed all trainee requirements as specified by 5 AAC 39.143 (f) may then become certified to observe shellfish harvest on board a vessel at sea.

CDQ (Community Development Quota): The Magnuson/Stevens Fisheries Act provided for the crab CDQ fisheries. Those fisheries are Bristol Bay red king crab, Norton Sound red king crab, St. Matthew blue king

crab, Pribilof red and blue king crab, and the Bering Sea *Chionoecetes bairdi* and *opilio* Tanner crab fisheries. Allocation of the above fisheries to the CDQ groups is a percent of the total harvest, in 1998 it was 3.5%, in 1999 the allocation will be 5% and in 2000 and beyond it will be 7.5%. There are 57 communities along the Bering Sea eligible for the CDQ program. These villages aligned into six CDQ organizations and are collectively referred to as CDQ groups: Aleutian Pribilof Island Community Development Association (APICDA), Bristol Bay Economic Development Corporation (BBEDC), Central Bering Sea Fishermen's Association (CBSFA), Coastal Villages Regional Fund (CVRF), Norton Sound Economic Development Corporation (NSEDC), and Yukon Delta Fisheries Development Association (YDFDA).

chela: (key-lah) A crab claw (Figure 1). The **chela height** can be used to establish the maturity of some crab species. (Figure 4).

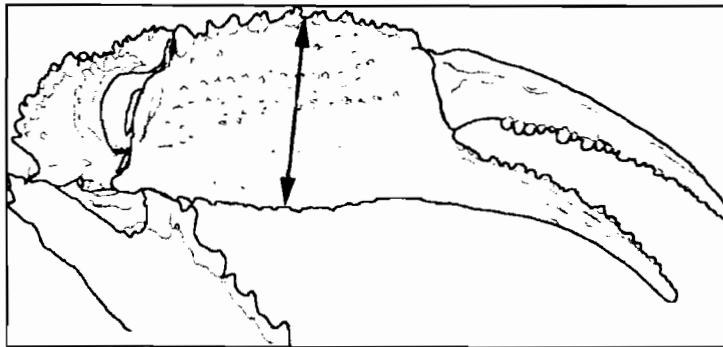


Figure 4. Chela height of a Tanner crab, adapted from Jadamec et al. 1999.

commissioner permit: A permit issued by the commissioner of ADF&G to regulate shellfish fisheries for which there are few established regulations. The permits can specify gear, area, season, size, observer, and other requirements. Regulations specify conditions for commissioner permits for *Lithodes cousei* (5 AAC 34.082), *Chionoecetes tanneri* and *C. angulatus* (5 AAC 35.082), and other miscellaneous shellfish including octopi, squid, Korean hair crab, sea urchins, sea cucumbers, sea snails, coral and other marine invertebrates (5 AAC 38.062).

contractor: Contractors are employers of the observers required in the various shellfish fisheries. They arrange for training and provide logistical support to place their observers on the vessels requesting them. The contractors are paid by the vessels and they in turn pay the observers.

Council: As established by the Magnuson Act, regional councils were set up to establish regulations for federal fisheries. Alaska is under the jurisdiction of the North Pacific Fisheries Management Council (NPFMC), commonly referred to as the "Council".

C/P: Catcher/Processor.

CPUE: Catch Per Unit Effort is a measure of fishery performance. CPUE in crab fisheries commonly refers to the number of legal crab captured per pot.

crab pots: A portable structure designed and constructed to capture and retain fish and shellfish alive in the water (5 AAC 39.105 (d 11)). Depending on the fishery, the pots may be configured as single pots with a buoy setup for each pot (Figure 5), or longlined with a buoy setup on either end of a string of pots (Figure 6).

The various crab pots have definitions established by regulation:

King crab pot: A pot that is no larger than 10 feet long by 10 feet wide by 42 inches high with rigid tunnel eye openings that are a minimum of five inches in one dimension and tunnel opening perimeters that individually

are larger than 36 inches or a pot that is no larger than 10 feet long by 10 feet wide by 42 inches high that tapers inward from its base to a top consisting of one horizontal opening of any size (5 AAC 34.050 (f)). King crab pots in the Kodiak, Alaska Peninsula, and Bristol Bay Statistical Areas and the Pribilof District of the Bering Sea Area must have at least 1/3 of one vertical surface of the pot composed of 9" stretched mesh webbing.

Tanner crab pot: Tanner pots are defined the same as the king crab pots, except that the tunnel eye openings are a maximum of five inches in one dimension with a perimeter larger than 36 inches. In the Bering Sea District, a Tanner crab pot may not have tunnel eye openings on the vertical side of the pot that exceed three inches in height. (5 AAC 35.525 (k)).

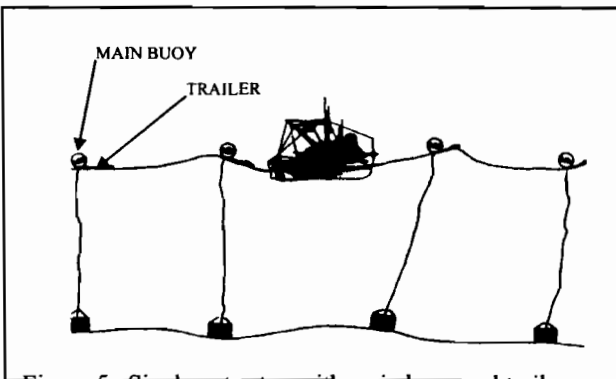


Figure 5. Single pot setup with main buoy and trailer buoy designated.

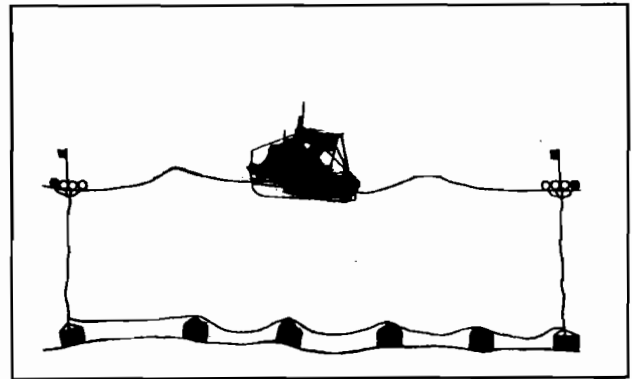


Figure 6. Longline pot setup.

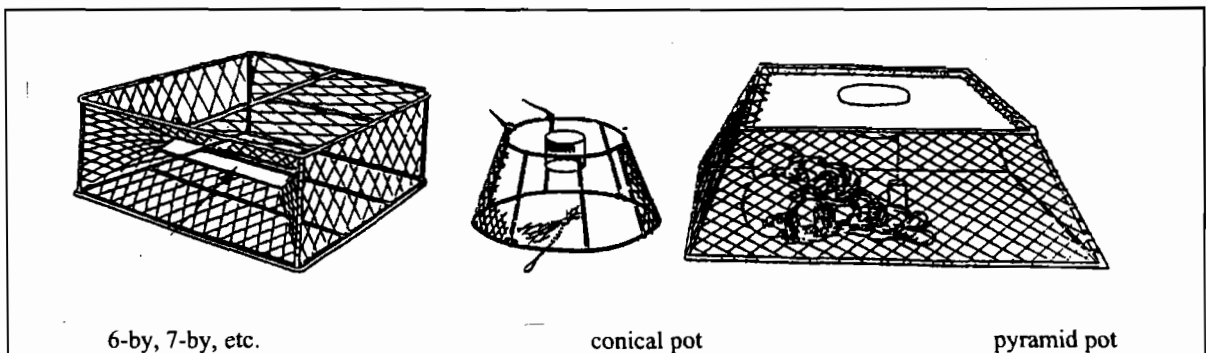


Figure 7. King and Tanner crab pots with tunnel eye illustrated. The term 6-by, for example, is commonly used to describe a pot 6 feet by 6 feet square (and a maximum of 42 inches in height).

deadloss: Crab processors will only purchase live crabs. Any crabs “dead on arrival” at the processor are called deadloss and must be recorded on the fish ticket separately from live crabs. Deadloss is typically deducted from the GHL.

debriefing: A meeting between ADF&G personnel and the onboard observer at the end of a fishing trip where the completed data forms are turned in and checked, and various aspects of the fishery and the just finished observer trip are discussed.

decertification: Under certain criteria, an observer may have his certification revoked and therefore no longer be eligible to be employed as an onboard observer (5 AAC 39.143).

deck load: With excellent fishing conditions, a boat may catch more product than will fit in the fish hold below deck, and will resort to loading the deck as well before delivering. Then the boat will come in with a deckload. Deckload may also refer to crab pots carried on the deck of a boat.

deep water Tanner crab: Relatively new fisheries in Alaska, the deep water tanners, *Chionoecetes tanneri* and *C. angulatus* resemble the better known "Tanner crab", *C. bairdi*, but are somewhat smaller with thinner legs. Commercially, they occur at depths of 250 to 400 fathoms.

delivery time: The period of time from the closure of the fishery until a vessel is at its chosen delivery point.

directed fishery: This term means different things depending upon which fishery it is referring to. The federal government has a published definition of directed fishing as it applies to the groundfish fishery: Any fishing activity which results in the retention of more than the maximum allowable bycatch of a species (50 CFR 672.2). It is more informally used in state shellfish fisheries to describe fishing activities which target a certain shellfish species within the framework of established regulations.

district: In the shellfish regulations, the state is divided into areas, districts, and sections. For example, in the Tanner crab fishery, the Northeast Section is part of the Kodiak District which is part of Statistical Area J (Westward) (5 AAC 35.500-505).

donut hole: An area of international "high seas" in the Bering Sea completely surrounded by the waters claimed by the United States and Russia.

dredge: Scallop vessels use dredges, usually two at a time. The dredge is a rigid metal frame with a cutter blade that digs into the bottom and scoops the scallops into a bag made of metal rings. For weathervane scallops the minimum ring size is 4 inches which allows the escape of the smaller scallops (5 AAC 38.076 (f 1)).

effective spawning biomass: The estimated biomass of mature females that can be mated by available mature males.

EEZ: Exclusive Economic Zone, Established by the Magnuson Act as the Zone outside the 3-mile state territorial sea to the 200-mile limit claimed by the United States.

Emergency Order: An emergency order or **E.O.** gives the Commissioner of ADF&G the force of law to open or close seasons or areas, or to change weekly closed periods on fish and game, under criteria established by the Board of Fisheries or Game (AS Sec. 16.05.060).

escape mechanism: Pot gear must incorporate an escape mechanism made of cotton twine which rots or a zinc device which dissolves in salt water. These are used as specified in 5 AAC 39.145 to create an opening in the mesh of lost pots that disables them. Other mechanisms include **escape rings** and **escape panels** of large mesh incorporated into the walls of the crab pots allowing undersize male crab and females to exit the pot.

exclusive registration area: A vessel registered for a fishery in an exclusive registration area may not register for that fishery in any superexclusive registration area or in any other exclusive area during that registration year.

exploitation rate: The proportion that is harvested from any defined segment of the stock. For example, "legal exploitation rate" is the proportion of legal-sized crabs that are harvested.

fathom: a nautical term for a depth of six feet.

floating processor: A ship which can process seafood at sea (usually in a protected anchorage), but does not catch the product itself.

FMP: Fishery Management Plan, the Board of Fisheries may implement by regulation fishery management plans to provide the ADF&G with guidelines in managing the various subsistence, commercial, sport and personal use fisheries around the state, for example the Alaska Scallop Fishery Management Plan (5 AAC 38.076). In addition the “Council” may pass a federal FMP for fisheries which occur jointly in federal and state waters, defining the role of the state and federal government in managing these fisheries. This has been done for Bering Sea/Aleutian Islands king and Tanner crab and the scallop fishery statewide.

F/P: Floating Processor

ghost fishing: The capture and retention of animals in lost gear.

golden king crab: A marketing name for brown king crab.

GHL (quota): Guideline Harvest Level.

Guideline Harvest Level: Based on preseason surveys or historic harvest information, ADF&G may issue a GHL for a fishery. These are commonly referred to a quotas, however GHL’s are only as stated, “guidelines”, and are intended primarily for planning purposes. They may be adjusted based on in season fishery performance.

handling mortality: The death of crabs due to being caught and discarded back to the sea is known as handling mortality. The proportion of crabs caught and discarded back to the sea that die due to handling is the **handling mortality rate**.

harvest: The portion of a population taken by man, also known as **catch** or **yield**, measured as weight or numbers of individuals.

high impact emerging fishery: If a fishery increases above a low sporadic level, more than one user group is interested in harvesting the resource, or the harvest level is approaching an unsustainable level and the BOF has not already established comprehensive regulations for the fishery, the ADF&G commissioner may declare it a “high impact emerging fishery”. At this point the fishery would close until the Department establishes an interim management plan and regulations consistent with that plan. The Department would also petition the board to consider the interim plan and regulations at its next meeting (5 AAC 39.210).

incidental catch: Another term for **bycatch**.

inseason management: ADF&G fishery managers will often rely upon information gathered as a fishery progresses such as CPUE, weather and tide conditions, and actual numbers of vessels fishing to make inseason management decisions.

LBA: Length-based analysis

legal size: The minimum size of an animal that may be retained as set by regulation.

length-based analysis: A computer model of a population in which abundance is estimated by analyzing size frequency or abundance data from annual assessment surveys, commercial catch sampling, and tagging information. The carapace **length** of king crab is used in the model. While it is actually the carapace **width** of Tanner crabs considered, the method is still referred to as LBA.

LLP: License Limitation Program, a “Council” program to reduce the number of vessels eligible to fish Bering Sea crab.

lost gear: For a variety of reasons, crab pots may end up as lost gear: Buoys may be severed by a passing boat or by being frozen into the ice pack. Trawl gear can “catch” the pots and sever their lines and/or drag them from their known locations. The term lost gear in a report could refer to the number of pots lost or the rate of loss.

main buoy: The buoy attached to the line running down from the surface of the sea to the pot on the sea floor (See Figure 5).

mature male harvest rate: The proportion of mature male crabs that are harvested, currently set at 20% of the mature male abundance for Bristol Bay red king crabs.

maximum legal harvest rate: The highest allowed harvest rate of legal male crabs, currently set at 60% for Bristol Bay red king crab.

merus: The largest segment of the crab leg, near the body, see Figure 1.

molt: Crabs and shrimp can increase in size only by shedding their hard shells (exoskeleton) and expanding during a soft period in a process known as molting. It takes about two weeks for the new shell to harden. Mature crabs will typically molt no more than once a year while younger animals may molt more frequently.

National Marine Fisheries Service: A federal agency in the Department of Commerce, with responsibility for managing fish resources in the EEZ, except where delegated to the state. Also known as NMFS, the agency conducts the annual Bering Sea crab survey and issues preliminary GHIL numbers for the area.

new shell: A crab shell that is less than a year since its last molt, with few or no scratches, sharp dactyli (leg tips, see Figure 1) and no or little growth of epifauna (ie, barnacles) on the shell.

NMFS: (pronounced NYMPHS) See National Marine Fisheries Service.

non-exclusive registration area: A vessel may be registered for a fishery in one or more nonexclusive registration areas and one exclusive area, but then not for any superexclusive area during one registration year (except see 5 AAC 34.020 (a 2))

non-pelagic trawl: A non-pelagic trawl net fishes in contact with the sea bottom, and is therefore restricted from operating in the numerous protected areas set out in 5 AAC 39.164.

old shell: A crab which has skipped a molt as indicated by the scratches on the shell, worn spines, growth of epifauna such barnacles, and perhaps missing limbs, also known as “skip molt”.

optimum yield: A catch level that balances a maximum catch with a stable catch over the long term would be considered the optimum yield for a fishery.

overall length: A measurement of vessel length for crab vessels, the state uses the federal definition: the horizontal distance, rounded to the nearest foot, between the foremost part of the stem and the aftermost part of the stern, excluding bowsprits, rudders, outboard brackets and similar fittings or attachments. (Code of Federal Regulations, Shipping 46 CFR 69.9)

pelagic trawl: A trawl net or its doors which does not operate in contact with the bottom, and does not have any devices such as chafing gear, rollers, or bobbins which might protect it from contact with the bottom

PNCIAC: The Pacific Northwest Crab Industry Advisory Committee is the only advisory committee located outside the state of Alaska. This Seattle committee was mandated by the North Pacific Management Council as part of the Bering Sea/Aleutian Islands Fisheries Management Plan (BSAI FMP) with the purpose of providing non-residents access to the Board of Fisheries regulatory process. A substantial non-resident fleet based in the Pacific Northwest fishes for crabs in the Alaskan waters covered by the BSAI FMP.

population: A group of inter-breeding animals that inhabit a particular locality, also known as a **stock**. Population levels may be expressed in numbers or weight (biomass).

pot storage: By following certain legal requirements (see for example 5 AAC 34.050 (c)) a crab fisherman may store gear in the water, sometimes this is also called “**wet pot storage**”. Specific pot storage areas have been established (see 5 AAC 35.525 (c 2)).

pre-recruit crab: A male crab which has not yet reached legal size. A pre-recruit I would be one year away from obtaining legal size, assuming an annual molt. A pre-recruit II would be two years away from legal size.

prohib: Prohib is an abbreviation of prohibited species. For example, halibut are a prohib on a crab boat.

PSC: Prohibited Species Catch: A limitation on the allowable bycatch of salmon, steelhead, herring, halibut, and king and Tanner crab in the Bering Sea/Aleutian Islands groundfish fishery.

recruit crab (legal): A male crab that has reached legal size as a result of a molt this year.

recruitment: Addition of new individuals to the population by reproduction, often restricted to mean the addition of breeding individuals, but also may mean the addition of legal-sized crab or any defined size-class or stock component.

registration: Before operating in a registration area, a fishing vessel owner or authorized agent must complete a registration for that particular area and species. A registration is not valid until the vessel is inspected to insure no product is already onboard. This inspection is commonly known as a “tank check”.

registration area: The waters off Alaska are divided by regulation into statistical areas. (not the same as the statistical areas used for catch reporting on fish tickets). These statistical areas are divided into registration areas in the state territorial waters and the “adjacent seaward biological influence zone” which extends out 200 miles, but these statistical areas are commonly referred to simply as registration areas in both state and federal waters. Registration areas have been established in the Dungeness, Shrimp, scallop, king crab, and Tanner crab fisheries. The areas are not necessarily the same for the various fisheries.

reproductive potential: The most productive level of reproduction possible for a population is called its reproductive potential.

robust harvest strategy: A management strategy which works well inspite of uncertainties about potentially important factors such as handling mortalities, stock-recruitment relationships, natural mortality, etc.

shore based processor: An on shore factory for processing seafood that buys its product from catcher boats.

size limit: The minimum size at which an animal may be retained.

skip molt: A crab that did not molt in the last year, also known as “**old shell**”.

soak time: A baited pot is placed on the sea bottom for a period of time before being retrieved allow the target animals to find and enter the pot. This is called the “soak time”. A pot retrieval is commonly called a “pot lift” or “pot pull”.

snow crab: Formerly, snow crab referred to all Tanner crabs (*Chionoecetes* sp.) but in recent years it has generally become more restricted to mean only “opilio” crab, *Chionoecetes opilio*.

state waters: By state definition, waters of Alaska means the internal waters of the state including rivers, streams, lakes and ponds, the tidal zone of the state from mean higher high water to mean lower low water, and those waters extending three miles seaward of the baseline.

statistical area (for catch reporting): The state is divided into blocks 30' of latitude by 1° of longitude in offshore waters, and smaller irregular areas inshore which are used as catch reporting areas for shellfish catches. A fisherman must report on his fish tickets which statistical area(s) his catch came from. (See also registration area).

stock: Also known as a **population**, a stock is a group of inter-breeding animals which inhabit a particular area. A **stock collapse** would be the decline of a stock abundance to a level that a rebound in abundance is uncertain

stock-recruitment relationship: The relationship between a spawning population and the corresponding number of offspring produced that survive to reach maturity.

super-exclusive registration area: A vessel registered for a super-exclusive registration area may not register for that fishery in any other registration area during that registration year.

tank check: Before a fishing registration is valid, a vessel must be inspected to insure there is no product on board. This is known as a “tank check” or “**tank inspection**”.

Tanner crab: Commonly refers to *Chionoecetes bairdi*, a valuable species which occurs in commercial quantities from the Bering Sea to Southeast Alaska. Sometimes all crab of the genus *Chionoecetes* are called Tanner crab including *C. bairdi*, snow crab *C. opilio*, and deep water Tanner crabs, *C. tanneri* and *C. angulatus*

terminal molt: The hypothesis that members of the *Chionoecetes* genus (See above) cease molting upon reaching maturity. Generally accepted for females, it is still the subject of debate in males.

threshold: Population abundance at or below which a fishery remains closed.

trailer buoy: Attached to the main buoy by about a ten foot line, the trailer buoy is grabbed by a crew member on deck and is used to retrieve the main buoy and the pot. Sometimes the trailer buoy is comprised of several buoys, one being a solid foam, puncture-resistant “sea lion buoy” (see Figure 5).

trawl: A conical-shaped net that is towed through the water for catching fish or shellfish. The net accumulates its catch in the closed, small end usually called the cod end.

Yield: Yield is the portion of a population taken by man, also known as **harvest** or **catch**, measured in weight or numbers of individuals.

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Special Publication No. BOF 2008-03

**Customary and Traditional Use Worksheet, King
Crab and Tanner Crab, Prince William Sound
Management Area; and other Background
Information**

Prepared by

Alaska Department of Fish and Game,

Division of Subsistence

for the March 2008 Anchorage Board of Fisheries meeting

February 2008

Alaska Department of Fish and Game

Division of Subsistence



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | | | mid-eye-to-fork | MEF |
| gram | g | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye-to-tail-fork | METF |
| hectare | ha | | | standard length | SL |
| kilogram | kg | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | total length | TL |
| kilometer | km | | | | |
| liter | L | at | @ | Mathematics, statistics | |
| meter | m | compass directions: | | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | east | E | alternate hypothesis | H _a |
| millimeter | mm | north | N | base of natural logarithm | e |
| | | south | S | catch per unit effort | CPUE |
| | | west | W | coefficient of variation | CV |
| Weights and measures (English) | | copyright | © | common test statistics | (F, t, χ^2 , etc.) |
| cubic feet per second | ft ³ /s | corporate suffixes: | | confidence interval | CI |
| foot | ft | Company | Co. | correlation coefficient (multiple) | R |
| gallon | gal | Corporation | Corp. | correlation coefficient (simple) | r |
| inch | in | Incorporated | Inc. | covariance | cov |
| mile | mi | Limited | Ltd. | degree (angular) | ° |
| nautical mile | nmi | District of Columbia | D.C. | degrees of freedom | df |
| ounce | oz | et alii (and others) | et al. | expected value | E |
| pound | lb | et cetera (and so forth) | etc. | greater than | > |
| quart | qt | exempli gratia (for example) | e.g. | greater than or equal to | ≥ |
| yard | yd | Federal Information Code | FIC | harvest per unit effort | HPUE |
| | | id est (that is) | i.e. | less than | < |
| | | latitude or longitude | lat. or long. | less than or equal to | ≤ |
| Time and temperature | | monetary symbols (U.S.) | \$, ¢ | logarithm (natural) | ln |
| day | d | months (tables and figures): first three letters | Jan, ..., Dec | logarithm (base 10) | log |
| degrees Celsius | °C | registered trademark | ® | logarithm (specify base) | log _z , etc. |
| degrees Fahrenheit | °F | trademark | ™ | minute (angular) | ' |
| degrees kelvin | K | United States (adjective) | U.S. | not significant | NS |
| hour | h | United States of America (noun) | USA | null hypothesis | H ₀ |
| minute | min | U.S.C. | United States Code | percent | % |
| second | s | U.S. state | use two-letter abbreviations (e.g., AK, WA) | probability | P |
| | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| Physics and chemistry | | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| all atomic symbols | | | | second (angular) | " |
| alternating current | AC | | | standard deviation | SD |
| ampere | A | | | standard error | SE |
| calorie | cal | | | variance | |
| direct current | DC | | | population | Var |
| hertz | Hz | | | sample | var |
| horsepower | hp | | | | |
| hydrogen ion activity (negative log of) | pH | | | | |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

SPECIAL PUBLICATION NO. BOF 2008-03

**CUSTOMARY AND TRADITIONAL USE WORKSHEET, KING CRAB
AND TANNER CRAB, PRINCE WILLIAM SOUND MANAGEMENT
AREA; AND OTHER BACKGROUND INFORMATION**

by

Alaska Department of Fish and Game, Division of Subsistence

Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road, Anchorage, Alaska, 99518-1599

February 2008

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TABLE OF CONTENTS

| | Page |
|-------------------------|-------------|
| LIST OF TABLES..... | ii |
| ABSTRACT..... | 1 |
| BACKGROUND..... | 1 |
| THE EIGHT CRITERIA..... | 2 |
| Criterion 1..... | 2 |
| Criterion 2..... | 3 |
| Criterion 3..... | 3 |
| Criterion 4..... | 3 |
| Criterion 5..... | 4 |
| Criterion 6..... | 4 |
| Criterion 7..... | 4 |
| Criterion 8..... | 4 |
| REFERENCES CITED..... | 5 |
| TABLES AND FIGURES..... | 7 |

LIST OF TABLES

| Table | | Page |
|--------------|---|-------------|
| 1. | Population of communities in the Prince William Sound Area, 2000 and 2006. | 8 |
| 2. | Study years and sample sizes of Division of Subsistence household surveys. | 9 |
| 3. | Regulations governing the noncommercial harvest of king crabs, Prince William Sound, 1999. | 10 |
| 4. | Regulations governing the noncommercial harvest of Tanner crabs, Prince William Sound, 1999. | 11 |
| 5. | Harvests and uses of crabs (any species), Prince William Sound communities. | 12 |
| 6. | Harvests and uses of king crabs, Prince William Sound communities. | 14 |
| 7. | Harvests and uses of Tanner crabs, Prince William Sound communities. | 16 |
| 8. | Harvests of king and Tanner crabs by gear type. | 18 |
| 9. | Percentage of harvest by commercial removal or noncommercial methods. | 19 |
| 10. | Estimated total wild resource harvests, pounds usable weight per person. | 20 |

LIST OF FIGURES

| Figure | | Page |
|---------------|--|-------------|
| 1. | Map of the Prince William Sound Management Area. | 21 |
| 2. | Map of the Anchorage – MatSu – Kenai nonsubsistence area. | 22 |
| 3. | Map of the Valdez nonsubsistence area. | 23 |

ABSTRACT

This worksheet was prepared for the Alaska Board of Fisheries (Board) as background for consideration of changes to the noncommercial harvest regulations for crabs in the Prince William Sound Management Area of Alaska, with a primary focus on the communities of Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier. This worksheet presents the 8 criteria that the Board of Fisheries is required to consider under Joint Board of Fisheries and Game regulations (5 AAC 99.010) in order to identify fish stocks that are customarily and traditionally taken or used by Alaska residents for subsistence uses. Shellfish played an important role in the diets of the indigenous Chugach and Eyak peoples of Prince William Sound and the Copper River Delta area. The last year that subsistence harvest of various species of crab was open in Prince William Sound was 1999. In Cordova, the estimated king crab (*Lithodes* and/or *Paralithodes* spp.) harvest was 934 crabs in 1988 and 859 crabs in 1991, but 36 crabs in 1993 and 98 in 1997. In 1997-1998, the estimated combined king crab harvest for Chenega Bay, Cordova, and Tatitlek was 121 crabs. The estimated Tanner crab (*Chionoecetes bairdi*) harvest for these three communities in 1997-98 was 4,869 crabs. From the early 1980s until 1999, the noncommercial king and Tanner crab fishing in eastern Prince William Sound was closed by emergency order due to poor stock status.

