Stock Assessment and Fishery Evaluation Report
for the
KING AND TANNER CRAB FISHERIES
of the
Bering Sea and Aleutian Islands Regions

1998 Crab SAFE

Compiled by
The Plan Team for the King and Tanner Crab Fisheries
of the Bering Sea and Aleutian Islands

With Contributions by

B. Brennan, R. Gish, G. Kruse,
C. Lean, R. Morrison, M. Murphy, B. Otto, D. Pengilly,
M. Schwenzfeier, D. Tracy, D. Witherell, and J. Zheng

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North Pacific Fishery Management Council
605 W. 4th Avenue, #306
Anchorage, AK 99501

Introduction

The annual area management report is a requirement of the North Pacific Fishery Management Council's *Fishery Management Plan (FMP) for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands*. This report also fulfill a federal requirement at 50 CFR Section 602.12(e) for an annual stock assessment and fishery evaluation (SAFE). The SAFE details the current biological and economic status of fisheries, guidelines harvest levels (GHL) ranges, and support for different management decisions or changes in harvest strategies. This report is assembled by the crab plan team with contributions from the State of Alaska Department of Fish and Game and the National Marine Fisheries Service, and is available to the public and presented to the Council on an annual basis. Although ADF&G and NMFS have presented much of this material to the Council in its meetings of the previous year, the Council has not received these reports in final form. The contents are as follows:

RESULTS OF THE 1998 NMFS BERING SEA CRAB SURVEY
EXECUTIVE SUMMARY

This section summarizes data presented in the Report to Industry on the 1998 Eastern Bering Sea Trawl Survey. Numbers presented are trawl survey indices of population level and do not necessarily represent absolute abundance. For further information, contact Dr. Bradley G. Stevens or Dr. Robert S. Otto, NMFS, P.O. Box 1638, Kodiak, AK 99615. Phone (907) 487 5961. (GHL = Guideline Harvest Level.)

Red king crab *(Paralithodes camtschaticus)* Bristol Bay.

Legal males:	7.4 million crabs; -21% change.
Pre-recruits:	16.5 million crabs; 85% change.
Large Females:	35.3 million crabs; 42% change.
Outlook:	Abundance of mature, pre-recruit males has increased due to growth of a recruiting cohort, offsetting the decline of aging legal males. Increased abundance of mature females allows use of a 15% exploitation rate.
GHL:	16.4 million lbs (7,446 metric tons, mt). Fishery opens November 1.

Red king crab *(P. camtschaticus)* Pribilof District.

Legal males:	0.4 million crabs; -63% change.
Pre-recruits:	0.5 million crabs; no change.
Large Females:	1.0 million crabs; no change.
Outlook:	Legal and pre-recruit male crabs are highly concentrated and index has very low precision. Females are poorly estimated. Survey and fishery data indicate a long-term population decline. Red king crab are scarce in the Pribilof Islands and usually harvested incidental to blue king crabs.
GHL:	Fishery combined with blue king crab (see below).

Pribilof Islands blue king crab *(P. platus)* Pribilof District.

Legal males:	0.8 million crabs; no change.
Pre-recruits:	0.4 million crabs; 17% change.
Large Females:	2.0 million crabs; 20% change.
Outlook:	Population is low and trends are not easily detectable.
GHL:	1.3 million lbs (590 mt) of red and blue king crabs. Fishery opens September 15.

St. Matthew blue king crab *(P. platus)* Northern District.

Legal males:	3.1 million crabs; -21% change.
Pre recruits:	1.8 million crabs; -21% change.
Large Females:	Not well estimated.
Outlook:	Population is above average levels. Annual abundance estimates are affected by the portion of the stock occupying untrawlable grounds.
GHL:	3.8 million lbs (1,725 mt). Fishery opens September 15.

Tanner crab *(Chionoecetes bairdi)* Eastern District.

Legal males:	2.2 million crabs; -36% change.
Pre-recruits:	12.1 million crabs; 22% change.
Large Females:	6.5 million crabs; -35% change.
Outlook:	Population still declining, but some recruitment is apparent. This year's estimates of legal males and large females are the lowest in the history of the survey.
GHL:	Fishery will not open in 1998.

Snow crab *(C. opilio)* All districts combined.