Key words: Prince William Sound, Chenega Bay, Cordova, Tatitlek, Whittier, king crab, *Paralithodes camtschaticus*, *Lithodes aequispinus*, *Paralithodes platypus*, Tanner crab, *Chionoecetes bairdi*, subsistence shellfish.

BACKGROUND

At its meeting in March 2008, the Alaska Board of Fisheries will consider Proposals 360, 361, 362, 363, 364, and 365, which address re-opening noncommercial harvest opportunities for various species of king crabs (*Lithodes* and/or *Paralithodes* spp.) and/or Tanner crabs (*Chionoecetes bairdi*) in the Prince William Sound Management Area (Figure 1). In March 1999, Board of Fisheries' action on Proposals 349 and 350 closed subsistence, personal use, and sport fisheries for king and Tanner crabs in the Prince William Sound Management Area due a lack of a harvestable surplus.

Under the Alaska subsistence law (AS 16.05.258(a)), the Board of Fisheries is required to identify the fish stocks or portions of stocks that are customarily and traditionally taken or used for subsistence (a "C&T finding"). In March 1999, the Board made a positive customary and traditional use finding for shrimps (various spp.), Dungeness crabs (*Cancer magister*), and miscellaneous shellfish in the Prince William Sound Management Area (5 AAC 02.208). The Board postponed action on a C&T finding on king and Tanner crabs until a harvestable surplus was available. This worksheet provides background information on noncommercial harvests and uses of king and Tanner crabs in the Prince William Sound Management Area, within the larger context of uses of marine invertebrates, with a primary focus on the Prince William Sound communities of Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier. (See Table 1 for population data for these communities.) The information is organized according to the 8 criteria for identifying customary and traditional uses as defined in the Joint Board of Fisheries and Game Subsistence Procedures (5 AAC 99.010). This information may be supplemented during public testimony and board deliberations.

Most of the harvest and use data reported in this worksheet derive from systematic household surveys conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence. Table 2 reports study years and sample achievements for these surveys.

Table 3 provides a summary of the subsistence, personal use, and sport fishing regulations for king crabs in 1999 (the last year these fisheries were open to harvesting) and Table 4 provides the same for Tanner crabs. The area within the Valdez city limits, and areas near Whittier are classified as nonsubsistence areas under regulations of the Joint Board (5 AAC 99.015(a)(5)) and are closed to all subsistence fishing (Figure 2 and Figure 3). Personal use and sport fishing may be permitted in nonsubsistence areas.

THE EIGHT CRITERIA

CRITERION 1.

A long-term, consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

Shellfish played an important role in the diets of the indigenous Chugach (Birket-Smith 1953:18, 23; de Laguna 1956:6, 193) and Eyak (Birket-Smith and de Laguna 1938) peoples of Prince William Sound and the Copper River Delta area. Although the archaeological record does not document the use of crabs by the Chugach, this is likely due to poor preservation of remains. The ethnohistorical record shows that crabs, especially Dungeness, were an important spring resource for the Eyak, when crabs could be speared in shallow water. Descendants of the Chugach and Eyak people presently live in Chenega Bay, Cordova, Tatitlek, and Valdez.

The estimated population of the Prince William Sound Area Management Area in 2006, excluding the inland communities of the Copper River Basin (which do not harvest shellfish in substantial numbers) was 6,393 in and around five communities (Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier). In 2000, 13.8% of the population of these communities was Alaska Native (Table 1). Residents of other Alaska communities also engage in the noncommercial harvest of marine invertebrates in the Prince William Sound Area.

Former residents of the community of Chenega (destroyed by a tsunami generated by the Great Alaska Earthquake of 1964) recalled that marine invertebrates used in the community included butter clams (*Saxidomus giganteus*), littleneck clams (*Protothaca staminea*), cockles (*Clinocardium spp.* and *Serripes spp.*), chitons (Class *Polyplacophora*), sea urchins (*Strongylocentrotus spp.*), sea cucumbers (*Parastichopus californicus*), marine snails (Class *Gastropoda*), octopi (*Octopus vulgaris*), crabs, and mussels (*Mytilus spp.*) (Stratton and Chisum 1986:34-37). Use of crabs in the Prince William Sound communities of Chenega and Tatitlek prior to 1960, while occurring, was relatively limited. Crabs were used when caught incidentally in salmon gillnets. In the 1960s, Prince William Sound area residents began using pots for subsistence crab fishing (Stratton 1990:44).

Subsistence harvests of marine invertebrates in Prince William Sound are not monitored annually by ADF&G. Harvest estimates for crabs are available for years in which the Division of Subsistence conducted household surveys (Table 2). Table 5 reports household survey data for harvests and uses of crabs, with all species combined. Prior to the *Exxon Valdez* oil spill, the majority of households in Chenega Bay, Cordova, and Tatitlek used crabs. In the most recent survey year before the closure of subsistence fishing for king and Tanner crabs (1997-98), 26.7% of households in Chenega Bay used crabs, as did 28.4% in Cordova and 68.8% in Tatitlek. About 25% of Valdez households used crabs in the period 1991 to 1993. In Whittier, 32.3% of households used crabs in the single study year of 1990-91.

Table 6 and Table 7 summarize household survey data for king crabs and Tanner crabs, respectively. Harvests and uses of both types of crab have varied widely, which is likely related to relative abundance and stock status. For example, in Cordova, the estimated king crab harvest was 934 crabs in 1988 and 859 crabs in 1991, but 36 crabs in 1993 and 98 in 1997. In 1997-1998, the estimated combined king crab harvest for Chenega Bay, Cordova, and Tatitlek was 121 crabs. The estimated Tanner crab harvest for these three communities in 1997-98 was 4,869 crabs. Since 1988, Tanner crab stocks in Prince William Sound have been judged to be too low for commercial harvests. All commercial fishing for king crabs has been closed since 1995-1996; there has been no commercial blue (*P. platypus*) or red (*P. camtschaticus*) king crab fishery since 1991-1992. From the early 1980s until 1999, the noncommercial king and Tanner crab fishing in eastern Prince William Sound was closed by emergency order due to poor stock abundance status.

The estimate for sport harvests of king crabs in Prince William Sound, based on the ADF&G Statewide Harvest Survey (SWHS) annual mail survey, was 58 king crabs for 1997, and no harvests for any year from 1977 to 1996. For Tanner crabs, the SWHS reports 333 were harvested in 1994, 304 in 1995, 430 in 1996, and 729 in 1997 (Howe 2001).

CRITERION 2.

A pattern of taking or use recurring in specific seasons of each year.

Harvest of marine invertebrates occurs year-round in Prince William Sound communities. At Tatitlek, Tanner crabs were harvested from September through April, although little harvest occurred from November through March, when boating was difficult and crabs were found in deeper water. At Cordova, crabs were taken year-round (Stratton 1989:52).

CRITERION 3.

A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

For marine invertebrates in general, harvest areas are reached by skiff, commercial fishing vessel, all-terrain vehicle (ATV), or on foot. Noncommercial pots are used for crabs and shrimps (e.g. Stratton 1990:106-107 for Tatitlek; Stratton 1989:102-104 for Cordova). Some Dungeness crabs are caught in salmon nets (Stratton 1990:107).

Marine invertebrates, such as crabs, shrimps, and octopi, are also removed for home use from commercial catches or taken incidentally while people are engaged in other commercial fisheries. Table 8 reports the estimated harvests of king crabs (in numbers of crabs) and Tanner crabs (in numbers of crabs) that were removed from commercial harvests for home use or taken under noncommercial regulations, by community and study year, based on household harvest surveys. Table 9 shows, of the total king crab harvests and Tanner crab harvests in Prince William Sound communities, the percentage that was removed from commercial catches for home use and the percentage that was harvested under noncommercial regulations. It should be noted that these harvests may have occurred anywhere in the state, not just in Prince William Sound, which accounts in part for the occurrence of harvests in years when Prince William Sound commercial or noncommercial crab fisheries were closed. While harvests under noncommercial regulations accounted for most of the crab harvest in almost every case, in some years, commercial removal was a substantial source of king and/or Tanner crab harvests in Cordova.

CRITERION 4.

The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Harvest of marine invertebrates occurs throughout Prince William Sound, although areas of concentrated effort are near each community. Maps of areas used for harvesting marine invertebrates by Chenega Bay residents appear in the Division of Subsistence's Technical Paper No. 139 (Stratton and Chisum 1986). Maps of harvest areas used by Cordova, Valdez, and Whittier residents are available in Division of Subsistence project files.

According to interviews conducted in the mid-1980s, areas used for crab fishing by Cordova residents included Orca Inlet, Orca Bay, Simpson Bay, Gravina Bay, as well as areas in the Copper River Flats (Stratton 1989:102, 104). The major areas for noncommercial crabbing for Cordova residents, Orca Bay and Orca Inlet, were closed to Dungeness harvesting for most of the 1980s and closed to king and Tanner fishing for several seasons as well (e.g. Trowbridge 1992:27), and all seasons have been closed since 1999.

CRITERION 5.

A means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

Today, most harvests of marine invertebrates, including crabs, are eaten fresh; some are frozen for later use.

CRITERION 6.

A pattern of taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Tatitlek and Cordova are long-established Prince William Sound communities. Most of the residents of Chenega Bay are former residents, or descendents of former residents, of the village of Chenega, which was destroyed by a tsunami generated by the 1964 Great Alaska Earthquake. The village was re-established in 1984. In all these communities, subsistence harvesting activities are often family activities. Marine invertebrate gathering especially involves family members of all ages.

CRITERION 7.

A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

In the past, fishing for crabs was a fairly specialized activity. For example, crabs were typically harvested by only a few residents of Chenega Bay and Tatitlek because this required ownership of pots and of a boat from which to set and pull them. These fishers shared their catches widely. This pattern also occurred in Cordova and Valdez (Stratton 1990:106-107).

As shown in Table 5, Table 6, and Table 7, a large percentage of households interviewed during Division of Subsistence surveys reported receiving or giving away harvests of king crabs or Tanner crabs when these resources were available to community members.

CRITERION 8.

A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

As shown in Table 10, harvests of wild foods in Chenega Bay and Tatitlek have ranged from 275 to 577 pounds per person. On average, households in these communities use about 20 different types of resources annually (Fall 2006). Noncommercial resource harvests are also relatively large in Cordova, ranging from about 128 to 234 pounds in study years from 1985 to 2003. In 2003, households in Cordova used an average of 12.4 types of wild resources. As also shown in Table 10, harvests in Valdez and Whittier are lower than in the other three Prince William Sound communities, at around 100 pounds per person in Valdez to 80 pounds per person in Whittier, per year. Use diversity is also moderate in Valdez and Whittier, at about 6 to 8 types of wild foods used per household annually.

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TABLES AND FIGURES

Table 1. – Population of communities in the Prince William Sound Area, 2000 and 2006.

| Community | 2000 | | | 2006 |
|------------------------|------------------|--------------------------|-----------------|------------------|
| | Total population | Alaska Native population | % Alaska Native | Total population |
| Chenega Bay | 86 | 67 | 77.9% | 69 |
| Cordova | 2,454 | 368 | 15.0% | 2,211 |
| Tatitlek | 107 | 91 | 85.0% | 117 |
| Valdez | 4,036 | 410 | 10.2% | 3,690 |
| Whittier | 182 | 23 | 12.6% | 189 |
| Balance of census area | 99 | NA | NA | 117 |
| Totals | 6,964 | 959 | 13.8% | 6,393 |

Sources: U.S. Bureau of the Census 2001; Alaska Department of Labor and Workforce Development 2008.

Table 2. – Study years and sample sizes of Division of Subsistence household surveys.

| Community | Study year | Sample type | Number of households | | |
|-------------|------------|-------------------|----------------------|-----------------|------------------------|
| | | | Interviewed | Community total | Percentage interviewed |
| Chenega Bay | 1984 - 85 | Census | 16 | 16 | 100% |
| | 1985 - 86 | Census | 16 | 17 | 94% |
| | 1989 - 90 | Census | 18 | 21 | 86% |
| | 1990 - 91 | Census | 18 | 21 | 86% |
| | 1991 - 92 | Census | 18 | 22 | 82% |
| | 1992 - 93 | Census | 23 | 26 | 89% |
| | 1993 - 94 | Census | 23 | 28 | 82% |
| | 1997 - 98 | Census | 15 | 21 | 71% |
| | 2003 | Census | 16 | 20 | 80% |
| Cordova | 1985 | Random | 206 | 853 | 24% |
| | 1988 | Stratified random | 101 | 872 | 12% |
| | 1991 | Random | 101 | 784 | 13% |
| | 1992 | Random | 41 | 784 | 5% |
| | 1993 | Random | 104 | 946 | 11% |
| | 1997 - 98 | Stratified random | 152 | 831 | 18% |
| | 2003 | Stratified random | 148 | 910 | 16% |
| Tatitlek | 1987 - 88 | Census | 19 | 31 | 61% |
| | 1988 - 89 | Census | 21 | 28 | 75% |
| | 1989 - 90 | Census | 22 | 28 | 79% |
| | 1990 - 91 | Census | 17 | 28 | 61% |
| | 1991 - 92 | Census | 19 | 27 | 70% |
| | 1993 - 94 | Census | 20 | 28 | 71% |
| | 1997 - 98 | Census | 16 | 27 | 59% |
| | 2003 | Census | 25 | 27 | 93% |
| | Valdez | 1991 | Random | 100 | 1,231 |
| 1992 | | Random | 100 | 1,257 | 8% |
| 1993 | | Random | 35 | 1,257 | 3% |
| Whittier | 1990 - 91 | Stratified random | 56 | 103 | 54% |

Table 3. – Regulations for noncommercial harvest of king crabs, Prince William Sound, 1999.

| | Subsistence | Personal use | Sport |
|---|--|--|--|
| Limits on participation | Any Alaska resident. | Any Alaska resident. | No restrictions. |
| License requirement | None. | Alaska resident sport fishing license. | Sport fishing license. |
| Permit requirement | None. | None. | None. |
| Season | No closed season. | No closed season. | No closed season. |
| Daily bag and possession limits; bag and possession limits are not additive | 6 male crabs per person. | 6 male crabs per person. | 6 male crabs per person. |
| Size limits | Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater. | Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater. | Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater. |
| Pot limits | Five per person, 10 per vessel. | No more than 5 per person, 10 per vessel. | Five per person, 10 per vessel. |
| Other | Crab pots left in saltwater unattended for more than two weeks must have bait and bait containers removed and all doors secured fully open; escape mechanism required. | Escape mechanism required. | Escape mechanism required. |

Table 4. – Regulations for noncommercial harvest of Tanner crabs in Prince William Sound, 1999.

| | Subsistence | Personal use | Sport |
|---|--|---|---------------------------------|
| Limits on participation | Any Alaska resident. | Any Alaska resident. | No restrictions. |
| License requirement | None. | Alaska resident sport fishing license. | Sport fishing license. |
| Permit requirement | None. | None. | None. |
| Season | No closed season. | No closed season. | No closed season. |
| Daily bag and possession limits; daily bag and possession limits are not additive | 20 male crabs per person. | 20 male crabs per person. | 20 male crabs per person. |
| Size limits | 5.3 inches in width of shell or greater. | 5.3 inches in width of shell or greater. | 5.5 inch minimum size. |
| Pot limit | Five per person, 10 per vessel. | No more than 5 per person, 10 per vessel. | Five per person, 10 per vessel. |
| Other | Escape mechanism required. | Escape mechanism required. | Escape mechanism required. |

Table 5. – Harvests and uses of crabs (any species), Prince William Sound.

| Community | Study year | Percentage of households | | | | Estimated harvests | | | | 95% confidence limit (+/-%) ¹ | |
|-------------|------------|--------------------------|--------|------------|-----------|--------------------|----------------------------------|--|------------------------------|--|-------------------|
| | | Using | Trying | Harvesting | Receiving | Giving | Community total harvest, numbers | Community total harvest, usable pounds | Average pounds per household | | Per capita pounds |
| Chenega Bay | 1984 | 6.3 | 0.0 | 0.0 | 6.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Chenega Bay | 1985 | 87.5 | 18.8 | 12.5 | 87.5 | 25.0 | 23 | 47 | 2.8 | 0.8 | 39 |
| Chenega Bay | 1989 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Chenega Bay | 1990 | 0.0 | 16.7 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Chenega Bay | 1991 | 55.6 | 22.2 | 16.7 | 50.0 | 11.1 | 209 | 333 | 15.2 | 4.1 | 73 |
| Chenega Bay | 1992 | 21.7 | 8.7 | 8.7 | 21.7 | 4.3 | 124 | 193 | 7.4 | 2.1 | 50 |
| Chenega Bay | 1993 | 8.7 | 4.3 | 4.3 | 8.7 | 4.3 | 15 | 23 | 0.8 | 0.2 | 80 |
| Chenega Bay | 1997 | 26.7 | 26.7 | 6.7 | 26.7 | 20.0 | 27 | 57 | 2.7 | 1.0 | 115 |
| Chenega Bay | 2003 | 31.3 | 6.3 | 0.0 | 31.3 | 12.5 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Cordova | 1985 | 62.6 | 20.4 | 17.5 | 53.4 | 14.6 | 7,503 | 7,771 | 9.1 | 3.4 | 58 |
| Cordova | 1988 | 72.8 | 30.5 | 30.5 | 55.4 | 22.4 | 7,437 | 9,054 | 10.4 | 3.8 | 51 |
| Cordova | 1991 | 37.6 | 12.9 | 10.9 | 30.7 | 7.9 | 1,636 | 2,808 | 3.6 | 1.2 | 106 |
| Cordova | 1992 | 39.0 | 14.6 | 14.6 | 29.3 | 12.2 | 1,646 | 1,528 | 1.9 | 0.6 | 85 |
| Cordova | 1993 | 50.0 | 11.5 | 10.6 | 45.2 | 14.4 | 3,802 | 4,734 | 5.0 | 1.6 | 113 |
| Cordova | 1997 | 28.4 | 8.3 | 7.5 | 24.1 | 7.1 | 4,909 | 7,656 | 9.2 | 3.1 | 79 |
| Cordova | 2003 | 25.7 | 7.4 | 7.4 | 19.6 | 10.8 | 1,405 | 1,509 | 1.7 | 0.6 | 77 |
| Tatitlek | 1987 | 68.4 | 15.8 | 15.8 | 57.9 | 15.8 | 307 | 472 | 15.2 | 3.8 | 90 |
| Tatitlek | 1988 | 71.4 | 9.5 | 9.5 | 61.9 | 23.8 | 580 | 856 | 30.6 | 8.5 | 73 |
| Tatitlek | 1989 | 13.6 | 0.0 | 0.0 | 13.6 | 4.5 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Tatitlek | 1990 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Tatitlek | 1991 | 31.6 | 0.0 | 0.0 | 31.6 | 15.8 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Tatitlek | 1993 | 40.0 | 20.0 | 20.0 | 35.0 | 25.0 | 188 | 302 | 10.8 | 3.1 | 57 |
| Tatitlek | 1997 | 68.8 | 31.3 | 31.3 | 56.3 | 18.8 | 407 | 652 | 24.1 | 8.1 | 98 |
| Tatitlek | 2003 | 24.0 | 0.0 | 0.0 | 24.0 | 8.0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Valdez | 1991 | 25.0 | 8.0 | 5.0 | 21.0 | 3.0 | 9,232 | 14,728 | 12.0 | 3.6 | 128 |

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Table 5. – Page 2 of 2.

| Community | Study year | Percentage of households | | | | | | Estimated harvests | | | |
|-----------|------------|--------------------------|--------|------------|-----------|--------|----------------------------------|--|------------------------------|-------------------|--|
| | | Using | Trying | Harvesting | Receiving | Giving | Community total harvest, numbers | Community total harvest, usable pounds | Average pounds per household | Per capita pounds | 95% confidence limit (+/-%) ¹ |
| Valdez | 1992 | 22.0 | 4.0 | 3.0 | 20.0 | 4.0 | 1,634 | 2,332 | 1.9 | 0.6 | 110 |
| Valdez | 1993 | 25.7 | 8.6 | 8.6 | 20.0 | 5.7 | 2,658 | 4,123 | 3.3 | 1.1 | 145 |
| Whittier | 1990 | 32.3 | 10.0 | 10.0 | 23.4 | 9.9 | 446 | 674 | 6.5 | 2.4 | 32 |

¹ Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.

Sources: ADF&G 2007; Fall 2006.

Table 6. -- Harvests and uses of king crabs, Prince William Sound communities.

| Community | Study year | Percentage of households | | | | Estimated harvests | | | | 95% confidence interval (+/- %) ¹ | |
|-------------|------------|--------------------------|--------|------------|-----------|--------------------|--------------------------|-------------------------|------------------------------|--|-------------------|
| | | Using | Trying | Harvesting | Receiving | Giving | Community total, numbers | Community total, pounds | Average pounds per household | | Per capita pounds |
| Chenega Bay | 1984 | 6.3 | 0.0 | 0.0 | 6.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1985 | 87.5 | 12.5 | 6.3 | 81.3 | 18.8 | 19 | 44 | 2.6 | 0.7 | 47 |
| Chenega Bay | 1989 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1990 | 0.0 | 5.6 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1991 | 5.6 | 5.6 | 0.0 | 5.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1992 | 8.7 | 0.0 | 0.0 | 8.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1993 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1997 | 20.0 | 20.0 | 6.7 | 20.0 | 13.3 | 21 | 48 | 2.3 | 0.8 | 115 |
| Chenega Bay | 2003 | 25.0 | 6.3 | 0.0 | 25.0 | 6.3 | 0 | 0 | 0.0 | 0.0 | |
| Cordova | 1985 | 23.3 | 2.9 | 2.9 | 20.4 | 3.4 | 340 | 781 | 0.9 | 0.3 | 90 |
| Cordova | 1988 | 32.5 | 7.0 | 7.0 | 25.6 | 7.0 | 934 | 2,147 | 2.5 | 0.9 | 110 |
| Cordova | 1991 | 15.8 | 3.0 | 3.0 | 12.9 | 2.0 | 859 | 1,976 | 2.5 | 0.9 | 147 |
| Cordova | 1992 | 22.0 | 2.4 | 2.4 | 19.5 | 2.4 | 33 | 77 | 0.1 | 0.0 | 190 |
| Cordova | 1993 | 15.4 | 1.0 | 1.0 | 14.4 | 2.9 | 36 | 84 | 0.1 | 0.0 | 186 |
| Cordova | 1997 | 10.7 | 1.6 | 0.4 | 10.3 | 0.4 | 98 | 225 | 0.3 | 0.1 | 164 |
| Cordova | 2003 | 16.9 | 1.4 | 1.4 | 15.5 | 6.8 | 219 | 503 | 0.6 | 0.2 | 131 |
| Tatitlek | 1987 | 10.5 | 0.0 | 0.0 | 10.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1988 | 9.5 | 0.0 | 0.0 | 9.5 | 4.8 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1989 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1990 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1991 | 5.3 | 0.0 | 0.0 | 5.3 | 5.3 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1993 | 5.0 | 5.0 | 5.0 | 0.0 | 5.0 | 3 | 6 | 0.2 | 0.1 | 100 |
| Tatitlek | 1997 | 25.0 | 6.3 | 6.3 | 18.8 | 0.0 | 2 | 4 | 0.1 | 0.1 | 136 |
| Tatitlek | 2003 | 4.0 | 0.0 | 0.0 | 4.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |

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Table 6. – Page 2 of 2.

| | | Percentage of households | | | | | | Estimated harvests | | | |
|-----------|------------|--------------------------|--------|------------|-----------|--------|--------------------------|-------------------------|------------------------------|-------------------|--|
| Community | Study year | Using | Trying | Harvesting | Receiving | Giving | Community total, numbers | Community total, pounds | Average pounds per household | Per capita pounds | 95% confidence interval (+/- %) ¹ |
| Valdez | 1991 | 7.0 | 1.0 | 1.0 | 6.0 | 1.0 | 535 | 1,231 | 1.0 | 0.3 | 188 |
| Valdez | 1992 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Valdez | 1993 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Whittier | 1990 | 6.8 | 4.5 | 4.5 | 2.3 | 2.3 | 47 | 108 | 1.1 | 0.4 | 38 |

¹ Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.
Sources: ADF&G 2007; Fall 2006.

Table 7. – Harvests and uses of Tanner crabs, Prince William Sound communities.

| Community | Study Year | Percentage of households | | | | Estimated harvests | | | | 95% Confidence interval (+/-) % ¹ | |
|-------------|------------|--------------------------|--------|------------|-----------|--------------------|----------------------------|---------------------------|------------------------------|--|-------------------|
| | | Using | Trying | Harvesting | Receiving | Giving | Community harvest, numbers | Community harvest, pounds | Average pounds per household | | Per capita pounds |
| Chenega Bay | 1984 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1985 | 31.3 | 6.3 | 0.0 | 31.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1989 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1990 | 0.0 | 5.6 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Chenega Bay | 1991 | 55.6 | 16.7 | 11.1 | 50.0 | 11.1 | 208 | 332 | 15.1 | 4.1 | 73 |
| Chenega Bay | 1992 | 17.4 | 8.7 | 8.7 | 17.4 | 4.3 | 118 | 188 | 7.2 | 2.1 | 52 |
| Chenega Bay | 1993 | 8.7 | 4.3 | 4.3 | 8.7 | 4.3 | 15 | 23 | 0.8 | 0.2 | 80 |
| Chenega Bay | 1997 | 20.0 | 26.7 | 6.7 | 20.0 | 20.0 | 6 | 9 | 0.4 | 0.2 | 115 |
| Chenega Bay | 2003 | 18.8 | 6.3 | 0.0 | 18.8 | 12.5 | 0 | 0 | 0.0 | 0.0 | |
| Cordova | 1985 | 22.8 | 4.4 | 3.9 | 19.9 | 2.9 | 2,195 | 3,511 | 4.1 | 1.6 | 144 |
| Cordova | 1988 | 26.1 | 8.6 | 8.6 | 17.6 | 5.7 | 2,616 | 4,185 | 4.8 | 1.7 | 78 |
| Cordova | 1991 | 8.9 | 3.0 | 3.0 | 5.9 | 1.0 | 320 | 512 | 0.7 | 0.2 | 142 |
| Cordova | 1992 | 4.9 | 2.4 | 2.4 | 2.4 | 0.0 | 359 | 574 | 0.7 | 0.2 | 190 |
| Cordova | 1993 | 28.8 | 5.8 | 4.8 | 25.0 | 7.7 | 2,238 | 3,580 | 3.8 | 1.2 | 150 |
| Cordova | 1997 | 15.0 | 5.5 | 4.7 | 11.4 | 4.7 | 4,458 | 7,132 | 8.6 | 2.8 | 87 |
| Cordova | 2003 | 6.8 | 0.7 | 0.7 | 6.1 | 4.1 | 195 | 313 | 0.3 | 0.1 | 180 |
| Tatitlek | 1987 | 36.8 | 10.5 | 10.5 | 26.3 | 10.5 | 286 | 457 | 14.7 | 3.7 | 90 |
| Tatitlek | 1988 | 71.4 | 9.5 | 9.5 | 61.9 | 23.8 | 500 | 800 | 28.6 | 7.9 | 71 |
| Tatitlek | 1989 | 13.6 | 0.0 | 0.0 | 13.6 | 4.5 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1990 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1991 | 21.1 | 0.0 | 0.0 | 21.1 | 10.5 | 0 | 0 | 0.0 | 0.0 | |
| Tatitlek | 1993 | 40.0 | 20.0 | 20.0 | 35.0 | 25.0 | 185 | 296 | 10.6 | 3.1 | 57 |
| Tatitlek | 1997 | 62.5 | 31.3 | 31.3 | 50.0 | 18.8 | 405 | 648 | 24.0 | 8.0 | 99 |
| Tatitlek | 2003 | 20.0 | 0.0 | 0.0 | 20.0 | 4.0 | 0 | 0 | 0.0 | 0.0 | |

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Table 7. – Page 2 of 2.

| Community | Study Year | Percentage of households | | | | | Estimated harvests | | | | 95% Confidence interval (+/- %) ¹ |
|-----------|------------|--------------------------|--------|------------|-----------|--------|----------------------------|---------------------------|------------------------------|-------------------|--|
| | | Using | Trying | Harvesting | Receiving | Giving | Community harvest, numbers | Community harvest, pounds | Average pounds per household | Per capita pounds | |
| Valdez | 1991 | 16.0 | 5.0 | 4.0 | 12.0 | 3.0 | 8,232 | 13,172 | 10.7 | 3.2 | 136 |
| Valdez | 1992 | 15.0 | 3.0 | 3.0 | 13.0 | 2.0 | 1,320 | 2,112 | 1.7 | 0.6 | 112 |
| Valdez | 1993 | 14.3 | 5.7 | 5.7 | 8.6 | 5.7 | 2,514 | 4,022 | 3.2 | 1.1 | 154 |
| Whittier | 1990 | 27.9 | 8.9 | 8.9 | 19.0 | 9.9 | 318 | 510 | 5.0 | 1.8 | 41 |

¹ Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.

Sources: ADF&G 2007; Fall 2006.

Table 8. – Harvests of king and Tanner crabs by gear type.

| Community | Study year | King crabs (numbers) | | Tanner crabs (numbers) | |
|-------------|------------|-------------------------|-------|---------------------------|-------|
| | | Commercial removal | Other | Commercial removal | Other |
| Chenega Bay | 1984 - 85 | 0 | 0 | 0 | 0 |
| Chenega Bay | 1985 - 86 | 0 | 19 | 0 | 0 |
| Chenega Bay | 1991 | 0 | 0 | 0 | 208 |
| Chenega Bay | 1992 | 0 | 0 | 0 | 118 |
| Chenega Bay | 1993 | 0 | 0 | 0 | 15 |
| Chenega Bay | 1997 | 0 | 21 | 0 | 6 |
| Chenega Bay | 2003 | 0 | 0 | 0 | 0 |
| Cordova | 1985 | 137 | 203 | 621 | 1,573 |
| Cordova | 1988 | 556 | 377 | 2,171 | 445 |
| Cordova | 1991 | 844 | 16 | 243 | 78 |
| Cordova | 1992 | 0 | 33 | 359 | 0 |
| Cordova | 1993 | 18 | 18 | 200 | 2,038 |
| Cordova | 1997 | 98 | 0 | 163 | 4,295 |
| Cordova | 2003 | 16 | 203 | 3 | 192 |
| Tatitlek | 1987 | 0 | 0 | 0 | 286 |
| Tatitlek | 1988 | 0 | 0 | 0 | 500 |
| Tatitlek | 1991 | 0 | 0 | 0 | 0 |
| Tatitlek | 1993 | 0 | 3 | 0 | 185 |
| Tatitlek | 1997 | 0 | 2 | 0 | 405 |
| Tatitlek | 2003 | 0 | 0 | 0 | 0 |
| Valdez | 1991 | 0 | 535 | 0 | 8,232 |
| Valdez | 1992 | 0 | 0 | 0 | 1,320 |
| Valdez | 1993 | 0 | 0 | 0 | 2,514 |
| Whittier | 1990 - 91 | 0 | 47 | 2 | 316 |

Source: ADF&G 2007.

Table 9. – Percentage of harvest by commercial removal or noncommercial methods.

| Community | Study year | King crabs ¹ | | Tanner crabs ¹ | |
|-------------|------------|-------------------------|------------------------|---------------------------|------------------------|
| | | Commercial removal | Non-commercial harvest | Commercial removal | Non-commercial harvest |
| Chenega Bay | 1984 - 85 | | | | |
| Chenega Bay | 1985 - 86 | | 100.0% | | |
| Chenega Bay | 1991 | | | | 100.0% |
| Chenega Bay | 1992 | | | | 100.0% |
| Chenega Bay | 1993 | | | | 100.0% |
| Chenega Bay | 1997 | | 100.0% | | 100.0% |
| Chenega Bay | 2003 | | | | |
| Cordova | 1985 | 40.3% | 59.7% | 28.3% | 71.7% |
| Cordova | 1988 | 59.6% | 40.4% | 83.0% | 17.0% |
| Cordova | 1991 | 98.1% | 1.9% | 75.7% | 24.3% |
| Cordova | 1992 | | 100.0% | 100.0% | |
| Cordova | 1993 | 50.0% | 50.0% | 8.9% | 91.1% |
| Cordova | 1997 | 100.0% | | 3.7% | 96.3% |
| Cordova | 2003 | 7.3% | 92.7% | 1.5% | 98.5% |
| Tatitlek | 1987 | | | | 100.0% |
| Tatitlek | 1988 | | | | 100.0% |
| Tatitlek | 1991 | | | | |
| Tatitlek | 1993 | | 100.0% | | 100.0% |
| Tatitlek | 1997 | | 100.0% | | 100.0% |
| Tatitlek | 2003 | | | | |
| Valdez | 1991 | | 100.0% | | 100.0% |
| Valdez | 1992 | | | | 100.0% |
| Valdez | 1993 | | | | 100.0% |
| Whittier | 1990 - 91 | | 100.0% | 0.6% | 99.4% |

¹ Blank cells indicate no harvest.

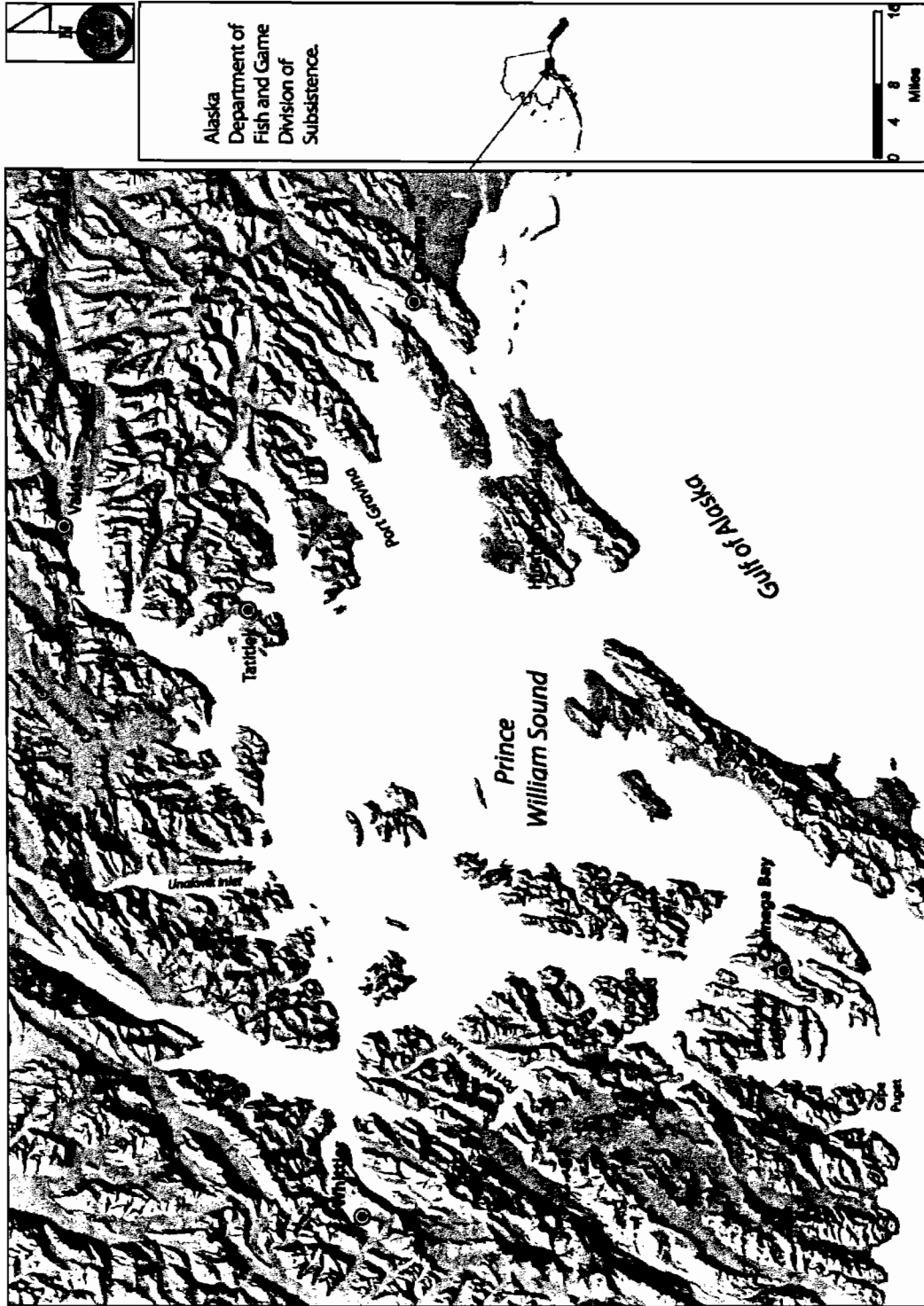
Source: ADF&G 2007.

Table 10. – Estimated total wild resource harvests, pounds usable weight per person.

| Community | Study year | Estimated pounds per person |
|-------------|------------|-----------------------------------|
| Chenega Bay | 1984 | 316 |
| Chenega Bay | 1985 | 374 |
| Chenega Bay | 1991 | 345 |
| Chenega Bay | 1992 | 414 |
| Chenega Bay | 1993 | 275 |
| Chenega Bay | 1997 | 577 |
| Chenega Bay | 2003 | 471 |
| Cordova | 1985 | 164 |
| Cordova | 1988 | 234 |
| Cordova | 1991 | 189 |
| Cordova | 1992 | 164 |
| Cordova | 1993 | 128 |
| Cordova | 1997 | 179 |
| Cordova | 2003 | 176 |
| Tatitlek | 1987 | 352 |
| Tatitlek | 1988 | 644 |
| Tatitlek | 1991 | 346 |
| Tatitlek | 1993 | 270 |
| Tatitlek | 1997 | 406 |
| Tatitlek | 2003 | 290 |
| Valdez | 1991 | 88 |
| Valdez | 1992 | 103 |
| Valdez | 1993 | 79 |
| Whittier | 1990 | 80 |

Sources: ADF&G 2007; Fall 2006.

Prince William Sound, Alaska



Alaska
Department of
Fish and Game
Division of
Subsistence.

Figure 1. – Map of the Prince William Sound Management Area.

Anchorage Nonsubsistence Area

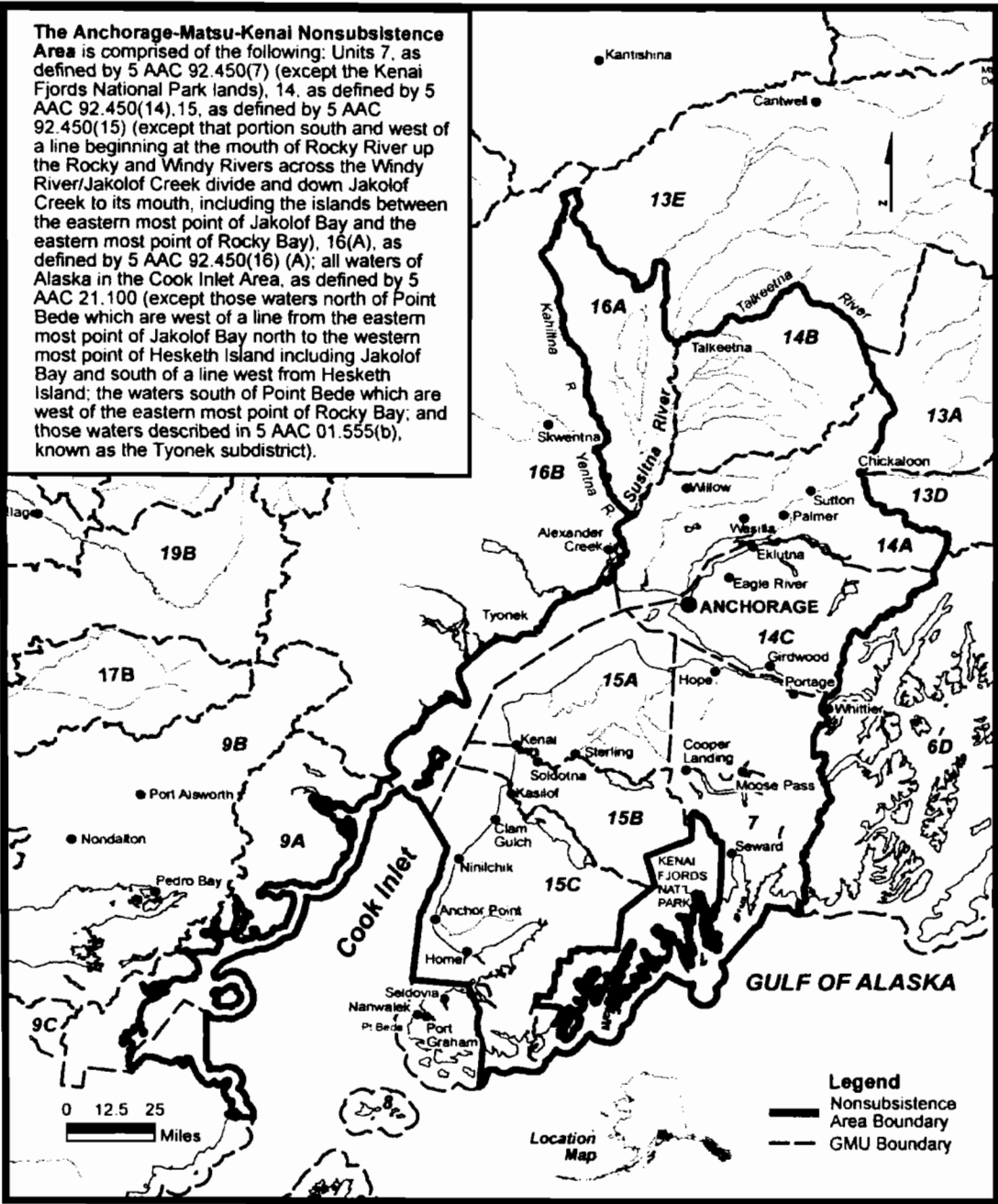
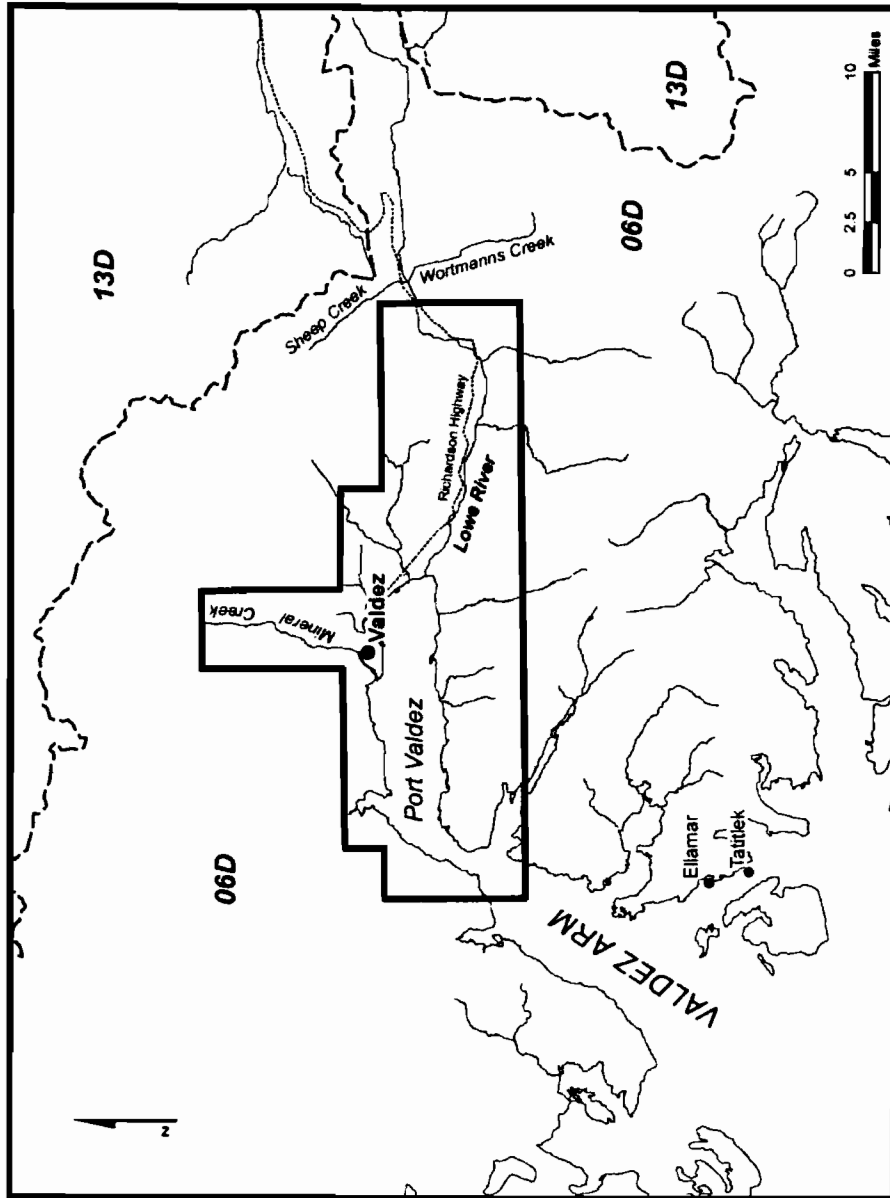
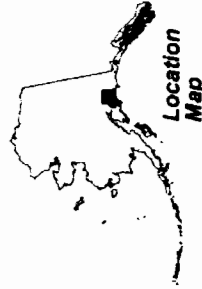


Figure 2. – Map of the Anchorage – MatSu – Kenai nonsubsistence area.

Valdez Nonsubsistence Area



The Valdez Nonsubsistence Area is comprised of the following: within Unit 6(D), as defined by 5 AAC 92.450(6) (D), and all waters of Alaska in the Prince William Sound Area as defined by 5 AAC 24.100, within the March 1993 Valdez City limits.



- Legend**
- Nonsubsistence Area Boundary
 - - - GMU Boundary
 - Roads



Alaska Department of Fish and Game - Division of Subsistence and Boards

September 2007

Figure 3. – Map of the Valdez nonsubsistence area.

ALASKA DEPARTMENT OF FISH AND GAME

**STAFF COMMENTS ON KING AND TANNER CRAB, AND
SUPPLEMENTAL ISSUES PROPOSALS**



**ALASKA BOARD OF FISHERIES MEETING
ANCHORAGE, ALASKA
MARCH 3-9, 2008**

Regional Information Report No. 2A08-01

The following staff comments were prepared by the Alaska Department of Fish and Game for use at the Alaska Board of Fisheries meeting, March 3-9, 2008 in Anchorage, Alaska and are prepared to assist the public and board. The stated staff comments should be considered preliminary and subject to change, if or when new information becomes available. Final Department positions will be formulated after review of written and oral testimony presented to the Alaska Board of Fisheries.