Large males:	255 million crabs; -17% change.
Small males:	1,015 million crabs; -32% change.
Large Females:	1,161 million crabs; -16% change.
Outlook:	Abundance of large males has peaked and declined slightly from last year. This population is expected to decline rapidly next year, but continued recruitment of small crab may offset that somewhat.
GHL:	196.0 million lbs (89,000 mt). Fishery opens January 15, 1999.

Hair crab *(Erimacrus isenbeckii)*

Large males:	2.9 million crabs; -32% change.
Large Females:	Not well estimated.
Outlook:	Population is declining and recruitment trends are not apparent.
GHL:	0.5 million lbs (227 mt) Pribilof District only. Fishery opens November 1.

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES OF THE BERING SEA

By

Rance Morrison, Area Management Biologist

Robert K. Gish, Assistant Area Management Biologist

Mike Ruccio, Staff Management Biologist

Mary Schwenzfeier, Pot Limit Program Administrator

Bering Sea Management Staff

Dutch Harbor Area Office
PO Box 920587
Dutch Harbor, Alaska 99692

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KING CRAB REGISTRATION AREA T
BRISTOL BAY

Introduction

The Bristol Bay king crab Area T includes all waters north of Cape Sarichef, east of 168° West longitude and south of the latitude of Cape Newenham and includes all waters of Bristol Bay (Figure 5-1).

Historic Background

Commercial king crab fishing in the Bering Sea began with the Japanese in 1930. Their presence continued in this fishery until 1940 and then again from 1953 until 1974. The Russian king crab fleet also operated in the eastern Bering Sea from 1959 through 1971. United States fishermen entered the eastern Bering Sea/ Bristol Bay area king crab fishery with trawl gear in 1947. Effort and catches declined in the 1950's with no catch being reported in 1959. A period of fluctuating low catches followed through 1966 before expanding into a full-scale fishery in the late 1970's.

The king crab fishery in the eastern Bering Sea traditionally harvested red king crab 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 in 1968, U. S. effort increased in the eastern Bering Sea with a record catch of 129.9 million pounds in 1980 (Figure 5-2 and Table 5-1). As in other areas of the state, the Eastern Bering Sea stocks crashed in the early 1980's and have since remained depressed.

In 1980 the Alaska Board of Fisheries (BOF) defined that portion of the Bering Sea south of Cape Newenham and east of 168° West Longitude as the Bristol Bay King Crab Registration T. This 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 registration areas. Only nonexclusive registration areas could subsequently be fished.

The National Marine Fisheries Service (NMFS) has conducted annual abundance trawl 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 crab and the lowest total king crab population ever recorded. Small females carrying fewer eggs and high predator abundance was also noted. As a result, the fishery was closed for the 1983 season. The fishery reopened in 1984 and catches slowly increased annually 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 Department to monitor the red king crab harvest, the BOF initiated an onboard observer program in 1988. Fishing effort increased dramatically from

89 vessels in 1984 to over 300 vessels in 1991. The number of pots fished by the fleet also increased, to almost 90,000 pots registered for the 1991 fishery.

As a result of the increased number of pots, the BOF established a 250 pot limit that was implemented for the 1992 Bristol Bay red king crab fishery. This measure was intended to improve manageability of the fishery by extending the length of the season and reduce the potential for pot loss. Pot limits were applied through a buoy sticker program.

Immediately following the 1992 Bristol Bay red king crab fishery, the 250 pot limit was repealed by the U.S. Secretary of Commerce. This action was taken due to perceived inconsistencies with provisions of the Bering Sea/Aleutian Island king and Tanner crab Federal Management Plan (FMP) which mandated application of pot limits in a nondiscriminatory manner. In the spring of 1993, the BOF passed new regulations that set pot limits based on overall vessel length. For the Bristol Bay king red crab fishery, vessels in excess of 125 feet in overall length were limited to 250 pots and vessels 125 feet and under in length overall were allowed 200 pots total. These pot limits were applied through a buoy tag program from the Dutch Harbor and Kodiak ADF&G offices.

Projected harvest shortfalls in both the St. Matthew blue king and Pribilof Islands red king crab fisheries in mid-September 1993 prompted a meeting in Seattle between fishermen, industry representatives and staff from ADF&G and NMFS to discuss methods to improve in-season data collection and management. At that meeting, a sales representative from MCI Communications Incorporated presented information about satellite communications software available for confidential communication between ADF&G and vessels at sea, which could be used for daily in-season catch reporting. As a result of this meeting, ADF&G purchased the necessary computer hardware and software for retrieval of daily satellite transmitted catch messages from vessels at sea.