ABSTRACT

This document contains Alaska Department of Fish and Game (ADF&G) staff comments on king and Tanner crab, and supplemental issues regulatory proposals for statewide management areas. These comments were prepared by ADF&G for use at the Alaska Board of Fisheries meeting, March 3–9, 2008 in Anchorage, Alaska. The comments are forwarded to assist the public and Board. The comments contained herein should be considered preliminary and subject to change, as new information becomes available. Final department positions will be formulated after review of written and oral public testimony presented to the Board.

Key words: Alaska Board of Fisheries, staff comments, shellfish, management, regulatory proposals, supplemental issues, king crab, Tanner crab.

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TABLE OF CONTENTS

| | Page |
|--|-------------|
| Summary of Department Positions on 2008 Statewide King and Tanner proposals..... | ii |
| COMMITTEE A – Bering Sea King and Tanner Crab | 1 |
| PROPOSAL 368 – 5 AAC 39.690..... | 1 |
| PROPOSAL 369 – 5 AAC 39.645..... | 3 |
| PROPOSAL 370 – 5 AAC 34.606..... | 5 |
| PROPOSAL 371 – 5 AAC 35.510..... | 7 |
| PROPOSAL 372 – 5 AAC 39.670..... | 8 |
| PROPOSAL 373 – 5 AAC 35.506..... | 12 |
| PROPOSAL 374 – 5 AAC 39.670 (c)(3)(A)..... | 15 |
| PROPOSAL 375 – 5 AAC 39.675..... | 17 |
| PROPOSAL 376 – 5 AAC 35.525..... | 19 |
| PROPOSAL 377 – 5 AAC 34.825..... | 21 |
| PROPOSAL 378 – 5 AAC 34.825..... | 22 |
| PROPOSAL 379 – 5 AAC 34.053..... | 23 |
| PROPOSAL 380 – 5 AAC 34.910..... | 24 |
| PROPOSAL 381 – 5 AAC 34.917..... | 26 |
| COMMITTEE B – Aleutian Islands, Kodiak and Norton Sound King and Tanner Crab | 27 |
| PROPOSAL 382 – 5 AAC 39.145..... | 27 |
| PROPOSAL 383 – 5 AAC 34.xxx..... | 30 |
| PROPOSAL 384 – 5 AAC 39.675..... | 33 |
| PROPOSAL 385 – 5 AAC 35.xxx..... | 34 |
| PROPOSAL 386 – 5 AAC 35.505(c)..... | 36 |
| PROPOSAL 366 – 5 AAC 35.506..... | 38 |
| PROPOSAL 367 – 5 AAC 35.525..... | 40 |
| PROPOSAL 387 – 5 AAC 34.910 (d)(1)..... | 43 |
| PROPOSAL 388 – 5 AAC 34.915(b)..... | 45 |
| PROPOSAL 389 – 5 AAC 34.920(d)..... | 46 |
| PROPOSAL 390 – 5 AAC 34.925(b), (d)..... | 47 |
| PROPOSAL 391 – 5 AAC 34.925..... | 49 |
| COMMITTEE C – Prince William Sound and Cook Inlet King and Tanner Crab..... | 50 |
| PROPOSAL 359 – 5 AAC 35.408(b)(4), (b)(5) and others | 50 |
| PROPOSAL 360 – 5 AAC 77.516..... | 53 |
| PROPOSAL 361 – 5 AAC 77.557..... | 55 |
| PROPOSAL 362 – 5 AAC 77.558..... | 57 |
| PROPOSAL 363 – 5 AAC 77.558..... | 58 |
| PROPOSAL 364 – 5 AAC 77.557..... | 60 |
| PROPOSAL 365 – 5 AAC 77.557..... | 62 |
| COMMITTEE D – Supplemental Issues | 64 |
| PROPOSAL 402 – 5 AAC 38.xxx..... | 64 |
| PROPOSAL 403 – 5 AAC 39.975..... | 65 |
| PROPOSAL 405 – 5 AAC 28.055..... | 67 |

Summary of Department Positions on 2008 Statewide King and Tanner proposals

| Committee and Proposal # | Dept Position * | Issue |
|--------------------------|-----------------|---|
| Committee A 368 | S | Provide for transfer of CDQ coverage between CDQ groups. |
| 369 | S | Provide for partial observer coverage in Bering Sea Tanner crab fishery. |
| 370 | S | Modify preseason vessel registration requirements for rationalized fisheries. |
| 371 | S | Modify preseason vessel registration requirements for Bering Sea Tanner crab. |
| 372 | S | Clarify IFQ fishery crab management plan. |
| 373 | S | Define directed and incidental Tanner crab fishing for rationalized fisheries. |
| 374 | O | Allow pot gear to be transferred to another vessel. |
| 375 | S | Clarify regulation for unattended gear prior to storage. |
| 376 | O | Repeal Bering Sea Tanner and snow crab pot limits. |
| 377 | O | Repeal Bristol Bay red king crab pot limit. |
| 378 | N | Allow 20 groundfish pots for bait in the Bristol Bay red king crab fishery. |
| 379 | N | Allow 20 groundfish pots for bait in the Bristol Bay red king crab fishery. |
| 380 | N/A | Develop Pribilof District red king crab management plan. |
| 381 | O | Reduce or repeal St. Matthew Island blue king crab minimum TAC. |
| Committee B 382 | O | Increase biodegradable cotton thread size for Aleutian Islands golden king crab. |
| 383 | O | Increase harvest level in Aleutian Islands golden king crab fishery. |
| 384 | O | Increase time that pot gear may be unattended in the Aleutian Islands golden king crab fishery. |
| 385 | S | Establish Eastern Aleutian District Tanner crab harvest strategy. |
| 386 | S | Establish Eastern Aleutian District Tanner crab districts. |
| 366 | N | Repeal Kodiak District Tanner crab superexclusive registration. |
| 367 | N | Implement differential pot limits for big and small vessels in Kodiak District. |
| 387 | N | Change start of Norton Sound open access and CDQ red king crab fisheries. |
| 388 | S | Change opening criteria for Norton Sound CDQ red king crab fishery |
| 389 | N | Reduce size limit for male blue king crab. |
| 390 | S | Require escape mechanisms in Norton Sound and Kotzebue commercial king crab pots |
| 391 | N | In the Nome winter red king crab fishery require a faster-acting escape mechanism. |
| Committee C 359 | S | Establish harvest threshold for Tanner crab in Lower Cook Inlet. |
| 360 | O | Open personal use Tanner crab fishery near Gore Point. |
| 361 | O | Reopen personal use king crab fishery in Prince William Sound. |
| 362 | O | Reopen personal use Tanner crab fishery near Valdez. |
| 363 | O | Open personal use Tanner crab fishery in Prince William Sound. |
| 364 | O | Open personal use king and Tanner crab fisheries in Prince William Sound. |
| 365 | O | Open personal use king and Tanner crab fisheries in Prince William Sound. |
| Committee D 401 | | Revise stocked waters management plan. |
| 402 | S | Consider statewide regulations for state-waters scallop fishery. |
| 403 | S | Modify definitions for pelagic shelf rockfish. |
| 404 | | Clarify western boundary of Ugashik District. |
| 405 | S | Consider adopting revised seabird avoidance regulations. |

* Position - N=Neutral, S=Support, O=Oppose, NA=No Action, N/S=Neutral on Allocation-but Support, N/O=Neutral on Allocation-but Oppose

COMMITTEE A – Bering Sea King and Tanner Crab (14 Proposals)

PROPOSAL 368 – 5 AAC 39.690. Bering Sea/Aleutian Islands King and Tanner Crab Community Development Quota (CDQ) Fisheries Management Plan.

Proposed By: Alaska Department of Fish and Game (ADF&G).

What Would The Proposal Do? This proposal would allow community development quota (CDQ) transfer among eligible CDQ groups to cover crab harvest exceeding a group allocation.

What Are The Current Regulations? Current regulation only allows CDQ crab quota transfer before crab is harvested.

What Would Be The Effect If The Proposal Were Adopted? If this proposal is adopted, a CDQ group could transfer unused CDQ crab quota to an eligible CDQ group with excess crab on board. State CDQ regulation will be in agreement with the Magnuson-Stevens Fishery Management and Conservation Act.

Proposed regulatory language as follows:

5 AAC 39.690. Bering Sea/Aleutian Islands King and Tanner Crab Community Development Quota (CDQ) Fisheries Management Plan.

(e)(6)(D) a person operating a vessel in a CDQ fishery may not exceed the CDQ group allocation specified in this paragraph; [ALL] CDQ crab taken in excess of the CDQ group allocation [SHALL BE] **may be voluntarily transferred to an eligible CDQ group at the time of the offload. If a CDQ group is unable to transfer the excess crab then the crab shall be weighed, sold, and reported on an ADF&G fish ticket and all proceeds from the sale of CDQ crab in excess of the group allocation shall be surrendered to the state.**

Background: The state of Alaska manages Bering Sea-Aleutian Islands crab under the federal Bering Sea-Aleutian Islands Crab Fishery Management Plan (FMP). In 2006, the Magnuson-Stevens Fishery Conservation and Management Act was amended to allow voluntary quota transfers among eligible CDQ groups to cover harvest exceeding a group allocation after harvesting has occurred. Current state regulation only allows CDQ quota transfers before the crab has been harvested.

Department Comments: The proposal as submitted to the Alaska Board of Fisheries allows for transfer of crab not CDQ quota. The intention of the proposal is to allow a CDQ group to transfer available quota to an eligible CDQ group with excess crab on board. In December of 2007 the North Pacific Fishery Management Council (NPFMC) adopted regulation allowing for post-delivery IFQ transfer to occur up to June 30 of the current registration year; June 30 is the end of the IFQ crab regulatory year.

Because IFQ and CDQ crab are often harvested simultaneously onboard the same vessel, ADF&G would like to adopt a regulation that mirrors the federal IFQ overage regulation with respect to the time period allowed for quota transfer. Therefore, ADF&G **SUPPORTS** this staff proposal with the following amended regulatory language which provides for the transfer of quota, not crab as originally proposed, and allows for quota transfer to occur up to June 30 to match federal regulations for IFQ transfer:

5 AAC 39.690. Bering Sea/Aleutian Islands King and Tanner Crab Community Development Quota (CDQ) Fisheries Management Plan.

(e)(6)(D) a person operating a vessel in a CDQ fishery may not exceed the CDQ group allocation specified in this paragraph; **[ALL] a CDQ group that retains crab [TAKEN] in excess of the CDQ group allocation [SHALL BE] may have quota voluntarily transferred to them from an eligible CDQ group no later than June 30 of the current allocation year. If a CDQ group is unable to obtain quota for the excess crab then the crab shall be weighed, sold, and reported on an ADF&G fish ticket and all proceeds from the sale of CDQ crab in excess of the group allocation shall be surrendered to the state.**

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, GHM management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 369 – 5 AAC 39.645. Shellfish Onboard Observer Program (d)(4)(D)(ii).

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? The purpose of this proposal is to align observer-coverage regulation with the ADF&G's current observer coverage policy for vessels harvesting *C. bairdi* Tanner crab in Registration Area J, Bering Sea District.

What Are The Current Regulations? Observer coverage is required during the directed harvest of *C. bairdi* Tanner crab for 30 percent of the total crab weight on each catcher vessel in Registration Area J, Bering Sea District.

What Would Be The Effect If The Proposal Were Adopted? This proposal gives the ADF&G the latitude needed to assure that adequate observer data is collected to help characterize the rationalized Bering Sea *C. bairdi* Tanner crab fishery.

Although not in regulation, ADF&G has recently selected between 30 percent and 100 percent of the catcher vessels engaged in directed harvest of Bering Sea *C. bairdi* Tanner crab to carry an observer for 100 percent of their fishing time. The substitute regulatory language provided below reflects the ADF&G's current policy for observer coverage in the *C. bairdi* Tanner crab fishery in the Bering Sea District.

Substitute regulatory language: **5 AAC 39.645. Shellfish Onboard Observer Program (d)(4)(D)(ii).** during harvest of 30 percent of the total *C. bairdi* Tanner crab weight harvested on each catcher vessel while operating fishing gear during each registration year, **or the department may randomly select between 30 percent and 100 percent of the catcher vessels engaged in directed harvest of *C. bairdi* Tanner crab to carry onboard observers for 100 percent of the fishing time of each selected catcher vessel,** unless a catcher vessel harvests *C. bairdi* Tanner crab as incidental catch during directed fishing for either Bristol Bay red king crab or Bering Sea *C. [OPILIA] opilio* (snow crab), where observer coverage requirements for those directed fisheries would apply to the *C. bairdi* Tanner crab incidental harvest;

Background: The Bering Sea Tanner crab fishery was rationalized beginning with the 2005/06 fishing season. The ADF&G's goal in 2005/06 was to place observers on 30% of the vessels engaged in directed harvest of Tanner crab. The ADF&G was unable to determine inseason during the 2005/06 Tanner crab fishery whether observer coverage was adequate. Because of the difficulty tracking observer coverage levels inseason for the Tanner crab fishery and also because separate Tanner crab quota became available both east and west of 166° West longitude in 2006/07, ADF&G increased the observer coverage goal to 100% percent of the catcher vessels that engaged in directed harvest of Tanner crab. The ADF&G covers the cost of observer coverage through test fishing/federal grants for catcher vessels selected to carry an observer in this fishery.

The ADF&G's selection of catcher vessels for observer coverage in the Bristol Bay red king crab and Bering Sea snow crab fisheries relies on the preseason registration process completed by 5:00 p.m. September 24 of each year. Participation and harvest that may occur during the Bering Sea *C. bairdi* Tanner crab fishery between October 15 and March 31 cannot be predicted using the same preseason vessel registration process because those vessels that are preseason registered for the rationalized Tanner crab fishery include vessels that wish to retain Tanner crab incidental to harvest in other crab fisheries, vessels that wish to engage in directed harvest of Tanner crab, and vessels that want the option to both directly and incidentally harvest Tanner crab. Additionally, the preseason registration process is not an indicator of a vessel's harvest of Individual Fishing Quota (IFQ) east or west of 166° West longitude in the Bering Sea District. As a result, the ADF&G is unable to determine how to place observers on vessels for adequate data collection for temporal and spatial characterization of the fishery based on the preseason registrations submitted to ADF&G.

Fishing effort in the Tanner crab fishery is unpredictable throughout the season, and largely dependent on the industry's business decisions. Recent effort levels in the fishery have been low with a portion of the Total Allowable Catch (TAC) left unharvested.

Table 1. shows that the percentage of Tanner crab catcher vessels that carried observers was less than 40 percent of those that harvested Tanner crab either in a directed fishery or incidentally.

Table 1. Comparison of the number of vessels that pre-season registered to harvest Tanner crab to the number of vessels that harvested Tanner crab, and the percentage of all vessels that harvested Tanner crab that were observed during the Bering Sea Tanner crab fishery, 2005/2006 and 2006/2007.

| Year | Number of catcher vessels that pre-season registered to harvest Tanner crab | Number of catcher vessels that harvested Tanner crab ^a | Number of catcher vessels that harvested Tanner crab that carried observers ^a | Percent of all catcher vessels that harvested Tanner crab that carried observers ^b |
|-----------|---|---|--|---|
| 2005/2006 | 106 | 41 | 14 | 34.1% |
| 2006/2007 | 83 | 55 | 20 | 36.4% |

^aIncludes vessels that incidentally harvested Tanner crab, vessels that engaged in directed harvest of Tanner crab, and vessels that both incidentally and directly harvested Tanner crab.

^bObserver present and acting in the capacity of an onboard observer during harvest and delivery.

Department Comments: ADF&G **SUPPORTS** the substitute regulatory language. This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, state observer requirement management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal will result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 370 – 5 AAC 34.606 AREA O REGISTRATION (b); 5 AAC 34.806 AREA T REGISTRATION (b); 5 AAC 34.906 AREA Q REGISTRATION (c); 5 AAC 35.506 AREA J REGISTRATION (f).

Proposed By: Alaska Department of Fish and Game.

What Would The Proposal Do? This proposal would allow a person to file a preseason vessel registration for a rationalized crab fishery without first obtaining a valid Commercial Fisheries Entry Commission (CFEC) interim-use permit card for that fishery. A CFEC interim-use card would still be required for non-rationalized crab fisheries with a preseason registration requirement.

What Are The Current Regulations? Current Bering Sea and Aleutian Islands crab fishery preseason vessel registration regulations require a vessel operator to possess a valid CFEC interim-use permit card for that fishery to complete a preseason vessel registration.

What Would Be The Effect If The Proposal Were Adopted? Vessel operators or agents would not have to purchase a CFEC interim use card prior to preseason registering.

Proposed regulatory language as follows:

5 AAC 34.606 AREA O REGISTRATION

(b) For the red [AND GOLDEN] king crab fisheries, the vessel registration deadline for the registration year is 21 days before that vessel begins fishing operations. Before a vessel may be registered under this subsection, the vessel operator must **file a preseason registration form with the department** [FIRST] **and** obtain a valid CFEC interim-use permit for Aleutian Islands king crab that references the vessel's ADF&G license number. **For the purposes of filing a preseason registration form for the red king crab fishery west of 179° W. long. a valid CFEC interim-use permit is not required.** The registration form must identify the vessel operator's CFEC permit number and must be received in person, or by mail or facsimile, at the department office in the Dutch Harbor or Kodiak by the deadline specified in this subsection.

5 AAC 34.806 AREA T REGISTRATION

(b) For the red king crab fishery [IES], the vessel registration deadline for the registration year is 5:00 p.m. September 24. **Before a vessel may be registered under this section, the vessel operator must file a preseason registration form with the department** [BEFORE A VESSEL MAY BE REGISTERED UNDER THIS SUBSECTION, THE VESSEL OPERATOR MUST FIRST OBTAIN A VALID CFEC INTERIM-USE PERMIT FOR BRISTOL BAY KING CRAB THAT REFERENCES THE VESSEL'S ADF&G LICENSE NUMBER.] The registration form must identify the vessel **and operator,** [OPERATOR'S CFEC PERMIT NUMBER] and must be received in person, or by mail or facsimile, at the department office in Dutch Harbor or Kodiak by the deadline specified in this subsection.

5 AAC 34.906 AREA Q REGISTRATION

(c) Before a vessel may be registered under this section, the vessel operator must file a preseason registration form with the department [FIRST] and obtain a valid CFEC interim-use permit for Bering Sea king crab that references the vessel's ADF&G license number. For the purposes of filing a preseason registration form for Pribilof red and blue king crab or Saint Matthew blue king crab a valid CFEC interim-use permit is not required. The registration form must identify the vessel operator's CFEC permit number and must be received in person, by mail, or facsimile, at the department office in Dutch Harbor or Kodiak by the applicable deadline specified in (b) of this section.

5 AAC 35.506 AREA J REGISTRATION

(f) Before a vessel may be registered under this section, the vessel operator must file a preseason registration form with the department [FIRST] and obtain a valid CFEC interim-use permit for [BERING SEA] Tanner crab that references the vessel's ADF&G license number. For the purposes of filing a preseason registration form for Bering Sea Tanner or snow crab a valid CFEC interim-use permit is not required. The registration form must identify the vessel operator's CFEC permit number and must be received in person, or by mail or facsimile, at the department office in Dutch Harbor or Kodiak by the applicable deadline specified in (e) of this section [BY THE DEADLINE SPECIFIED IN THIS SECTION].

Background: Fishing seasons have been greatly lengthened for the rationalized crab fisheries and all of the rationalized crab fishing seasons span parts of two calendar years. All rationalized crab fisheries with the exception of the Aleutian Islands golden king crab fishery open annually on October 15, however Bering Sea snow and Tanner crab harvest traditionally begins after January 1, and continues up to the biological closure for the respective species. The preseason vessel registration deadline occurring in the prior year can require a participant to purchase a CFEC interim-use permit card for the calendar year in which the vessel operator must file a preseason registration, and another for the year harvest actually occurs.

Prior to the implementation of crab rationalization (CR) ADF&G used the number of vessels preseason registered to set pot limits, evaluate preseason fishery expectations and make onboard observer assignments. The implementation of CR has eliminated the two former functions of the preseason registration process leaving the latter. ADF&G does not believe that assigning observers to vessels in the CR fisheries will be compromised by eliminating the requirement that a person possess a CFEC interim-use permit for that fishery at the time the preseason registration is filed.

Department Comments: ADF&G **SUPPORTS** this staff proposal. This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, reporting requirements management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 371 – 5 AAC 35.510. Fishing Seasons For Registration Area J.

Proposed By: Tary Middlesworth.

What Would The Proposal Do? This proposal would allow a person to file a preseason vessel registration for the Bering Sea Tanner crab fishery without first obtaining a valid Commercial Fisheries Entry Commission (CFEC) interim-use permit card for that fishery.

What Are The Current Regulations? Current Bering Sea and Aleutian Islands crab fishery preseason vessel registration regulations require a vessel operator to possess a valid CFEC interim-use permit card for that fishery to complete a preseason vessel registration.

What Would Be The Effect If The Proposal Were Adopted? Vessel operators or agents would not have to purchase a CFEC interim use card prior to preseason registering.

Background: Fishing seasons have been greatly lengthened for the rationalized crab fisheries and all of the rationalized crab fishing seasons span parts of two calendar years. All rationalized crab fisheries with the exception of the Aleutian Islands golden king crab fishery open annually on October 15, however Bering Sea snow and Tanner crab harvest traditionally begins after January 1, and harvesting continues up to the biological closure for the respective species. The preseason vessel registration deadline occurring in the prior calendar year can require a participant to purchase a CFEC interim-use permit card for the calendar year in which the vessel operator must file a preseason registration, and another for the year harvest actually occurs.

Prior to the implementation of crab rationalization (CR) ADF&G used the number of vessels preseason registered to set pot limits, evaluate preseason fishery expectations and make onboard observer assignments. The implementation of CR has eliminated the two former functions of the preseason registration process leaving the latter. ADF&G does not believe that assigning observers to vessels in the CR fisheries will be compromised by eliminating the requirement that a person possess a CFEC interim-use permit for that fishery at the time the preseason registration is filed.

Department Comments: ADF&G **SUPPORTS** this proposal because not requiring a CFEC card to preregister will not affect the preseason registration process for this rationalized crab fishery. The regulation cited in the proposal is incorrect. Preseason registration for Bering Sea Tanner crab is addressed in 5 AAC 35.506 (f) Area J Registration, rather than 5 AAC 35.510. Fishing Seasons For Registration Area J.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, reporting requirements management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 372 – 5 AAC 39.670. Bering Sea/Aleutian Islands Individual Fishing Quota (IFQ) Crab Fisheries Management Plan.

Proposed By: Alaska Department of Fish and Game.

What Would The Proposal Do? This proposal seeks to clarify the Bering Sea/Aleutian Islands IFQ crab fishery management plan. This proposal also adds two fisheries to the list of rationalized fisheries covered by this management plan, changes the nomenclature used to describe those fisheries, removes references to National Marine Fisheries Service (NMFS) cooperatives for the purpose of gear sharing and clarifies that concurrent species harvest is only allowed for specific Bering Sea fisheries.

What Are The Current Regulations? Current regulation allows vessel operators registered for crab rationalization (CR) fisheries to designate other vessel operators who may also utilize their pot gear. Gear-sharing regulations do not modify existing pot limit or gear marking requirements.

The existing Individual Fishing Quota (IFQ) crab management plan also provides vessel operators in the CR fisheries an opportunity to concurrently harvest Bristol Bay red king crab and Tanner crab, as well as Bering Sea snow crab and Bering Sea Tanner crab.

What Would Be The Effect If The Proposal Were Adopted?

Proposed regulatory language as follows:

5 AAC 39.670. Bering Sea/Aleutian Islands Individual Fishing Quota (IFQ) Crab Fisheries Management Plan.

(b) The following fisheries are covered under the management plan in this section:

- (1) Bristol Bay red king crab **(BBR)**;
- (2) Aleutian Islands red king crab (west of 179° W. long.) **(WAI)**;
- (3) Aleutian Islands golden king crab **(east of 174° W. long.) (EAG)**;
- (4) Aleutian Islands golden king crab (west of 174° W. long.) (WAG)**;
- (5) Saint Matthew Island Section blue king crab (SMB)**;
- (6) Pribilof District red and blue king crab (PIK)**;
- (7) Bering Sea [C. OPILIO TANNER] snow crab (BSS); [AND]**
- (8) Bering Sea [C. BAIRDI] Tanner crab (east of 166° W. long.) (EBT)[.]; and**
- (9) Bering Sea Tanner crab (west of 166° W. long.) (WBT).**

(c) The following provisions apply to the fisheries specified in this section:

(1) a vessel participating in an Individual Fishing Quota (IFQ), Community Development Quota (CDQ), or the Adak community allocation crab fishery must have on board the vessel an activated vessel monitoring system (VMS) approved by NMFS;

(2) **A vessel operator who is validly registered for one or more of the fisheries list in (b) (1)-(9) of this section may authorize other vessel operators who are validly registered for the same fishery to operate crab pot gear belonging to that vessel** [FOR THE PURPOSES OF THIS SECTION, A CRAB FISHERY COOPERATIVE IS A COOPERATIVE APPROVED BY NMFS BY AUGUST 1 OF EACH YEAR PRECEDING THE FISHING SEASON; DURING A CRAB FISHERY COOPERATIVE],

(A) **Before a vessel operator may operate crab pot gear belonging to another vessel, the registered operator of the pot gear must file a cooperative gear authorization form with the department authorizing other vessels to operate the crab pot gear** [THE MANAGER OF A COOPERATIVE MUST REGISTER THE VESSEL OR VESSELS OPERATING FOR THE COOPERATIVE WITH THE DEPARTMENT BEFORE THE COOPERATIVE BEGINS FISHING];

[(B) A VESSEL MAY PARTICIPATE IN MORE THAN ONE CRAB FISHERY COOPERATIVE AT A TIME;

(C) THE TOTAL NUMBER OF CRAB POTS DEPLOYED BY THE MEMBERS OF A COOPERATIVE MAY NOT EXCEED THE SUM OF THE CRAB POT LIMITS OF ALL VESSELS PARTICIPATING IN THE COOPERATIVE];

(3) each crab pot deployed must bear the ADF&G number of the vessel that registers the crab pot, and if **deployed** in a fishery with a crab pot limit, [THE] **each** pot must bear a buoy tag registered to the vessel registering that pot; in addition,

(A) an active vessel may collectively operate and transport crab pot gear of another registered and active vessel;

(B) when a vessel transports and deploys crab pot gear to the fishing grounds for another vessel, the vessel registered with the crab pot gear must be active in the registration area where the crab pot gear is deployed within seven days of the initial deployment;

(C) repealed 8/28/2005;

(D) a vessel's crab pot gear may not be deployed unless the vessel is actively participating in harvesting the species in the applicable area;

(E) for the purposes of this paragraph, a vessel is considered active in an area by becoming validly registered with the department and by VMS verification of the vessel in the registration area.

(F) A vessel that has completed fishing operations as defined in 5 AAC 39.675 (b) (1)-(2) is not considered active in a registration area;

(4) No provision of this section allows an individual vessel operator to utilize a greater quantity of crab pot gear than authorized elsewhere in 5 AAC 34 and 5 AAC 35;

([4]5) Vessel operators may only register to harvest EBT and BBR or WBT and BSS concurrently;

(A) a vessel participating in concurrent fisheries for [BRISTOL BAY RED KING CRAB]**BBR** and [*C. bairdi* Tanner crab]**EBT** may only use one species allocation of crab pot gear (pot limit); the participating vessel operator shall designate at the time of registration the quantity of pot gear registered and whether the crab pot gear is configured for red king crab or [*C. BAIRDI*] Tanner crab;

(B) a vessel participating in concurrent species fisheries for [*C. BAIRDI* TANNER CRAB]**WBT** and [*C. OPILIO* TANNER CRAB]**BSS** may only use one species allocation of crab pot gear (pot limit); the participating vessel operator shall designate at the time of registration the quantity of pot gear registered and whether the crab pot gear is configured for [*C. BAIRDI*] Tanner crab or [*C. OPILIO* TANNER]**snow** crab;

(6) a vessel operator may have a species of king or Tanner crab from an IFQ fishery and king crab from an Adak community allocation fishery or a species of king or Tanner crab from a CDQ fishery on board the vessel at the same time; a vessel operator may not have a species of king or Tanner crab from an IFQ fishery and a species of king or Tanner crab from a non-CDQ or non-IFQ fishery on board the vessel at the same time;

(7) an operator of a vessel participating in an IFQ, CDQ, or Adak community allocation crab fishery in the Bering Sea/Aleutian Islands area must notify the United States Coast Guard at least 24 hours before departing port when carrying crab pot gear;

(8) in addition to the registration requirements specified in 5 AAC 34 and 5 AAC 35, a vessel owner, or owner's agent, shall provide satisfactory proof of a current valid United States Coast Guard Commercial Fisheries Vessel Safety Decal before a registration certificate is issued;

(9) the operator of a vessel designated at the time of registration to operate the crab pot gear of another vessel shall be considered the agent of the vessel registered to operate the crab pot gear.

Background: When the Alaska Board of Fisheries (BOF) first adopted regulations for the CR fisheries in March 2005 it was not clearly understood by either industry or managers how the CR fisheries would operate. Now that the third fishing year under the CR program has nearly been completed a better understanding of actual fishing practices has developed. This proposal was submitted to modify the IFQ management plan in light of new information gained since March 2005.

Initially it was believed that the NMFS cooperative structure would play an important role in how vessel operators chose to collectively operate one another's gear. In practice the NMFS cooperative does not seem to be the primary vehicle that vessel operators use to select fishing partners and individual operators are likely to select fishing partners that are not part of their NMFS cooperative.

The BOF also chose to reference the fisheries managed under this plan in relation to the traditional ADF&G registration areas and fishery designations, rather than the NMFS IFQ designations. Unfortunately this practice has not allowed ADF&G to accurately track fishing activity in some fisheries where ADF&G registration areas and NMFS IFQ designations are not well matched.

The BOF chose to provide vessel operators with the option to harvest Bristol Bay red king crab and Bering Sea Tanner crab, and Bering Sea snow crab and Tanner crab concurrently because the distribution of these species overlaps and retention of the non-targeted species would allow for the commercial sale of legal crabs that might otherwise be discarded. The BOF specifically addressed concurrent retention for these species only because of the distributional overlap and potential for reduced bycatch mortality.

Eliminating references to NMFS cooperatives will make the IFQ management plan easier to understand and aligns state regulations more closely with actual fishing practices. By requiring separate registration for each specific CR fishery such as eastern and western Bering Sea Tanner crab, the department will be able to better track effort in these fisheries. If adopted, this proposal would not modify other aspects of gear operation in the CR fisheries.

Department Comments: ADF&G **SUPPORTS** this staff proposal to update and clarify the IFQ fisheries management plan.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, registration areas management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 373 – 5 AAC 35.506. Area J Registration; and 5 AAC 35.525. Lawful Gear For Registration Area J.

Proposed By: Alaska Department of Fish and Game.

What Would The Proposal Do? This proposal would define directed and incidental Tanner crab fishing for the Bering Sea District of Registration Area J based on the predominant species delivered. This proposal would also require a vessel operator participating in a directed Tanner crab fishery to use Tanner crab pot gear. The proposal would clarify the conditions of registration for the concurrent harvest of Bering Sea Tanner crab and Bristol Bay red king crab, or Bering Sea Tanner crab and snow crab. This proposal also clarifies that the harvests of Tanner crab east and west of the stock assessment boundary at 166° W. long. are separate fisheries.

What Are The Current Regulations? Current regulations allow for the simultaneous harvest of Tanner crab and snow crab in the Bering Sea District west of 166° W long., and red king crab and Tanner crab in Registration Area T east of 166° W long. Concurrent harvest of other species is not permitted.

What Would Be The Effect If The Proposal Were Adopted? This proposal would provide clear regulatory guidance to participants on the type of pot gear to be used when harvesting Bering Sea Tanner crab and Bering Sea snow crab or Bristol Bay red king crab concurrently. By requiring harvesters participating in a directed Tanner crab fishery to have at least 50% of their gear configured as Tanner crab pots, bycatch reduction will be maximized and the department will be able to better assess true effort levels.

Proposed regulatory language as follows:

5 AAC 35.506. Area J Registration.

(i) In the Bering Sea District a vessel operator may register to harvest *C. bairdi* Tanner crab under the following conditions:

- (1) West of 166° W. long. in a directed *C. bairdi* Tanner crab fishery, or in an incidental *C. bairdi* Tanner crab fishery while the vessel operator is simultaneously registered for the *C. opilio* snow crab fishery.**
- (2) East of 166° W. long. in an incidental *C. bairdi* Tanner crab fishery while the vessel operator is simultaneously registered for the Registration Area T red king crab fishery.**
- (3) In a directed *C. bairdi* Tanner crab fishery occurring between 163° W. long. and 166° W. long.**
- (4) A vessel operator may not be concurrently registered to harvest *C. bairdi* Tanner crab east and west of 166° W. long.**

[DURING THE FISHING SEASON FOR *C. bairdi* TANNER CRAB, A VESSEL OPERATOR REGISTERED FOR ONLY BRISTOL BAY RED KING CRAB

FISHERIES CONDUCTED EAST OF 168° W. LONG. MAY NOT RETAIN *C. bairdi* TANNER CRAB. A VESSEL OPERATOR REGISTERED TO RETAIN BOTH BRISTOL BAY RED KING CRAB AND *C. bairdi* TANNER CRAB IS RESTRICTED TO FISHING EAST OF 166° W. LONG. A VESSEL OPERATOR MAY REGISTER FOR DIRECTED *C. bairdi* TANNER CRAB FISHING ONLY IN THE WATERS BETWEEN 166° W. LONG, AND 163° W. LONG.]

(j) For the purposes of this section

- (1) A directed *C. bairdi* Tanner crab fishery means 50% or more of the weight of the landed catch reported on an ADF&G fish ticket consists of *C. bairdi* Tanner crab.
- (2) An incidental *C. bairdi* Tanner crab fishery is one in which less than 50% of the weight of the landed catch reported on an ADF&G fish ticket consists of *C. bairdi* Tanner crab.

[A VESSEL OPERATOR MAY REGISTER TO, AT THE SAME TIME, FISH FOR AND RETAIN *C. OPILIO* AND *C. BAIRDI* TANNER CRAB WEST OF 166° W. LONG.]

5 AAC 35.525 (c) (4). Lawful Gear for Registration Area J.

(C) in a directed *C. bairdi* Tanner crab fishery as defined in 5 AAC 35.506 (i) (1) no less than 50% of the pots registered to a vessel may be configured for *C. bairdi* Tanner crab.

Background: Current regulations have caused confusion as to how a vessel operator may fish for Tanner crab using Tanner, snow or red king crab pot gear and have allowed vessel operators to target Tanner crab with pot gear designed for snow crab. The intent of regulations adopted in March 2005 to allow incidental harvest of Tanner crab with either red king crab or snow crab was to allow for the retention of those legal animals that would typically be discarded as bycatch in fisheries where two species overlap.

The requirement that at least 50% of the pots used in a directed Tanner crab fishery be configured as Tanner crab pots would be difficult to enforce if pot limits are repealed as requested by proposals 376 and 377. Because both processors and harvesters show reluctance in operating with the small quantities of Tanner crab that are typically harvested incidental to Bristol Bay red king and Bering Sea snow crab (only 11% of the 2006/07 eastern Bering Sea total allowable catch was harvested while the Bristol Bay red king fishery was open) and the associated difficulties concurrent harvesting causes ADF&G in tracking and monitoring the fishery, the BOF may wish to consider eliminating concurrent harvest of Tanner crab with Bristol Bay red and Bering Sea snow crab.

Department Comments: ADF&G **SUPPORTS** this staff proposal.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, registration areas management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 374 – 5 AAC 39.670 (c)(3)(A). Bering Sea/Aleutian Islands Individual Fishing Quota (IFQ) Crab Fisheries Management Plan.

Proposed By: Alaska Crab Coalition

WHAT WOULD THE PROPOSAL DO? This proposal would allow the operator of a vessel registered for a crab rationalization (CR) fishery to transfer gear operation rights upon completion of fishing to the operator of another vessel registered for the same fishery.

What Are The Current Regulations? Current regulations allow a vessel operator in a CR fishery to authorize other registered vessels to operate registered pot gear, thereby allowing for the sharing of crab pot gear. Crab pot gear may not be unattended by the registered operator of the gear for more than 14 days and the vessel that the gear is registered to must be active in the registration area when gear is deployed.

What Would Be The Effect If The Proposal Were Adopted? Vessels completing fishing could legally transfer gear to another vessel operator. It is unclear from the proposal how this gear would fit into the existing crab pot limits.

Background: In March 2005 regulations were developed to allow for gear sharing in the CR fisheries. The discussion at that time was focused on the belief that gear sharing was needed as a safety and economic efficiency measure. It was postulated at that time that larger vessels would transport gear to the fishing grounds for smaller vessels at the beginning of fishing operations. The existing regulations were developed with that concept in mind and little discussion was devoted to operation of gear later in the season after a vessel had completed fishing operations and left the grounds. In practice, most of the gear sharing that occurs during the CR fisheries takes place after a vessel has completed fishing operations and leaves gear on the grounds for partner boats to operate and retrieve.

Department Comments: ADF&G is **OPPOSED** to this proposal as it is written. ADF&G supports the concept of gear sharing by vessel operators in the CR fisheries because of the potential conservation and efficiency benefits, but is concerned about legal responsibility for shared gear. The concern also exists that if a vessel operator becomes responsible for large amounts of gear then some of the gear that is widely dispersed on the grounds, or performing poorly may be neglected and not operated in a timely manner. The amount of broadly dispersed gear that a person is able to operate effectively is of particular importance when sea ice is present on the fishing grounds. If an affidavit or some other method of legal gear transfer clearly indicating who is responsible for shared gear is developed in conjunction with the concerns of the Department's of Law and Public Safety, and limits placed on the amount of gear that could be shared and tended in a timely manner then ADF&G's concerns would be addressed. ADF&G believes that a single vessel operator should not be responsible for more than the current pot limit of 450 pots. The 450 pot limit was established as the maximum number of pots a vessel operator

could responsibly operate without undue gear loss or overly long soak times that could reduce the viability of bycatch crabs.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, gear placement and removal management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 375 – 5 AAC 39.675. Crab Pot Gear Storage For Bering Sea/Aleutian Islands IFQ, CDQ, and Adak Community Allocation Crab Fisheries.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal clarifies that crab pot gear in the crab rationalization (CR) fisheries may not be left unattended for more than 14 days by the person who registers that gear. The proposal also explains vessel check out procedures for the CR fisheries.

What Are The Current Regulations? Current regulations allow pot gear in the CR fisheries to be stored unbaited with doors secured open for up to 14 days following completion of fishing in a registration area. If the registered operator of that gear is absent from the registration area for more than 14 days the gear must be removed from the water or placed in long-term storage. Vessel operators must check out of the fishery within 72 hours of completing fishing operations.

What Would Be The Effect If The Proposal Were Adopted?

Proposed regulatory language as follows:

5 AAC 39.675. Crab Pot Gear Storage For Bering Sea/Aleutian Islands IFQ, CDQ, and Adak Community Allocation Crab Fisheries.

(a) Notwithstanding any other provision of 5 AAC 34 - 5 AAC 35, king and Tanner crab pots may be stored outside of a designated storage area specified in 5 AAC 34.052 and 5 AAC 35.052 with all bait and bait containers removed and doors secured fully open for up to 14 days following the completion of fishing **operations** in a registration area. King and Tanner crab pots must be removed from the water or placed in long-term storage if left unattended **for 14 days or longer by the registered operator of the vessel whose ADF&G number is on the buoy of the pot gear.** [IN A REGISTRATION AREA] FOR LONGER THAN 14 DAYS. BEFORE A VESSEL IS ABSENT FROM THE REGISTRATION AREA FOR MORE THAN 14 DAYS, THE CRAB POT GEAR BELONGING TO THAT VESSEL MUST BE REMOVED FROM THE WATER OR PLACED IN LONG-TERM STORAGE. A VESSEL OPERATOR SHALL NOTIFY THE DEPARTMENT WITHIN 72 HOURS OF COMPLETING FISHING OPERATIONS IN A REGISTRATION AREA OR WHEN DEPARTING THE REGISTRATION AREA, AND WHEN GEAR IS MOVED TO LONG-TERM STORAGE. A VESSEL'S REGISTRATION IS INVALID AFTER 14 DAYS OF INACTIVITY IN A REGISTRATION AREA.]

(b) For the purposes of this section a vessel is deemed to have completed fishing operations if at least one of the following has occurred:

(1) The vessel operator contacts the department to invalidate the vessel registration for that species and registration area. This notification must occur within 72 hours of last operating pot gear in the registration area;

(2) The pot gear belonging to that vessel is removed from the water or placed into long-term storage.

Background: In March 2005, the BOF adopted new regulations governing crab pot gear storage in the CR fisheries. The gear storage regulation was designed to allow for temporary deep-water gear storage while minimizing concerns over lost gear, grounds pre-emption and unattended gear during the lengthened fishing seasons permitted under the rationalization program. The regulation as written contains vague wording and terms that are not well defined.

Department Comments: ADF&G **SUPPORTS** this staff proposal. The proposal is largely housekeeping in nature and does not modify the operational intent of regulations governing crab pot gear storage during the CR fisheries originally adopted by the BOF in March 2005.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, gear placement and removal management measure.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 376 – 5 AAC 35.525 Lawful Gear For Registration Area J (c)(4)(A&B); and 5 AAC 35.526 Tanner Crab Pot Marking Requirements For Registration Area J (a-c).

Proposed By: Alaska Crab Coalition

What Would The Proposal Do? This proposal seeks to repeal pot limits and buoy tag requirements for the Bering Sea Tanner and snow crab fisheries.

What Are The Current Regulations? Current regulations allow a vessel operator registered for either the Bering Sea snow crab or Bering Sea Tanner crab fishery to operate up to 450 pots for each fishery. A buoy on each pot must bear an ADF&G buoy tag for that fishery and year. Regulation also allows vessel operators to share gear with other vessel operators.

What Would Be The Effect If The Proposal Were Adopted? Pot limits would be rescinded in the Bering Sea snow and Tanner crab fisheries.

Background: Pot limits for Bering Sea crab fisheries were established by the Alaska Board of Fisheries (BOF) in 1992 and were implemented to lengthen fast-paced, short duration fisheries, and to limit gear loss that could result in ghost fishing. Subsequently the pot limits were modified to provide the department with greater management flexibility and to provide the industry with the maximum possible harvest opportunity at smaller harvest levels. The implementation of crab rationalization (CR) in 2005 eliminated the need for pot limits as an inseason management tool and in response the BOF increased pot limits in the major CR fisheries to 450 per vessel. The 450 pot per vessel level was established as the maximum number of pots a vessel operator could be expected to operate without undue gear loss or overly long soak times that could reduce the viability of bycatch crabs. In the first two CR snow and Tanner crab fisheries, the average vessel has used less than 180 pots per season.

The current pot limit for Bering Sea snow crab and Bering Sea Tanner crab fisheries do not appear to constrain vessel operators in their ability to harvest the available quota. Pot limits may contribute to reduced gear loss and efficient gear operation and release of bycatch crabs. Eliminating pot limits could make it difficult for the department to effectively document fishing effort and track gear usage in the fishery.

Department Comments: ADF&G is **OPPOSED** to this proposal. If pot limits are repealed, proposal 373 submitted by staff for concurrent western Bering Sea Tanner crab harvest during the Bering Sea snow crab fishery would be unenforceable. If concurrent fishing for Western Bering Sea Tanner crab during the Bering Sea snow crab fishery were eliminated then this concern would be alleviated.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, pot limits management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

PROPOSAL 377 – 5 AAC 34.825. Lawful Gear For Registration Area T (h); 5 AAC 34.826 King Crab Pot Marking Requirements For Registration Area T (a); and 5 AAC 34.051 King Crab Gear Marking Requirements (b)(c).

Proposed By: Alaska Crab Coalition

What Would The Proposal Do? This proposal seeks to repeal the pot limit and buoy tag requirement for the Bristol Bay red king crab fishery.

What Are The Current Regulations? Current regulations allow a vessel operator registered for the Bristol Bay red king crab fishery to operate up to 450 pots. A buoy on each pot must bear an ADF&G buoy tag.

What Would Be The Effect If The Proposal Were Adopted? The pot limit would be rescinded in the Bristol Bay red king crab fishery.

Background: Pot limits for Bering Sea crab fisheries were established by the Alaska Board of Fisheries (BOF) in 1992 and were implemented to lengthen fast-paced, short duration fisheries, and to limit gear loss that could result in ghost fishing. Subsequently the pot limits were modified to provide ADF&G with greater management flexibility and to provide the industry with the maximum possible harvest opportunity at smaller harvest levels. The implementation of crab rationalization (CR) in 2005 eliminated the need for pot limits as an inseason management tool and in response the BOF increased pot limits in the major CR fisheries to 450 per vessel. The 450 level was established as the maximum number of pots a vessel operator could responsibly operate without undue gear loss or overly long soak times that could reduce the viability of bycatch crabs. In the first two CR Bristol Bay red king crab fisheries, the average vessel has used less than 190 pots per season.

The current pot limit for Bristol Bay red king crab does not appear to constrain vessel operators in their ability to harvest the available quota. Pot limits may contribute to reduced gear loss and efficient gear operation and release of bycatch crabs. Eliminating pot limits could make it difficult for the department to effectively document fishing effort and track gear usage in the fishery.

Department Comments: ADF&G is **OPPOSED** to this proposal. If concurrent fishing for Eastern Bering Sea Tanner crab during the Bristol Bay red king crab fishery were eliminated then this concern would be alleviated.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, pot limits management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

PROPOSAL 378 – 5 AAC 34.825. Lawful Gear for Registration Area T (h).

Proposed By: Alaska Crab Coalition

What Would The Proposal Do? This proposal would allow a validly registered vessel operator for the Bristol Bay red king crab fishery to configure up to 20 of their registered pots as groundfish pots.

What Are The Current Regulations? Current regulations allow a validly registered vessel operator for the Bristol Bay red king crab fishery to operate up to 450 red king crab pots; groundfish pots are not allowed in the Bristol Bay red king crab fishery.

A groundfish pot tunnel-eye-opening perimeter is 36 inches or less. A red king crab pot tunnel-eye-opening is more than 36 inches with any one dimension no less than 5 inches.

What Would Be The Effect If The Proposal Were Adopted? Vessel operators could configure up to 20 pots to catch hanging bait for use in their crab fishing operations.

Background: In March 1999 the BOF adopted a regulation allowing a person registered for the Bering Sea snow crab and Bering Sea Tanner crab fisheries to configure up to 20 of their pots as groundfish pots for the purpose of catching bait for use in those crab fisheries. The BOF considered extending this privilege to participants in the Bristol Bay red king crab fishery, but did not do so because at that time the Bristol Bay red king crab fishery was less than seven days in length and there was no need to catch extra bait on the grounds, inseason. The Bristol Bay red king crab fishery is currently three months in length.

Department Comments: ADF&G is **NEUTRAL** on this proposal. The proposal has the potential to provide some economic benefit to participants, and does not appear to provide increased management or conservation concerns relative to current regulations.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, gear modifications management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

PROPOSAL 379 – 5 AAC 34.053. Operation of other Pot Gear (2).

Proposed By: Derwin H. Hostetler III

What Would The Proposal Do? This proposal would allow a validly registered vessel operator for the Bristol Bay red king crab fishery to configure up to 20 of their pots as groundfish pots.

What Are The Current Regulations? Current regulations allow a vessel operator for the Bristol Bay red king crab fishery to only operate red king crab pots.

What Would Be The Effect If The Proposal Were Adopted? Vessel operators could configure up to 20 pots to catch hanging bait for use in their crab fishing operations.

Background: In March 1999 the BOF adopted a regulation allowing a person registered for the Bering Sea snow crab and Bering Sea Tanner crab fisheries to configure up to 20 of their pots as groundfish pots for the purpose of catching bait. The BOF considered extending this privilege to participants in the Bristol Bay red king crab fishery, but did not do so because at that time the Bristol Bay red king crab fishery was less than seven days in length and there was no need to catch extra bait on the grounds, inseason. The Bristol Bay red king crab fishery is currently three months in length.

Department Comments: ADF&G is **NEUTRAL** on this proposal. The proposal has the potential to provide some economic benefit to participants, and does not appear to provide increased management or conservation concerns relative to current regulations.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, gear modifications management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

PROPOSAL 380 – 5 AAC 34.910. Fishing Seasons for Registration Area Q (b)(1).

Proposed By: Alaska Crab Coalition

What Would The Proposal Do? This proposal seeks to develop management measures for red king crab in the Pribilof District to allow for a commercial fishery opening.

What Are The Current Regulations? Pribilof District red king crabs are included in the crab rationalization program thus all harvest is regulated by individual fishing quota (IFQ) or community development quota (CDQ). Vessel operators are restricted to no more than 250 pots each and each vessel registered for the fishery must carry an onboard shellfish observer. There is no regulatory harvest strategy in place for red king crab.

What Would Be The Effect If The Proposal Were Adopted? Development of a management plan that allows for the harvest of Pribilof District red king crab, and protects the Pribilof District blue king stock.

Background: The Pribilof District red and blue king crab fisheries have been closed since 1999. The Pribilof District fishery for blue king crabs was closed in 1999 due to a declining abundance trend, low level of prerecruits, low precision of abundance estimates, and poor fishery performance in the preceding two seasons. The stock has continued to decline and was federally-classified as overfished in 2002. Although a rebuilding plan was implemented for the blue king crab stock and the fishery has remained closed, the blue king crab stock remains in seriously depressed condition.

The red king crab fishery was closed from 1984 through 1992. A red king crab fishery in the Pribilof District was opened in 1993, when survey results indicated a marked increase in abundance and fishing for red king crab continued through the 1998 season. The Pribilof District was closed to red king crab fishing for the 1999 season due to the poor precision of the abundance estimates, poor fishery performance in the preceding seasons, and concerns for bycatch of blue king crab. The red king crab fishery has remained closed through the 2007/08 season due to poor precision of abundance estimates and continued concerns for bycatch of blue king crab.

Estimates of red king crab abundance in the Pribilof District are highly variable from one year to the next and tend to lack precision, often with confidence intervals of greater than $\pm 50\%$ of the model point estimate. In 2007, mature biomass increased 18% from the 2006 estimate, but the abundance estimate of mature males is among the lowest on record. ADF&G estimated abundance of legal male red king crab in the Pribilof District to be 0.77-million crabs. However, precision of that estimate is poor and the confidence interval for the true abundance of legal males ranges from only 0.28-million crabs up to 1.26-million crabs. Survey data indicate that future recruitment to the mature and legal size classes will be poor. Red king crab distribution is patchy and pot surveys indicate that red and blue king crabs are often caught in the same areas suggesting that a fishery targeting red king crab would likely have a high bycatch of blue king crabs as well.

Additional management measures for red king crab would need to be evaluated in terms of the new federal overfishing definitions for both the red king crab and blue king crab stocks of the Pribilof District. Crab rationalization has reduced some of the flexibility in management of this fishery. Under rationalization, a total allowable catch (TAC) for the fishery is established preseason and distributed to the fleet as quota shares, thereby constraining ADF&G's ability to make inseason adjustments that would reduce the harvest level below the TAC.

Department Comments: Because of the lack of specificity in management measures ADF&G does not take a firm position on this proposal; however, ADF&G opposes any management measure that would negatively impact the overfished Pribilof District blue king crab stock or that would risk overfishing Pribilof red king crab. Additionally, since Pribilof blue king crab are under a Federal rebuilding plan, any management measures that may increase the bycatch of this stock would need to be analyzed to ensure they do not jeopardize its rebuilding.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, inseason adjustments and closed waters management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

PROPOSAL 381 – 5 AAC 34.917. Saint Matthew Island Section Blue King Crab Harvest Strategy (a)(2).

Proposed By: Alaska Crab Coalition

What Would The Proposal Do? This proposal seeks to reduce or repeal the minimum total allowable catch (TAC) threshold required to open the Saint Matthew Island Section blue king crab fishery.

What Are The Current Regulations? Current regulations require that a minimum TAC threshold of 2.5 million pounds (not including the CDQ fishery) be met prior to opening the Saint Matthew Island Section blue king crab fishery.

What Would Be The Effect If The Proposal Were Adopted? The minimum TAC would be repealed or reduced. This action could impact the rebuilding schedule for this stock which is currently classified as overfished.

Background: Minimum TACs for Bering Sea crab fisheries were originally implemented to assure adequate data collection to base inseason management decisions. With the implementation of crab rationalization, traditional inseason management is no longer conducted as permit holders have an individual fishing quota (IFQ).

The Saint Matthew Island Section blue king crab fishery has been closed since 1998 and the stock was federally-declared overfished in 1999. A rebuilding plan was developed after the overfishing declaration and is still in effect. The minimum TAC was analyzed as part of the rebuilding plan. In the analysis, the minimum TAC was determined to be an important factor in reducing the amount of time needed to rebuild the stock.

Stock status of Saint Matthew Island Section blue king crabs has improved during the last several years, but has not met levels needed to reopen the fishery. If the current recruitment trend continues, the minimum TAC may be met by 2009.

Department Comments: ADF&G is **OPPOSED** to this proposal. Eliminating or lowering the minimum TAC for Saint Matthew Island Section blue king crab could impede rebuilding of the stock. The St. Matthew Island blue king crab harvest strategy needs to be evaluated in terms of the new overfishing definition.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, GHM management measure.

Cost Analysis: If adopted this proposal would not result in increased costs for a person to participate in this fishery.

**COMMITTEE B – Aleutian Islands, Kodiak and Norton
Sound King and Tanner Crab
(12 Proposals)**

PROPOSAL 382 – 5 AAC 39.145. Escape Mechanism for Shellfish and Bottomfish Pots.

Proposed By: Linda Kozak

What Would The Proposal Do? This proposal seeks to increase the thread count from 30 to 120 thread biodegradable cotton, utilized as escape mechanism in golden king crab pots in the Aleutian Islands.

What Are The Current Regulations? Statewide regulation requires that king crab pots must have an 18 inch long opening secured by a single length of 100 percent cotton, 30-thread twine, located on a side-wall within six inches of the bottom of the pot. The breakdown of this twine is designed to reduce crab mortality from ghost fishing by creating an opening in the web of lost pots allowing crabs to escape.

What Would Be The Effect If The Proposal Were Adopted? Participants in the Aleutian Islands golden king crab fishery would be allowed to use higher thread-count biodegradable cotton twine in the escape mechanisms of pots. Lost pots would continue to ghost fish for greater periods of time, potentially increasing crab mortality.

Background: Aleutian Islands golden king crabs are fished in waters approximately 150 to 300 fathoms in depth. Because of the strong currents and high relief bathymetry in the Aleutian Islands, the pots must be longlined to reduce gear loss.

With the implementation of crab rationalization fleet size has decreased, though average pots deployed per vessel has increased substantially. In the eastern Aleutian Islands, the average number of pots deployed per vessel during rationalized golden king crab fisheries has nearly doubled compared to the number of pots utilized per vessel pre-rationalization.

Table 1.- Average pots deployed per vessel in the eastern and western Aleutian Islands golden king crab fishery from the 2000/01 to the 2006/07 seasons.

| Fishery Season | Eastern Aleutian Islands Average Pots / Vessel | Western Aleutian Islands Average Pots / Vessel |
|----------------|---|---|
| 2000/01 | 707 | 743 |
| 2001/02 | 680 | 943 |
| 2002/03 | 623 | 1,038 |
| 2003/04 | 695 | 1,190 |
| 2004/05 | 693 | 1,230 |
| Average | 680 | 1,029 |
| 2005/06* | 1,232 | 1,600 |
| 2006/07* | 1,358 | 2,000 |
| Average | 1,295 | 1,800 |

* Rationalized season

Average pot soak time for both the eastern Aleutian Islands and western Aleutian Islands golden king crab fisheries has increased considerably from the pre-rationalization level (through 2004/05) to the first rationalized 2005/06 fishery, and then lowered slightly during the second rationalized season in 2006/07.

Table 2.- Average soak times in hours and days in the eastern and western Aleutian Islands golden king crab fishery from the 2000/01 to the 2006/07 seasons.

| Fishery Season | Eastern Aleutian Islands | | Western Aleutian Islands | |
|----------------|--------------------------|---------------------|--------------------------|---------------------|
| | Soak Time (hours) | Soak Time (days) | Soak Time (hours) | Soak Time (days) |
| 2000/01 | 110.9 | 4.6 | 230.2 | 9.7 |
| 2001/02 | 105.6 | 4.4 | 294.9 | 12.3 |
| 2002/03 | 97.7 | 4.1 | 290.6 | 12.1 |
| 2003/04 | 97.0 | 4.0 | 321.6 | 13.4 |
| 2004/05 | 88.2 | 3.7 | 278.9 | 11.6 |
| Average | 99.9 | 4.2 | 283.2 | 11.8 |
| 2005/06* | 340.2 | 14.2 | 580.9 | 24.2 |
| 2006/07* | 277.8 | 11.6 | 456.3 | 19.0 |
| Average | 309.0 | 12.9 | 518.6 | 21.6 |

*Rationalized season

Lost pot data available from the two rationalized Aleutian Islands golden king crab seasons (2005/06 and 2006/07) indicate that of the total pots registered to harvest golden king crab, 1.77% and 1.44% respectively were lost for both east and west areas.

The implementation of crab rationalization has allowed vessel operators to fish at their own pace to harvest their individual fishing quota (IFQ). This has led to an increase in the average soak time during the rationalized fishery. Crab observer data indicates that Aleutian Islands golden king crab pot soak time varies considerably among participants,

and for some, the average pot soak time varies considerably over the course of the fishing season.

While research on degradation of 120-thread cotton twine under fishing conditions is limited, research on the degradation of 120-thread cotton twine in sea-water showed that even after 115 days the thread had not degraded enough to break.

Crab observer-collected data on time-to-failure for 30-thread twine used in the Aleutian Islands golden king crab fisheries indicate the mean time-to-failure is between 39 days and 49 days. Additional studies on the rates of biodegradation conducted in Kodiak found 30-thread cotton twine was still intact after soak time of 77 days and retained 4-14% of its original maximum strength. The same study indicated that the biodegradable twines in the crab fishery failed at 28-69% of their maximum strength, presumably due to forces involved in pot retrieval. Lost pots would not be subjected to these forces and total degradation of the 30-thread twine could take over 100 days.

Due to the nature of longlined crab pot gear and the environment where these pots are being utilized, the department is concerned that an increase in thread-count of the biodegradable cotton twine utilized in the escape mechanisms of groundfish and shellfish pots may cause greater mortality to crab and groundfish from lost pots.

DEPARTMENT COMMENTS: ADF&G **OPPOSES** increasing the thread-count of biodegradable cotton twine utilized in escape mechanisms in crab and groundfish pots.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, gear modifications management measure.

Cost Analysis: If adopted, this proposal may result in additional direct costs to the participants for those opting to utilize the larger thread count biodegradable cotton twine.

PROPOSAL 383 – 5 AAC 34.xxx. New Section.

Proposed By: Bing Henkel

What Would The Proposal Do? This proposal seeks to increase the harvest level for Aleutian Islands golden king crab.

What Are The Current Regulations? There is no regulatory harvest strategy for the Aleutian Islands golden king crab stocks. Annual harvest levels have been set preseason at 3.0 million pounds for the area east of 174° W long (eastern Aleutian Islands), and at 2.7 million pounds for the area west of 174° W long. (western Aleutian Islands), since the 1998/99 season. The total allowable catch (TAC) is set annually after a review of available commercial fishery and observer data. A portion of the stock is surveyed triennially.

What Would Be The Effect If The Proposal Were Adopted? Harvest levels in the Aleutian Islands golden king crab fishery would be increased above the status quo harvest levels of 3.0 million pounds east of 174° W long., and 2.7 million pounds west of 174° W long.

Background: Prior to the 1996/97 season, the Aleutian Islands king crab fisheries were managed as two distinct areas: the Dutch Harbor Area (east of 171° W longitude) and the Adak Area (west of 171° W longitude). In 1996, the BOF noted that the management boundary at 171° W longitude apparently bisected a single stock of golden king crab. At that meeting, BOF combined the Dutch Harbor and Adak Areas into a single management area. The BOF also directed ADF&G to conservatively manage golden king crab, east and west of 174° W longitude, based on distribution, as two distinct stocks. Prior to combining the two management areas, the Dutch Harbor Area had been managed on the basis of fishery performance with the historic average landings providing an informal harvest guideline. The Adak Area was formerly managed under a size-sex-season (3-S) policy.

Lacking population abundance estimates and a population assessment model, the 1996/97 season GHL for the areas east and west of 174° W longitude were established by using the average of annual harvests for the previous five seasons as an estimate of a sustainable annual harvest. After a minor adjustment to the GHL for the area east of 174° W longitude prior to the 1998/99 season, the status quo harvest levels of 3.0-million pounds for the area east of 174° W longitude and 2.7-million pounds for the area west of 174° W longitude have been in effect.

From the 1996/97 season through the 2004/05 season, the number of vessels participating in the Aleutian Islands golden king crab fisheries east of 174° W longitude increased from 14 in 1996/97 to 19 in 2004/05. The number of vessels participating in the fishery west of 174° W longitude fluctuated, ranging from 3 to 17 vessels during a given season. Over the same time period the fishing season length declined from 115 days to 14 days east of 174° W long., and from 365 days to 141 days west of 174° W longitude.

With the implementation of crab rationalization, the 2005/06 and 2006/07 Aleutian Islands golden king crab seasons have seen dramatic changes in terms of vessel participation, number of pots registered and season length. Total number of vessels participating dropped from an average of 21 vessels over the five seasons preceding rationalization to eight vessels participating in the first two rationalized seasons. The overall number of pots registered decreased from the season preceding the rationalized fisheries (2004/05) to the first rationalized season (2005/06) by 33% however, the overall average number of pots per vessel increased from 928 in 2004/05 to 1,704 in 2005/06.

Only a small portion of the area in which golden king crabs are commercially important is currently surveyed. The survey occurs every three years.

Relative abundance indicators (legal male catch per unit of effort or CPUE) may fluctuate from one year to the next. However, what those fluctuations mean in terms of true stock abundance can not be determined for these unsurveyed stocks without an assessment model or a more comprehensive survey. Interpreting changes in CPUE have become more difficult with the recent rationalization of these fisheries. Since crab rationalization was implemented, fewer vessels are participating in the fisheries. In the eastern and western Aleutian Islands soak time has increased allowing more time for escape mechanisms to permit small crab to exit. The longer soak time may be contributing to the lower CPUE of both female and sublegal male crabs, and the higher CPUE of legal male crab. However, with only two years of observer data during rationalized fisheries and observer coverage requirements being lowered with the implementation of rationalization, the department lacks data to determine what the recently observed temporal and spatial harvest patterns under rationalization mean in relation to stock abundance trends.

The department's stated position prior to endorsing crab rationalization for unsurveyed stocks was that TACs should be set conservatively because inseason closures prior to reaching the TAC may not occur. The TACs should be attainable without impacts to the sustainability of the fishery. The status quo harvest levels established prior to the 1998/99 season have been shown to be sustainable through the 2006/07 season.

It is not clear, however, what harvest level above the status quo would be sustainable. Status quo harvest levels and any change from the status quo harvest levels need to be evaluated in terms of the new federal overfishing definition for the Aleutian Islands stock. Until an assessment model is developed that can provide abundance estimates and from which a harvest strategy can be developed, staff recommends that the department continue to annually assess the sustainability of the status quo TACs using all available data prior to establishment of the TACs. Staff recommends that any consideration of raising the TAC above the status quo await development and adoption of an assessment model and of a formal harvest strategy that can be applied to abundance estimates. The overfishing catch limit set by the new overfishing definitions also needs to be considered before raising the TAC.

Department Comments: ADF&G is **OPPOSED** to changing the current harvest levels for the Aleutian Islands golden king crab until an assessment model is developed that can provide abundance estimates and from which a harvest strategy can be developed.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, GHM management measure.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 384 – 5 AAC 39.675. Crab Pot Gear Storage For Bering Sea/Aleutian Islands IFQ, CDQ, and Adak Community Allocation Crab Fisheries.

Proposed By: Linda Kozak

What Would The Proposal Do? This proposal seeks to extend the time allowed for a vessel in the Aleutian Islands golden king crab fishery to leave baited pot gear unattended and fishing.

What Are The Current Regulations? Current regulations state that pot gear may not be left unattended for more than 14 days in an area unless unbaited and placed in legal storage.

What Would Be The Effect If The Proposal Were Adopted? Vessels operators would be able to leave baited gear fishing on the grounds for up to 45 days without being present on the grounds.

Background: The 14 day limit, for unattended gear, was placed into regulation with the implementation of crab rationalization. After 14 days of being inactive in an area, a vessel's registration is invalidated. The intent of the fourteen day time period was to allow a vessel to leave baited gear on the grounds while in port delivering, with the intent to immediately return to the registration area and continue harvesting and tending their pot gear.

According to 5 AAC 39.675, all gear in a rationalized fishery must be removed from the water or placed in long-term storage if left unattended in a registration area for longer than 14 days. Before a vessel is absent from the registration area for more than 14 days, the crab pot gear belonging to that vessel must be removed from the water or placed in long-term storage. With the advent of crab rationalization with greatly lengthened fishing seasons and individual fishing quotas which may be harvested at the fisherman's own pace, ADF&G was concerned with fishing gear being left unattended for long time periods. Gear left unattended could be subject to loss resulting in ghost fishing and increased mortality of crab and groundfish.

Department Comments: ADF&G is **OPPOSED** to extending the crab pot gear storage regulation to greater than 14 days.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, gear placement and removal management measure.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 385 – 5 AAC 35.xxx. Eastern Aleutian District Tanner Crab Harvest Strategy.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal seeks to establish a regulatory harvest strategy for the Eastern Aleutian District Tanner crab fishery.

What Are The Current Regulations? There is no regulatory harvest strategy for Eastern Aleutian District Tanner crab fishery.

What Would Be The Effect If The Proposal Were Adopted? The harvest strategy currently used by ADF&G to manage the fishery would be placed into regulation.

Proposed regulatory language as follows:

5 AAC 35.xxx EASTERN ALEUTIAN DISTRICT TANNER CRAB HARVEST STRATEGY.

(a) In the Eastern Aleutian District, a commercial Tanner crab fishery may open only if analysis of preseason survey data indicates that the subject population:

- (1) meets or exceeds the threshold level of mature male abundance specified in (b) of this section, which is one-half the long-term average of mature male abundance; and**
- (2) in a section of the Eastern Aleutian District, is sufficient to provide a guideline harvest level of 35,000 pounds or more as calculated under (d) of this section.**

(b) The threshold levels of mature male abundance, in numbers of crab, for the following sections of the Eastern Aleutian District are:

| | |
|--|-----------------------|
| <u>(1) Akutan Section</u> | <u>200,000</u> |
| <u>(2) Unalaska/Kalekta Bay Section</u> | <u>65,000</u> |
| <u>(3) Makushin/Skan Bay Section</u> | <u>45,000</u> |

(c) In the Eastern Aleutian District,

- (1) the registration deadline is 5:00 p.m. December 24.**
- (2) the vessel operator must register with the department before fishing in any of the sections and may not be simultaneously registered to fish in more than one section at a time.**
- (3) the commissioner may close, by emergency order, any section based on fishery performance.**

(d) If the commercial Tanner crab fishery in the Eastern Aleutian District is opened under (a) of this section and the threshold level of mature male abundance

- (1) is equal to or less than the long-term average of mature male abundance, the guideline harvest level will be no more than 10 percent of the molting**

mature male abundance and no more than 30 percent of the legal size male abundance;

(2) exceeds the long-term average of mature male abundance, the guideline harvest level will be no more than 20 percent of the molting mature male abundance and no more than 30 percent of the legal size male abundance.

(e) In implementing this harvest strategy, the board directs the department to consider the reliability of the estimates of abundance of Tanner crab, the manageability of the fishery, and other factors deemed necessary to be consistent with sustained yield principles, and to use the best scientific information available.

(f) Nothing within this section prohibits the department from opening a commercial fishery for Tanner crab in the General Section of the Eastern Aleutian District if preseason survey results indicate that a harvestable surplus of Tanner crab is available and harvest rate would not exceed 20% of the molting mature male abundance or 30 percent of the legal male abundance.

(g) The long-term average of mature male abundance, in numbers of crab, for each of the following sections of the Eastern Aleutian District are:

| | |
|---|----------------|
| <u>(1) Akutan Section</u> | <u>400,000</u> |
| <u>(2) Unalaska/Kalekta Bay Section</u> | <u>130,000</u> |
| <u>(3) Makushin/Skan Bay Section</u> | <u>90,000</u> |

(h) For the purposes of this section

(1) “long-term average of mature male abundance” means the long-term average of the estimated abundance of male Tanner crab greater than 114 millimeters in carapace width;

(2) “molting mature male abundance” means the estimated abundance of 100 percent of newshell, and 15 percent of oldshell Tanner crab that are more than 114 millimeters in carapace width.

Background: Since 2004 ADF&G has managed the Eastern Aleutian District Tanner crab fishery based on principles contained in the proposed regulatory harvest strategy.

Department Comments: This is a staff proposal. ADF&G **SUPPORTS** having a regulatory harvest strategy for the Eastern Aleutian District Tanner crab stock.

The proposal as submitted had the phrase “mature male” inadvertently omitted from subsection (d). The proposed regulatory language above contains this addition to subsection (d).

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, GHM management measure.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 386 – 5 AAC 35.505(c). Description of Registration Area J Districts.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal seeks to place in regulation the harvest sections utilized by ADF&G for management of Eastern Aleutian District Tanner crab stock.

What Are The Current Regulations? Current regulations define the Eastern Aleutian District, but do not describe the smaller harvest sections currently utilized for management and stock assessment.

What Would Be The Effect If The Proposal Were Adopted? Participants in the Eastern Aleutian District Tanner crab fishery would have harvest sections defined in regulation.

Proposed regulatory language as follows:

5 AAC 35.505 DESCRIPTION OF REGISTRATION AREA J DISTRICTS (c)

(1) Akutan Section: all waters west of Akun Head (54° 17.58' N lat., 165° 37.58' W long.) and east of North Head (54° 13.5' N lat., 165° 51.08' W long.) to the three nautical mile state-waters boundary and north of a line from 54° 07.63' N lat., 165° 39.88' W long. to 54° 08.36' N lat., 165° 38.36' W long.

(2) Unalaska/Kalekta Bay Section: all waters west of Erskine Point (53° 58.55' N lat., 166° 16.30' W long.) and east of Cape Cheerful (54° N lat., 166° 40.33' W long.) to the three nautical mile state-waters boundary.

(3) Makushin/Skan Bay Section: all waters south of Cape Kovrizhka (53° 50.67' N lat., 167° 09' W long.) and north of Spray Cape (53° 36.83' N lat., 167° 09.33' W long.) to the three nautical mile state-waters boundary.

(4) General Section: all remaining waters of the EAD not contained within (1) through (3) of this section.

Background: Since 2004, ADF&G has managed the Eastern Aleutian District Tanner crab fishery based on trawl survey areas. ADF&G opens and closes specific geographical areas to harvest of Tanner crab by emergency order each year based on survey results. The same areas have been surveyed annually since 2003 and harvest sections used for management are not expected to change in the foreseeable future.

Department Comments: This is a staff proposal. ADF&G **SUPPORTS** having harvest sections defined in regulation.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, registration areas management measure.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 366 – 5 AAC 35.506. Area J Registration.

Repeal superexclusive registration for the Kodiak District Tanner crab fishery.

Proposed By: Tary Middlesworth

What Would The Proposal Do? This proposal would change the Kodiak District Tanner crab registration from superexclusive to nonexclusive.

What Are The Current Regulations? 5 AAC 35.506. Area J Registration (a). Registration Area J is a nonexclusive registration area, except the Kodiak and Chignik Districts are superexclusive registration districts.

(g) a vessel that is registered for the Tanner crab fishery in the Kodiak District may not be registered for the Tanner crab fishery in the Chignik or South Peninsula Districts during that registration year.

5 AAC 35.005 Registration Areas Established (c). A vessel validly registered for a superexclusive registration area may not be used to take Tanner crab in any other registration area during that registration year. Unless otherwise specified in this chapter, a Tanner crab vessel validly registered for a nonexclusive registration area may not be used to take Tanner crab in a superexclusive registration area during that registration year. A vessel may register for more than one nonexclusive registration area.

5 AAC 35.020 Tanner Crab Area Registration (h). An operator of a Tanner crab vessel validly registered for a superexclusive registration area may not operate any other Tanner crab vessel registered for any other superexclusive registration area in the same registration year.

What Would Be The Effect If The Proposal Were Adopted? Vessels that are validly registered for other nonexclusive Tanner crab registration areas would be able to participate in the Kodiak Tanner crab fishery, provided they have a limited entry permit. Likewise, vessels registered for the nonexclusive Kodiak District could fish in other nonexclusive registration areas or districts, except the Chignik and South Peninsula districts. Vessel operators that participate in other superexclusive Tanner crab fisheries would not be able to participate in the Kodiak Tanner crab fishery.

Background: The Kodiak District Tanner crab fishery became a limited entry fishery in 2003. Currently there are 166 limited entry permits issued and there are an additional 21 permits in some stage of adjudication; however, from 2003 through the 2007 season, an average of 66 permits were used in the Kodiak fishery.

The Kodiak District superexclusive registration requirement was adopted during the same year as limited entry.

Fishery limited entry programs are adopted by the Commercial Fisheries Entry Commission (CFEC), and are intended to limit the number of participants in a fishery.

Registration requirements (i.e., nonexclusive and superexclusive) are adopted by the Alaska Board of Fisheries and are intended to address participation by a vessel or vessel operator in multiple registration areas for the same species.

While both programs limit participation, the intentions behind both programs are different. CFEC limited entry places a maximum cap on the total participation to preserve the resource or economic health of the fishery. In contrast, nonexclusive and superexclusive registration requirements are generally allocative. Nonexclusive and superexclusive registration requirements limit the ability of a vessel or vessel operator to participate in multiple fisheries of the same type, essentially forcing a choice of one or the other.

Department Comments: ADF&G is **NEUTRAL** on the allocative aspects of this proposal.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

PROPOSAL 367 – 5 AAC 35.525. Lawful Gear for Registration Area J (c)(1).

Implement differential pot limits for big and small vessels during the Kodiak District Tanner crab fishery.

Proposed By: Tary Middlesworth

What Would The Proposal Do? In the Kodiak District Tanner crab fishery, this proposal would increase the pot limit for vessels larger than 60 feet in length by 20%, compared to the pot limit for vessels less than 60 feet in length. This proposal also reduces the current pot limit for vessels less than 60 feet in length when the guideline harvest level is over 5 million pounds.

What Are The Current Regulations? Current regulations do not distinguish pot limits with respect to vessel size. 5 AAC 35.525 Lawful Gear For Registration Area J (c) (1) in the Kodiak District, when the guideline harvest level for *C. bairdi* Tanner crab is

- (A) less than 2,000,000 pounds, an aggregate of no more than 20 pots may be operated from a validly registered Tanner crab vessel;
- (B) at least 2,000,000 pounds but less than 4,000,000 pounds, an aggregate of no more than 30 pots may be operated from a validly registered Tanner crab vessel;
- (C) at least 4,000,000 pounds but less than 5,000,000 pounds, an aggregate of no more than 40 pots may be operated from a validly registered Tanner crab vessel;
- (D) at least 5,000,000 pounds, an aggregate of no more than 60 pots may be operated from a validly registered Tanner crab vessel.

What Would Be The Effect If The Proposal Were Adopted? Vessels over 60-feet in length would be able to use 20% more pots than vessels less than 60-feet in length.

Table 1.—Current pot limit and proposed pot limit for the Kodiak District Tanner crab fishery.

| Guideline Harvest Level (pounds) | Current Pot Limit | Proposed Pot Limit | |
|-------------------------------------|----------------------|--------------------|----------|
| | | <60 feet | >60 feet |
| Less than 2 million | 20 | 20 | 24 |
| 2 - 4 million | 30 | 30 | 36 |
| 4-5 million | 40 | 40 | 48 |
| 5 million and greater | 60 | 50 | 60 |

Background: From 1995 to 2000 the Kodiak District Tanner crab fishery was closed due to low stock abundance. The fishery reopened in 2001.

The Kodiak District Tanner crab fishery became a limited entry fishery in 2003. Currently there are 187 limited entry permits issued, 142 (76%) small vessel permits (less than 60 feet overall length) and 45 (24%) large vessel permits (up to 120 feet overall length). From the 2003 through the 2007 season, an average of 66 permits were used in

the fishery. On average 13% of the total number of permits fished were on vessels 60 to 120 feet. During this same time frame, harvest attributed to large-vessel permits accounted for approximately 20% of the total harvest (Figure 1).

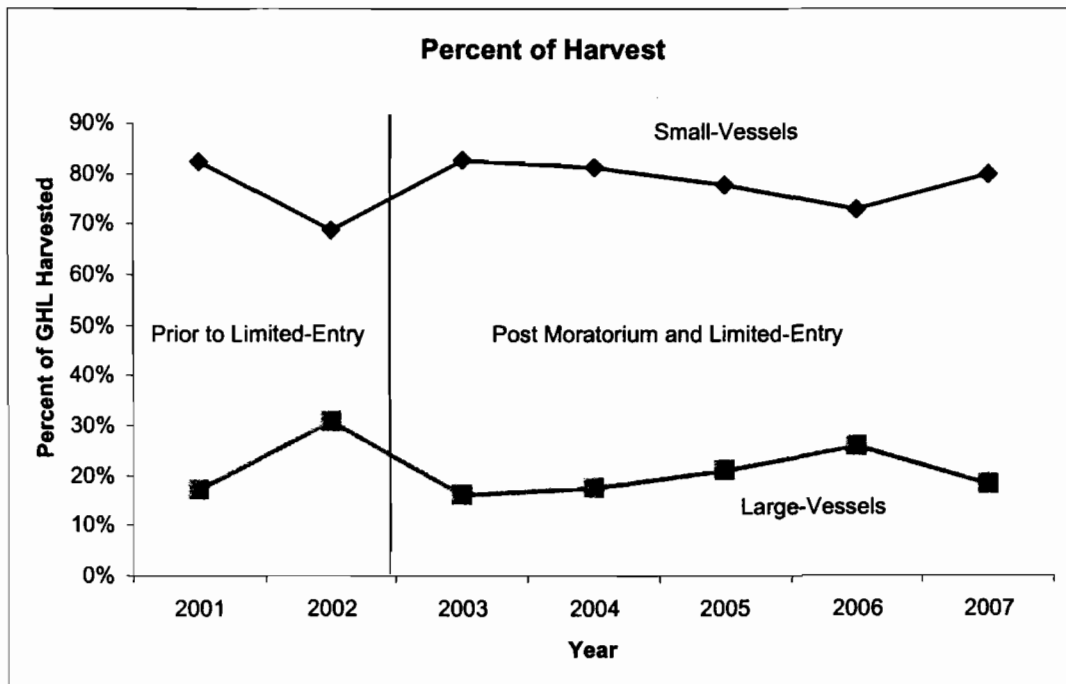


Figure 1.—Percent of the Kodiak District Tanner crab harvest by permit-size class, 2001-2007.

From 2003 through 2007 the number of large-vessel permits fishing has averaged eight per year. If the proposed increase in pot limits had been in effect from the 2003 season, this would have translated into an average of a 3% increase in the amount of gear allowed (Table 2).

Table 2.—Number of permits, amount of gear, and potential amount of gear if proposal had been adopted in prior years.

| Year | No. of Permits | | Total Pots | Hypothetical Pots | Percent increase |
|-------------------|----------------|--------------|------------|-------------------|------------------|
| | Small-Vessel | Large-Vessel | | | |
| 2003 | 66 | 6 | 1,440 | 1,464 | 2% |
| 2004 | 59 | 7 | 1,320 | 1,348 | 2% |
| 2005 | 66 | 8 | 1,480 | 1,512 | 2% |
| 2006 | 54 | 14 | 2,040 | 2,124 | 4% |
| 2007 | 43 | 6 | 980 | 1,004 | 2% |
| 2003-2007 average | 58 | 8 | 1,452 | 1,490 | 3% |

If all 187 permits are fished in a given year the proposal would increase the amount of gear by 5% for all guideline harvest levels except those over 5 million pounds (Table 3).

Table 3.—Amount of gear if all 187 permits are fished under current and proposed pot limits, and the percent difference in total gear.

| | Current Pot Limit | Proposed Pot Limit | % Change |
|-----------------------|-------------------|--------------------|----------|
| Less than 2 million | 3,740 | 3,920 | 5% |
| 2 - 4 million | 5,610 | 5,880 | 5% |
| 4-5 million | 7,480 | 7,840 | 5% |
| 5 million and greater | 11,220 | 9,800 | -13% |

Department Comments: ADF&G is **NEUTRAL** on the allocative aspects of this proposal. However, ADF&G requests the BOF to clarify whether vessels equal to 60 feet in length are part of the large vessel or small vessel size class. Current CFEC permits separate vessel sizes into vessels under 60 feet and vessel up to 120 feet.

Cost Analysis: ADF&G does not believe that approval of this proposal would result in a direct cost for a private person to participate in this fishery.

**PROPOSAL 387 – 5 AAC 34.910 (d)(1). Fishing Seasons for Registration Area Q;
and 5 AAC 34.915 (b). Norton Sound Red King Crab Harvest Strategy.**

Proposed By: Steve Ivanoff

What Would The Proposal Do? This proposal would move the start of the open access summer king crab fishery from July 1 to June 15. Move the start of the Community Development Quota (CDQ) king crab fishery from June 15 until after the open access fishery is finished; likely sometime in August.

What Are The Current Regulations? The CDQ fishery may open from 12:00 noon, June 15 or no less than 72 hours after the commercial herring fishery is closed, whichever is later, until 12:00 noon, June 28. The open access summer king crab fishing is from 12:00 noon, July 1 until 12:00 noon, September 3 unless closed earlier by emergency order.

What Would Be The Effect If The Proposal Is Adopted? This proposal, if adopted, would result in the open access fishery starting two weeks earlier than the current start date of July 1. The CDQ fishery would not occur before the open access fishery, but instead follow it, with the CDQ fishery likely occurring sometime in August. Local fishers would no longer have the advantage in locating crab before the open access fishery starts as regulations require all subsistence crab pots to be out of the water 14 days prior to any commercial fishing.

Background: A large-vessel summer commercial king crab fishery was initiated in Norton Sound in 1977. The summer commercial king crab season was from noon, August 1 until noon, September 3. However, the large boat fishery was often able to take the quota in less than two weeks. Regulation changes adopted in 1993 changed participation to a small boat fishery as a superexclusive designation went into effect in June 1994. Also, the summer commercial king crab season was changed to open from noon, July 1 until noon, September 3.

In 2000, a CDQ fishery was established and allowed 7.5% of the crab quota. Initially, the CDQ fishery was opened following the open access fishery. In 2001, a lack of fishing effort, marginal weather, and instances of more double-shelled crab in September resulted in allowing the CDQ fishery to occur before the open access fishery. Therefore, beginning with the 2002 summer commercial fishing season, the CDQ fishery has opened noon, June 15 and closed at noon, June 28. If the CDQ fishery failed to take the 7.5% of the quota, the CDQ fishery could open again after the open access fishery was complete.

The molt for male king crab usually begins in August and is believed to end by November. The molt for female crab is usually from late February through April. Mating is believed to occur from late winter until spring, usually from February through May. However, crab studies in the 1980s have listed the mating period ranging from January to June.

Department Comments: ADF&G is **NEUTRAL** on the possible allocative aspects of this proposal. Under current management strategies since 2002, the open access and CDQ

fisheries have been able to harvest their respective quotas within the timeframes allowed in regulation. Because the open access fishery is allotted 92.5% of the crab quota there is a high likelihood that there will be an increased harvest during the month of June. Increasing the harvest in June may reduce meat recovery. Additionally, if there is a late ice breakup Nome based vessels may have difficulty leaving port in mid-June because of ice.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, fishing seasons management measure.

Cost Analysis: The department does not believe that approval of this proposal would result in an additional direct cost for a private person to participate in this fishery.

PROPOSAL 388 – 5 AAC 34.915(b). Norton Sound Section Red King Crab Harvest Strategy.

Proposed By: Norton Sound Economic Development Corporation

What Would The Proposal Do? This proposal would eliminate the restriction requiring the commercial herring fishery to be completed before the start of the CDQ crab fishery on June 15.

What Are The Current Regulations? The CDQ crab fishery may start at 12:00 noon, June 15 or no less than 72 hours after the commercial beach seine and gillnet herring fishery is closed, whichever is later.

What Would Be The Effect If The Proposal Is Adopted? This proposal, if adopted, would allow the CDQ fishery to start at 12:00 noon, June 15, regardless of the commercial herring fishery.

Background: The CDQ crab fishery was initiated in 2000 and originally occurred after the open access fishery was completed. By regulation, the open access fishery begins at noon, July 1. Starting in 2002, because of a lack of fishing effort, marginal weather, and occurrence of more double-shelled crab in September, the CDQ fishery was allowed to occur before the open access fishery. Currently, the CDQ portion of the fishery can start as early as June 15. The CDQ fishery closes at noon, June 28 and any unused quota can be caught after the open access fishery closes for the year (usually in mid-August). The restriction on the CDQ fishery occurring after the herring fishery was to allow better enforcement and eliminate enforcement concerns of two fisheries occurring at the same time. However, there has not been a herring sac roe fishery for the previous two years and only a herring bait fishery has occurred during this time with only a few boats participating. Because of the low effort occurring in the herring fishery, there are no enforcement concerns with the crab and herring fisheries occurring at the same time. Therefore, the department has allowed the CDQ crab fishery to start on June 15 regardless of when the herring fishery was prosecuted.

Department Comments: ADF&G **SUPPORTS** this proposal to allow the CDQ fishery to start each year at 12:00 noon, June 15 for consistency. If this proposal is adopted, enforcement of crab and herring fisheries will not be adversely impacted.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, fishing seasons management measure.

Cost Analysis: The department does not believe that approval of this proposal would result in an additional direct cost for a private person to participate in this fishery.

PROPOSAL 389 – 5 AAC 34.920(d). Size Limits for Registration Area Q.

Proposed By: Norton Sound Economic Development Corporation

What Would The Proposal Do? This proposal would reduce the size limit for male blue king crab in the Norton Sound commercial crab fishery from 5 ½ inches to 5 inches, in width of shell.

What Are The Current Regulations? Only male blue king crab 5 ½ inches or greater, in width of shell, may be taken.

What Would Be The Effect If The Proposal Is Adopted? If adopted, this proposal would allow the harvest of smaller size male blue king crab.

Background: Harvest of blue king crab has been infrequent in Norton Sound. In 1983, 52,557 pounds of blue king crab were harvested near St Lawrence Island. In 1984, a regulation was adopted that closed waters within ten miles of St. Lawrence Island, King Island, and Diomedes Island. In 1989, 984 pounds of blue king crab were sold. In 1992 there were 53 pounds of blue king crab sold and in 1995 there were 7,913 pounds of blue king crab sold.

Size limit regulations provide a management tool to protect reproductive capacity of a population. Size limits protect breeding stocks by setting the minimum size limit greater than the size at sexual maturity.

Department Comments: ADF&G is **NEUTRAL** on this proposal. The department has limited information on the size frequency of the blue king crab stock, and size at maturity has not been estimated for this stock. Ideally size frequency and maturity by size data would be collected to help judge an appropriate legal size limit. In a 2005 king crab pot study near King Island 42 blue king crab were captured with 19% being 5 ½ inch or greater in size, 26% between 5 inches and 5 ½ inches and 55% being less than 5 inches in size. The legal size for red king crab in the Norton Sound fishery is 4 ¾ inches width of shell. In recent years, buyers have only purchased 5 inch or greater shell width red king crab because of market considerations.

If the minimum size limit is reduced, it is unlikely that there will be much of an increase in harvest because of the low blue king crab harvest to date and closed waters around St. Lawrence Island, King Island, and Diomedes Island. If some harvest does occur over the next three years, it will help with collecting more biological information.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 2, size limits management measure.

Cost Analysis: The department does not believe that approval of this proposal would result in an additional direct cost for a private person to participate in this fishery.

PROPOSAL 390 – 5 AAC 34.925(b), (d). Lawful Gear for Registration Area Q.

Proposed By: Norton Sound Economic Development Corporation

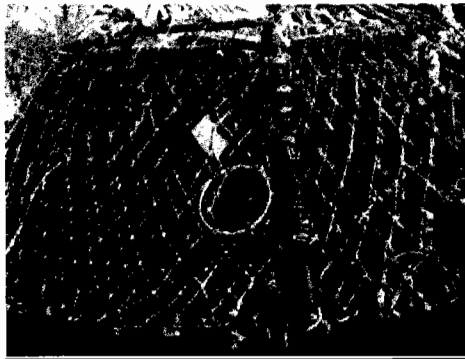
What Would The Proposal Do? This proposal would require escape mechanisms in summer and winter commercial king crab pots such that each crab pot would have four escape rings with an inside diameter of four and one-half inches or one side of four side pots would have a side panel on the lower half of a mesh size of not less than six and one-half inches.

What Are The Current Regulations? No escape mechanisms are required other than under 5 AAC 39.145, which requires that shellfish crab pots must contain an opening equal to 18 inches in length. The opening must be laced, sewn, or secured together by a single length of untreated, 100 percent cotton twine, no larger than 30 thread. The cotton twine may be knotted at each end only. The opening must be within six inches of the bottom of the pot and must be parallel with it.

What Would Be The Effect If The Proposal Is Adopted? The proposed escape mechanisms would allow sublegal male and female crabs to escape from the pot without having to be released when the crab pot is pulled out of the water by fishers during gear checks.

Background: Escape mechanisms are required in the Pribilof District and St. Matthew Island Section of Area Q, but are not required in the Norton Sound or Kotzebue Sections of the Northern District.

Figure 1. Photo of escape ring in a pyramid shellfish pot.



Department Comments: ADF&G **SUPPORTS** this proposal and believes that the escape mechanisms would reduce mortality and non-lethal damage to sublegal male and female crab.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands
King and Tanner Crabs (FMP) Category 3, gear modifications management measure.

Cost Analysis: Approval of this proposal would result in a modest additional direct cost for a private person to participate in this fishery to refit their pots with escape mechanisms.

**PROPOSAL 391 – 5 AAC 34.925. Lawful Gear for Registration Area Q; and
5 AAC 02.607. Subsistence Fishing Gear.**

Proposed By: Kevin Bopp

What Would The Proposal Do? In the Nome winter commercial and subsistence king crab fisheries, a galvanic release or other thread that would break down quicker than the current 30 thread or smaller would be required.

What Are The Current Regulations? Under 5 AAC 39.145 (1), shellfish pots must contain an opening equal to 18 inches in length. The opening must be laced, sewn, or secured together by a single length of untreated, 100 percent cotton twine, no larger than 30 thread. The cotton twine may be knotted at each end only. The opening must be within six inches of the bottom of the pot and must be parallel with it. Additionally, per 5 AAC 39.145 (2) shellfish pots may instead have a galvanic timed release device designed to release in no more than 30 days in salt water.

What Would Be The Effect If The Proposal Is Adopted? If adopted, this proposal would require a weaker type of thread for the winter crab fisheries.

Background: Numerous crab pots may be lost during the winter if ice moves due to wind events. Reports from some fishers indicate that they have replaced the 30 cotton thread approximately each month in their crab pots. However, if thread is treated or has any nylon, then the thread will not break in approximately 30 days.

Department Comments: ADF&G is **NEUTRAL** on this proposal. A smaller thread will break sooner than the 30 thread, but ADF&G believes 30 thread is sufficient. However, the thread must be cotton or it will not degrade properly. Galvanic timed release mechanisms would be more difficult for fishers to obtain and use than cotton thread. A galvanic timed release mechanism is not known to have been used in Norton Sound.

This proposal is a Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) Category 3, gear modifications management measure.

Cost Analysis: Approval of this proposal would result in an additional direct cost for a private person to participate in this fishery if required to purchase galvanic timed release mechanisms.

COMMITTEE C – Prince William Sound and Cook Inlet King and Tanner Crab (7 Proposals)

PROPOSAL 359 - 5 AAC 35.408 (b)(4) (b)(5). Registration Area H Tanner Crab Harvest Strategy. 5 AAC 35.410 (c) Fishing Seasons for Registration Area H. 5 AAC 58.022(a)(11). Waters; seasons; bag, possession, and size limits; and special provisions for Cook Inlet – Resurrection Bay Saltwater Area; 5 AAC 77.516 (1)(B). Personal Use Tanner Crab Fishery. Establish and refine management criteria for sport and personal use fisheries in Cook Inlet and on the outer Gulf coast of the Kenai Peninsula including Resurrection Bay.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal establishes a harvest threshold of 70,000 legal male Tanner crab, estimated from department trawl surveys in Kamishak Bay, for sport and personal use fisheries in Lower Cook Inlet and the outer Gulf coast salt waters, not including Kachemak Bay. A season of August 1 through March 30 is proposed. No change would occur in the daily bag and possession limits, pot limits, crab size and sex restrictions or permit requirements.

Also, due to the positive customary and traditional use finding for Tanner crab outside the Anchorage-Matsu-Kenai nonsubsistence area by the Board at its November 2007 meeting, subsistence regulations need to be adopted for this area if a harvestable surplus is available.

What Are The Current Regulations? Currently, the sport and personal use Tanner crab fisheries are closed in Cook Inlet and along the outer Gulf coast of the Kenai Peninsula because stock abundance is below harvest thresholds for the Kachemak Bay area specified in 5 AAC 35.408 Registration Area H Tanner Crab harvest strategy. When stock abundance in the Kachemak Bay area is above harvest thresholds, sport and personal use regulations in Cook Inlet and the outer Gulf coast salt waters allow a daily bag and a possession limit of 5 male Tanner crabs that are a minimum size of 5.5 inches in carapace width including spines. East of a line from Anchor Point to Point Pogibshi open season dates are July 15 through December 31 and January 15 or the beginning of the commercial Tanner crab season (whichever is later) through March 15. In all other waters of the Cook Inlet-Resurrection Bay saltwater area open season dates are July 15 through March 31. Two pots may be fished per person with no more than two pots fished per vessel. Shellfish pot buoys must be marked with the fisher's names and the name or U.S. Coast Guard number of the boat fishing them. Shellfish pots must be equipped with escape mechanisms including 2 or more escape rings 4 3/8 inches in diameter and a biodegradable twine closure. The requirement to obtain a permit to harvest shellfish with pots for sport or personal use exists, but has not been imposed because minimal effort has occurred with closure of the major crab and shrimp fisheries in the area.

What Would Be The Effect If The Proposal Is Adopted? Adoption of this proposal would open sport and personal use Tanner crab fisheries in Cook Inlet west of a line from Anchor Point to Pt. Pogibshi and along the outer Gulf Coast in the waters to Cape Puget August 1 through March 30. A small but unknown harvest is likely to occur.

Background: Tanner crab abundance is estimated with department trawl surveys of Kachemak and Kamishak bays, both located in lower Cook Inlet. 5 AAC 35.408 Registration Area H Tanner crab harvest strategy, passed by the Board of Fisheries in 2002, contains harvest guidelines for the sport and personal use fisheries in Cook Inlet and the outer Gulf coast of the Kenai Peninsula based upon male Tanner crab abundance estimates from the Kachemak Bay trawl survey.

The sport and personal use bag and possession limits were reduced from 20 to five and the pot limits from four to one per person and four to two per vessel in Cook Inlet and along the outer Gulf coast in 2001 because the legal male Tanner crab abundance estimate in the Kachemak Bay trawl survey declined sharply in 2000 and remained low in 2001. An accompanying decline occurred in the legal male Tanner crab abundance estimated from the Kamishak Bay trawl survey. As a result of the lower limits, the total harvest in 2001 was 6,499, with 193 Tanner crab taken outside the Kachemak Bay area. Tanner crab fishing was closed in Cook Inlet and along the outer Gulf coast in August of 2002 because abundance of legal male Tanner crab in Kachemak Bay was below harvest thresholds specified in 5 AAC 35.408 Registration Area H Tanner Crab harvest strategy.

Portions of the area under consideration in this proposal are within the Anchorage-Matsu-Kenai Nonsubsistence Area (5 AAC 99.015(a)(3)). The board may not create subsistence fisheries in nonsubsistence areas, but may provide noncommercial harvest opportunities in personal use and sport fisheries in the nonsubsistence area. For the portion of area under consideration in this proposal that is outside the nonsubsistence area, the Board made a positive customary and traditional use determination for all shellfish, including Tanner and king crab, during its Lower Cook Inlet regulatory meeting in Homer in November 2007. Presently, subsistence fishing for Tanner crab is closed in this area. If the department determines that there is a harvestable surplus of Tanner crab in the area subject to the customary and traditional use finding, the Board will need to determine the amount of the harvestable portion that is reasonably necessary for subsistence uses and, if so, what that amount is (AS16.05.258(b)). It will also need to adopt regulations providing a reasonable opportunity for subsistence uses of the Tanner crab stock (AS 16.05(b)(1)(A)). All Alaskans are eligible to participate in subsistence fisheries. Regulations governing subsistence Tanner crab fishing in the areas outside the nonsubsistence area could be identical to the personal use or sport fishing regulations in place within the nonsubsistence area, except a sport fishing license would not be required to obtain a subsistence fishing permit.

Department Comments: The department submitted this proposal and continues to **SUPPORT** it. The department plans to introduce recommendations to adjust the proposed fishery thresholds and possibly update additional thresholds in 5 AAC 35.408 Registration

Area H Tanner crab harvest strategy because analysis of survey data has been refined and additional data are available since the proposal was written.

The Cook Inlet-Resurrection Bay area as described in sport fishing regulations overlaps with the boundary of the PWS commercial fisheries (including personal use/subsistence) in the waters between Cape Puget and Cape Fairfield. Currently the subsistence fishery for Tanner crab in PWS is closed therefore the sport fishery may not open where the two areas overlap. There are proposals to open noncommercial fisheries for Tanner and king crab in PWS. If the board adopts these proposals, consideration will need to be given to potential regulatory conflicts in this area of overlap.

An opening date of August 1 is proposed for waters outside Kachemak Bay while retaining the earlier date of July 15 within the Kachemak Bay area. The opening date should be consistent throughout Cook Inlet and the outer Gulf coast.

Cost Analysis: The department does not believe that approval of this proposal may result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 360 – 5 AAC 77.516. Personal Use Tanner Crab Fishery.

Proposed by: Seward Fish and Game Advisory Committee

What Would The Proposal Do? The proposal seeks to open a personal use Tanner crab fishery in waters from Gore Point to Cape Puget with open season dates of September 15 to March 31, a five-pot limit, a 20 crab per day bag limit, and a harvest reporting requirement.

What Are The Current Regulations? Regulation 5 AAC 77.516 (1)(B) aligns noncommercial Tanner crab fishing in the Outer and Eastern Districts with noncommercial fishing in the Southern District; the management plan requires the Southern District fishery to open in order for the season in the Outer and Eastern Districts to open. The same regulation establishes open season dates of July 15 through March 15 with a two pot limit, daily bag and possession limits of 5 male Tanner crab of 5 ½ inches minimum carapace width, prohibits the possession of uncooked mutilated or disfigured Tanner crab aboard a vessel and requires that only whole crab, cooked or uncooked may be taken off a vessel.

What Would Be The Effect If The Proposal Is Adopted? If adopted, the proposal would open a noncommercial Tanner crab season in an area that is currently closed, shorten the season described in regulation from nine to six months, increase pot limits from two to five, and increase the daily bag and possession limit from 5 to 20 crab.

Background: Tanner crab abundance is estimated with department trawl surveys of Kachemak and Kamishak bays, both located in lower Cook Inlet. The department does not conduct crab assessment surveys in the Outer and Eastern Districts. 5 AAC 35.408 Registration Area H Tanner crab harvest strategy, passed by the Board of Fisheries in 2002, contains harvest guidelines for the sport and personal use fisheries in Cook Inlet and the outer Gulf coast of the Kenai Peninsula based upon male Tanner crab abundance estimates from the Kachemak Bay trawl survey. Estimates of legal male Tanner crab abundance in Cook Inlet and PWS surveys are variable but show slow increases in recent years.

The sport and personal use bag and possession limits were reduced from 20 to 5 crab and the pot limits from four to one per person and four to two per vessel in Cook Inlet and along the outer Gulf coast in 2001 because the legal male Tanner crab abundance estimate in the Kachemak Bay trawl survey declined sharply in 2000 and remained low in 2001. An accompanying decline occurred in the legal male Tanner crab abundance estimated from the Kamishak Bay trawl survey. As a result of the lower limits, the total harvest in 2001 was 6,499 crab, with 193 Tanner crab taken outside the Kachemak Bay area. Tanner crab fishing was closed in Cook Inlet and along the outer Gulf coast in August of 2002 because abundance of legal male Tanner crab in Kachemak Bay was below harvest thresholds specified in 5 AAC 35.408 Registration Area H Tanner Crab harvest strategy.

Department Comments: The department **OPPOSES** this proposal because the proposed pot and harvest limits may result in a harvest that is not sustainable. However, the department supports another proposal that would refine 5 AAC 35.408 Registration Area H Tanner crab harvest strategy and would result in opening the Cook Inlet area except Kachemak Bay with the pot, bag and possession limits described in regulation. The Cook Inlet-Resurrection Bay area as described in sport fishing regulations overlaps with the boundary of the PWS commercial fisheries (including personal use/subsistence) in the waters between Cape Puget and Cape Fairfield. Currently the subsistence fishery for Tanner crab in PWS is closed therefore the sport fishery may not open where the two areas overlap. There are proposals to open noncommercial fisheries for Tanner and king crab in PWS. If the board adopts these proposals, consideration will need to be given to potential regulatory conflicts in this area of overlap.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 361 – 5 AAC 77.557. Personal Use King Crab Fishery.

Proposed By: David Daniels

What Would The Proposal Do? This proposal seeks to reopen the personal use king crab fishery in Prince William Sound (PWS) with open season dates of November 1 through April 30, a one-pot per vessel gear limit, an annual bag limit of five crab per person, a punch card permit, a logbook requirement, a registration requirement with check-in/check-out provisions, and catch reporting within six hours of the next business day.

What Are The Current Regulations? Regulation 5 AAC 77.557 closed the personal use season for king crab in PWS.

What Would Be The Effect If The Proposal Were Adopted? If adopted, the proposal would re-establish a personal use king crab season in PWS.

Background: Three species of king crab, red, blue, and golden are found in PWS. Historically the department has not directly assessed king crab abundance in PWS. Tanner crab pot surveys, conducted 1977-1991 and trawl surveys conducted 1991 to the present have provided a relative index of abundance for red king crab. From 2004-2006 the department conducted pot surveys to index the relative abundance and monitor the stock status of golden king crab in western PWS.

Commercial fisheries for red and blue king crab were initially closed due to low abundance in 1984. The commercial fishery for golden king crab developed in the early 1980's and closed in 1989 except for a brief opening in 1994. All PWS non-commercial king crab fisheries remained open until 1999 with gear limits of five pots per person and no more than ten pots per vessel and daily bag and possession limits of six king crab per day. From 1982 through 1998 the department closed by emergency order the Hinchinbrook Entrance and Orca Bay portions of PWS to conserve declining king crab stocks. Historically, there was no mechanism in place to track the total noncommercial harvest. However; the Statewide Harvest Survey estimated 40 and 72 crab harvested in 1997 and 1998, the last two years of the sport and personal use fisheries. Subsistence king crab harvest data collected in 1999 indicated that subsistence harvests totaled less than 150 king crab among all PWS communities. The board has not made a customary and traditional use finding for king crab in PWS. The board closed all noncommercial king crab fisheries in 1999 due, in part, to the lack of stock status and harvest information.

Department Comments: The department **OPPOSES** the proposal. The PWS management area would need to be considered for a subsistence fishery prior to establishment of a personal use king crab fishery. The department supports working with the board to determine a C&T finding and, if a positive finding is established, move forward to determine the amount necessary for subsistence (ANS). The absence of red and blue king crabs in department surveys suggests that these species should not be harvested at this time. If the board chose to adopt a fishery for golden king crab, the

department would urge a conservative approach. The department would suggest a winter season, a limited fishing area, conservative pot and annual household limits, reporting requirements, and pot gear that minimizes bycatch.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 362 – 5 AAC 77.558. Personal Use Tanner Crab Fishery.

Proposed By: Delbert Ferrier

What Would The Proposal Do? The proposal seeks to open a personal use Tanner crab fishery in that portion of Port Valdez within the Valdez Non-subsistence Area of Prince William Sound (PWS) with open season dates of October 1 through May 30, a two pot per person and per vessel gear limit, a 10-crab bag and possession limit and restrict to one the number of individuals that may operate a pot.

What Are The Current Regulations? Regulation 5 AAC 77.558 closed the personal use season for Tanner crab in PWS.

What Would Be The Effect If The Proposal Were Adopted? The proposed fishery would concentrate all fishing for Tanner crab in PWS within the Port Valdez portion of the Valdez Nonsubsistence Area (described in 5 AAC99.015(a)(5)).

Background: The department has assessed Prince William Sound (PWS) management area Tanner crab from 1977-1991 using a pot survey and from 1991 to the present via a trawl survey. The pot surveys provided relative abundance indices of legal Tanner crab and were used to set preseason harvest guidelines for the commercial fishery. The trawl survey occurred annually from 1991-1995 and biennially from 1997 to present. The department uses a trawl survey to estimate legal male abundance. Legal male estimates declined from 108,689 in 1993 to 3,697 in 1999 and have since rebounded to 33,518 in 2007.

The PWS personal use Tanner crab fishery was first established in 1986 and remained open year around with pot limits of five per person and no more than ten per vessel with 20-crab daily bag and possession limits. Minimum legal size was set at 5.3 inches. Personal use fishery participants had to possess a State of Alaska sport fishing license and regulations required each pot employ a biodegradable escape mechanism as defined in 5 AAC 39.145 and specified pot buoy marking requirements. The board adopted a regulatory closure for all PWS commercial and noncommercial fisheries in 1999 due to steady declines in both overall and legal male abundance and the lack of comprehensive noncommercial fishery harvest information.

Department Comments: The department **OPPOSES** this proposal because it would concentrate Tanner crab fishing effort within Port Valdez.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 363 – 5 AAC 77.558. Personal Use Tanner Crab Fishery.

Proposed by: Valdez Advisory Committee

What Would The Proposal Do? The proposal seeks to open a personal use fishery for Tanner crab in Prince William Sound management area with season dates of October 1 through May 30, a 5-pot limit. The proposal also asks for seasons in “areas of known crab abundance”.

What Are The Current Regulations? Regulation 5 AAC 77.558 closes the personal use season for Tanner crab in PWS. Current subsistence regulations state that subsistence taking of king and Tanner crab in the Prince William Sound area is closed until the stocks recover enough to provide a harvestable surplus and regulations are adopted by the Board that reopen the fishery.

What Would Be The Effect If The Proposal Were Adopted? If adopted, the proposal would reestablish a PWS personal use Tanner crab season.

Background: The department has assessed Prince William Sound (PWS) management area Tanner crab from 1977-1991 using a pot survey and from 1991 to the present via a trawl survey. The pot surveys provided relative abundance indices of legal Tanner crab and were used to set preseason harvest guidelines for the commercial fishery. The trawl survey occurred annually from 1991-1995 and biennially from 1997 to present. The department uses a trawl survey and an area-swept methodology to estimate legal male abundance. Historically the trawl survey focused on core stations in Orca Bay including the bays along its north shore and the north end of Montague Island with the addition of ancillary stations throughout the PWS area. Legal male estimates from these core stations declined from 108,689 in 1993 to 3,697 in 1999 and have since rebounded to 33,518 in 2007.

The PWS personal use Tanner crab fishery was first established in 1986 and remained open year around with pot limits of five per person and no more than ten per vessel with 20-crab daily bag and possession limits. Minimum legal size was set at 5.3 inches. Personal use fishery participants had to possess a State of Alaska sport fishing license and regulations required each pot employ a biodegradable escape mechanism as defined in 5 AAC 39.145 and specified pot buoy marking requirements. The board adopted a regulatory closure for all PWS commercial and noncommercial fisheries in 1999 due to steady declines in both overall and legal male abundance and the lack of comprehensive noncommercial fishery harvest information. The board has not made a Customary and Traditional Use determination for Tanner crab in PWS.

Department Comments: The department **OPPOSES** the proposal as written. The PWS management area would need to be considered for a subsistence fishery prior to establishment of a personal use Tanner crab fishery. The department supports working with the board to determine a C&T finding and, if a positive finding is established, move forward to determine the amount necessary for subsistence (ANS). If the board chose to

adopt a Tanner crab fishery, the department would urge a conservative approach. The department would suggest a winter season, a limited fishing area, conservative bag and possession limits, reporting requirements, and pot gear that minimizes bycatch.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

**PROPOSAL 364 – 5 AAC 77.557. Personal Use King Crab Fishery; and
5 AAC 77.557. Personal Use Tanner Crab Fishery.**

Proposed By: Bernard Culbertson, Thane Miller

What Would The Proposal Do? The proposal seeks to open personal use king and Tanner crab fisheries by requiring the department to establish minimum stock levels for each species, that would clearly identify the levels at which fisheries could open.

What Are The Current Regulations? Regulations 5 AAC 77.557 and 5 AAC 77.558 closed the personal use seasons for king and Tanner crabs in PWS.

What Would Be The Effect If The Proposal Were Adopted? Personal use fisheries for king and Tanner crabs would reopen when the minimum stock levels were exceeded.

Background: Three species of king crab, red, blue, and golden are found in PWS. Historically the department has not directly assessed king crab abundance in PWS. Tanner crab pot surveys, conducted 1977-1991 and trawl surveys conducted 1991 to the present have provided a relative index of abundance for red king crab. From 2004-2006 the department conducted pot surveys to index the relative abundance and monitor the stock status of golden king crab in western PWS. Despite fishing both a broad area and a variety of depths, the survey captured only two juvenile male and one juvenile female golden king crab.

Commercial fisheries for red and blue king crab were initially closed due to low abundance in 1984. The commercial fishery for golden king crab developed in the early 1980's and closed in 1989 except for a brief opening in 1994. All PWS non-commercial king crab fisheries remained open until 1999 with gear limits of five pots per person and no more than ten pots per vessel and daily bag and possession limits of six king crab per day. From 1982 through 1998 the department closed by emergency order the Hinchinbrook Entrance and Orca Bay portions of PWS to conserve declining king crab stocks. Historically, there was no mechanism in place to track the total noncommercial harvest. However; the Statewide Harvest Survey estimated 40 and 72 crab harvested in 1997 and 1998, the last two years of the sport and personal use fisheries. Subsistence king crab harvest data collected in 1999 indicated that subsistence harvests totaled less than 150 king crab among all PWS communities. The board has not made a customary and traditional use finding for king crab in PWS. The board closed all noncommercial king crab fisheries in 1999 due, in part, to the lack of stock status and harvest information.

The department has assessed Prince William Sound (PWS) management area Tanner crab from 1977-1991 using a pot survey and from 1991 to the present via a trawl survey. The pot surveys provided relative abundance indices of legal Tanner crab and were used to set preseason harvest guidelines for the commercial fishery. The trawl survey occurred annually from 1991-1995 and biennially from 1997 to present. The department uses a trawl survey to estimate legal male abundance

The PWS personal use Tanner crab fishery was first established in 1986 and remained open year around with pot limits of five per person and no more than ten per vessel with 20-crab daily bag and possession limits. Minimum legal size was set at 5.3 inches. Personal use fishery participants had to possess a State of Alaska sport fishing license and regulations required each pot employ a biodegradable escape mechanism as defined in 5 AAC 39.145 and specified pot buoy marking requirements. The board adopted a regulatory closure for all PWS commercial and noncommercial fisheries in 1999 due to steady declines in both overall and legal male abundance and the lack of comprehensive noncommercial fishery harvest information. Data from the statewide harvest survey (SHS) indicated a harvest range of 137-537 crab with an average annual harvest of 300 Tanner crab during the period 1994-1998. These figures represent both sport and personal use harvests of Tanner crab. Data from the ADF&G Subsistence Division household survey suggest that subsistence harvests totaled less than 4,900 Tanner crab in 1997. The board has not made a Customary and Traditional Use determination for Tanner crab in PWS.

Department Comments: The department **OPPOSES** this proposal. The department currently lacks the data to allow development of a management plan with thresholds for king or Tanner crabs.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

PROPOSAL 365 – 5 AAC 77.557. Personal Use King Crab Fishery; and 5 AAC 77.557 Personal Use Tanner Crab Fishery.

Proposed By: Bernard Culbertson, Thane Miller

What Would The Proposal Do? The proposal would open king and Tanner crab for some undefined level of harvest.

What Are The Current Regulations? Regulations 5 AAC 77.557 and 5 AAC 77.558 closed the personal use seasons for king and Tanner crabs in PWS.

What Would Be The Effect If The Proposal Is Adopted? King and Tanner crab seasons would open to personal use fishing.

Background: Three species of king crab, red, blue, and golden are found in PWS. Historically the department has not directly assessed king crab abundance in PWS. Tanner crab pot surveys, conducted 1977-1991 and trawl surveys conducted 1991 to the present have provided a relative index of abundance for red king crab. From 2004-2006 the department conducted pot surveys to index the relative abundance and monitor the stock status of golden king crab in western PWS. Despite fishing both a broad area and a variety of depths, the survey captured only two juvenile male and one juvenile female golden king crab.

Commercial fisheries for red and blue king crab were initially closed due to low abundance in 1984. The commercial fishery for golden king crab developed in the early 1980's and closed in 1989 except for a brief opening in 1994. All PWS non-commercial king crab fisheries remained open until 1999 with gear limits of five pots per person and no more than ten pots per vessel and daily bag and possession limits of six king crab per day. From 1982 through 1998 the department closed by emergency order the Hinchinbrook Entrance and Orca Bay portions of PWS to conserve declining king crab stocks. Historically, there was no mechanism in place to track the total noncommercial harvest. However; the Statewide Harvest Survey estimated 40 and 72 crab harvested in 1997 and 1998, the last two years of the sport and personal use fisheries. Subsistence king crab harvest data collected in 1999 indicated that subsistence harvests totaled less than 150 king crab among all PWS communities. The board has not made a customary and traditional use finding for king crab in PWS. The board closed all noncommercial king crab fisheries in 1999 due, in part, to the lack of stock status and harvest information.

The department has assessed Prince William Sound (PWS) management area Tanner crab from 1977-1991 using a pot survey and from 1991 to the present via a trawl survey. The pot surveys provided relative abundance indices of legal Tanner crab and were used to set preseason harvest guidelines for the commercial fishery. The trawl survey occurred annually from 1991-1995 and biennially from 1997 to present. The department uses a trawl survey to estimate legal male abundance.

The PWS personal use Tanner crab fishery was first established in 1986 and remained open year around with pot limits of five per person and no more than ten per vessel with 20-crab daily bag and possession limits. Minimum legal size was set at 5.3 inches. Personal use fishery participants had to possess a State of Alaska sport fishing license and regulations required each pot employ a biodegradable escape mechanism as defined in 5 AAC 39.145 and specified pot buoy marking requirements. The board adopted a regulatory closure for all PWS commercial and noncommercial fisheries in 1999 due to steady declines in both overall and legal male abundance and the lack of comprehensive noncommercial fishery harvest information. Data from the statewide harvest survey (SHS) indicated a harvest range of 137-537 crab with an average annual harvest of 300 Tanner crab during the period 1994-1998. These figures represent both sport and personal use harvests of Tanner crab. Data from the ADF&G Subsistence Division household survey suggest that subsistence harvests totaled less than 4,900 Tanner crab in 1997. The board has not made a Customary and Traditional Use determination for Tanner crab in PWS.

Department Comments: The department **OPPOSES** this proposal. The proposal is vague beyond specifying opening personal use seasons for king and Tanner crab. The department supports working with the board to determine a C&T finding for PWS and, if a positive finding is established, move forward to determine the amount necessary for subsistence (ANS). If the board chose to adopt a crab fishery, the department would urge a conservative approach. The department would suggest a winter season, a limited fishing area, conservative bag and possession limits, reporting requirements, and pot gear that minimizes bycatch.

Cost Analysis: The department believes that adoption of this proposal could result in an additional direct cost for a private person to participate in the fishery.

COMMITTEE D – Supplemental Issues (5 Proposals)

PROPOSAL 402 – 5 AAC 38.xxx. New Section.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal will allow the BOF to consider regulations for managing a state-waters only scallop fishery in Southeastern Alaska, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Dutch Harbor, Bristol Bay-Bering Sea and Adak registration areas. ADF&G staff have developed recommendations for the BOF and public to consider for addressing harvest accounting, biological sampling, and enforcement of a state-waters scallop fishery.

What Are The Current Regulations? Scallop beds that occur in both state and federal waters are presently managed as one unit. Fishing for scallops in federal waters is restricted by the federal scallop LLP program. Fishing for scallops in state waters is currently limited by a CFEC vessel-based limited entry program.

What Would Be The Effect If The Proposal Were Adopted? ADF&G has drafted regulations to allow for a state-waters only scallop fishery that would be managed separately from the federal waters scallop fishery.

Background: The current state-waters vessel-based limited entry program is scheduled to expire December 31, 2008. Once this program expires, state waters will be open to scallop fishing by any vessel with a valid CFEC interim use permit beginning January 1, 2009. Federal waters will remain under the federal license limitation program. The state-federal boundary crosses several of the commercial scallop beds, but scallops are currently managed without regard to this boundary. New management measures may be needed to prevent overharvest and to ensure accurate accounting, biological sampling, and enforcement of state-waters scallop harvest, where permits will be unlimited, relative to federal waters, where there are 9 permits.

Department Comments: ADF&G **SUPPORTS** development of a state-waters only scallop management plan in case the legislature does not renew a limited entry program.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 403 – 5 AAC 39.975. Definitions and 5 AAC 75.995 Definitions.

Proposed By: Alaska Department of Fish and Game

What Would The Proposal Do? This proposal will modify the statewide definitions for commercial and sport fisheries for the pelagic shelf rockfish group. Specifically, the proposal changes the common name for *Sebastes ciliatus* from dusky to dark rockfish. A new species will be added to the statewide definitions of the pelagic shelf rockfish group, *Sebastes variabilis*, commonly known as dusky rockfish.

What Are The Current Regulations? Current statewide definitions for commercial fisheries and sport fisheries do not reference the species *S. variabilis*, and do not recognize the common name dark rockfish for *S. ciliatus*.

What Would Be The Effect If The Proposal Were Adopted? ADF&G definitions will be updated with current species nomenclature for the pelagic shelf rockfish group.

Proposed regulatory language as follows:

5 AAC 39.975 Definitions (37)

(A) *S. ciliatus* (~~Dusky~~ Dark)

(F) *S. variabilis* (Dusky)

5 AAC 75.995

(47) “pelagic rockfish” includes **dark** [dusky] (*S. ciliatus*) **dusky** (*S. variabilis*).....

Background: Beginning January 2009, ADF&G is scheduled to assume full management authority for dark rockfish *Sebastes ciliatus* from the federal government in the exclusive economic zone (3–200 nmi offshore). National Marine Fisheries Service is removing dark rockfish from the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Fishery Management Plans because dark rockfish are mainly a nearshore species; most of the resource occurs in state waters. Under the federal management system all species of rockfish in the pelagic shelf rockfish group are managed in aggregate, which could lead to conservation issues for a single species in the complex. Since most of the dark rockfish resource is in state waters ADF&G would be able to respond to conservation issues for this species on shorter notice, in smaller geographic areas than the federal government.

This proposal will adopt the currently recognized species designations and common names into the statewide definitions for the pelagic shelf rockfish group. The dusky rockfish (*S. ciliatus*) has been considered a single variable species with light and dark forms. These two forms have now been determined to be two separate species by Orr and Blackburn: Orr, James W. and J.E. Blackburn. 2004. The dusky rockfishes (Teleostei: Scorpaeniformes) of the North Pacific Ocean: resurrection of *Sebastes variabilis* (Pallas, 1814) and a redescription of *Sebastes ciliatus* (Tilesius, 1813). Fish. Bull. 102:328-348

Sebastes ciliatus was formerly defined as the dusky rockfish. The common name is now dark rockfish. The common name dusky rockfish is now applied to a newly recognized species *Sebastes variabilis*.

Department Comments: ADF&G **SUPPORTS** revising the pelagic shelf rockfish statewide definitions.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate.

PROPOSAL 405 – 5 AAC 28.055. Seabird Avoidance Measures in Groundfish Fisheries.

Proposed By: Alaska Board of Fisheries

What Would The Proposal Do? The BOF has previously adopted seabird avoidance measures in groundfish fisheries, so that seabird avoidance measures in state waters are coordinated with federal regulations. The National Marine Fisheries Service is revising federal seabird avoidance measures for groundfish and halibut fisheries off Alaska. The science-based refinements drop unnecessary regulations and reduce costs to fishermen in some areas, while strengthening seabird protections in the remaining areas.

The new regulations will no longer require seabird avoidance measures such as streamerlines or buoy bags in all of Prince William Sound, all state waters of Cook Inlet and in most waters of the Eastern Gulf of Alaska Regulatory Area Southeast Inside District. However, pelagic seabirds (e.g. albatross species) have been observed more frequently in lower Chatham Strait, Dixon Entrance, and parts of Cross Sound. Hook-and-line fishing vessels must continue to meet seabird avoidance gear requirements and standards in those parts of the nearshore areas.

Hook-and-line vessels greater than 26 feet long and less than 55 feet long were earlier exempted from certain seabird avoidance gear deployment requirements for applying streamer line standards. Research with fishermen on the smaller hook-and-line vessels has shown that they can effectively adhere to the stricter requirements. When the winds exceed 30 knots, the new standards are relaxed for smaller vessels, for safety reasons. In addition to these changes, fishermen are no longer required to have a completed Seabird Avoidance Plan onboard their vessel.

What Are The Current Regulations? Current seabird avoidance regulations are referenced in 50 C.F.R. 679.24 revised as of October 1, 2004.

What Would Be The Effect If The Proposal Were Adopted? State-waters seabird avoidance regulations will be compatible with federal waters seabird avoidance regulations.

Background: The state adopted seabird avoidance regulations in 2004 to reduce interaction between commercial fishing gear and seabirds.

Department Comments: ADF&G **SUPPORTS** revising seabird avoidance measures for coordination with federal regulations.

Cost Analysis: Adoption of this proposal is not expected to result in an additional direct cost for the private person to participate. NOAA Fisheries is continuing a program started by the U.S. Fish and Wildlife Service to provide free streamerlines, including light-weight lines designed for smaller vessels.