Daily vessel reports received via single side band radio and MCI telex were used to manage the 1993 Bristol Bay red king crab fishery. That season ran for 9 days and the total harvest was 14.6 million pounds, approximately 2.2 million pounds short of the 16.8 million pound guideline harvest level (GHL) midpoint.

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 crab in the Bristol Bay area. Compared to observations made during the 1993 survey, the abundance index of large male crab declined 25%. Based on 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. As a result, the Bristol Bay area did not open to fishing in 1994.

Due to potential measurement errors in the area-swept trawl abundance estimates, ADF&G developed a length-based analysis (LBA) for estimating red king crab population abundance. This method, used for the first time prior to the 1995 season, incorporates a variety of data sources (dock side sampling, observer collected data, etc.) as well as data collected on the annual survey. This method is less susceptible to year-to-year variations in factors unrelated to population abundance (oceanographic conditions, changes in species distribution and subsequent availability to the survey gear, etc.) and is therefore more likely to minimize errors in estimation of crab abundance. Analysis of the 1995 NMFS survey using the LBA indicated no appreciable difference in the abundance of

mature male and female red king crab from estimates derived from the 1994 survey. As a result the Bristol Bay red king crab fishery remained closed for the 1995 season.

Due to the depressed nature of the Bristol Bay red king crab population, the BOF, at their March 1996 meeting adopted a revised harvest strategy to promote stock rebuilding. Among changes to the harvest strategy was a reduction in the exploitation rate of mature male crab from 20% to 10% at population levels below where the stock is considered rebuilt (55 million pounds of effective spawning biomass).

Results of the LBA analysis of the 1996 NMFS survey indicated increases from the 1995 estimate of all size classes of males and females. Relative to the prior two years fishery closures due to insufficient numbers of large female crabs, was an increase in the number of large females in 1996 to 10.2 million crabs. This level was well above the 8.4 million large female threshold necessary for a fishery. Based on a 10% exploitation rate, the 1996 GHL was set at 5.0 million pounds. The 1996 fishery lasted four days and a total of 8.4 million pounds were harvested. This was 70% over the 5.0 million pound GHL.

As a result of the department's difficulty with managing this fishery at low GHL levels, the BOF held a special meeting in August of 1997 during which more stringent pot limits and vessel pre-registration requirements were adopted. Also adopted at this time were regulations that extended the tank inspection window for the Bristol Bay fishery from 24 to 30 hours and allowed fishermen to leave baited pots on the fishing grounds after the closure should the announcement for the closure be less than 24 hours. New pot limits were based, not only on vessel overall length, but also the pre-season midpoint GHL and the number of vessel that pre-registered for the fishery. These new pot limit regulations were adopted with a sunset provision of December 31, 1998. The sunset provision exists so that the pot limit regulations will be addressed at the 1999 BOF meetings. Specific information on pot limits based on GHL and number of vessels participating in the Bristol Bay fishery are found under 5 AAC 34.825 of the 1997-98 State of Alaska Commercial Shellfish Fishing Regulations.

1997 Fishery

The Bristol Bay Management Area T opened to fishing for red and blue king crabs at 16:00 hours on November 1, 1997. A total of 256 vessels, including 8 catcher-processors made 265 landings for a harvest of over 8.7 million pounds of red king crabs. The 1997 fishery lasted just over four days (98 hours to be exact) and was closed by emergency order (E. O.) at 18:00 hours on November 5. Three floating processors registered and purchased crab on the grounds during the fishery.

Based on the 7 million pound midpoint GHL and the 259 vessels which registered by the October 3 pre-registration deadline, vessels greater than 125' were permitted to fish a maximum 125 pots while vessels 125' and smaller were permitted a maximum of 100 pots.

A total of 259 vessels purchased 27,870 buoy tags for the 1997 Bristol Bay king crab fishery. This compares to a total of 200 vessels that purchased 40,586 pots for the 1996 season. Two vessels purchased buoy tags for the red king crab fishery but did not participate and not all vessels

participating fished a full complement of gear. The total number of pots fished in the 1997 season was 27,499 (Table 5-2). All vessels which qualified for the concurrently opening Pribilof hair crab fishery chose to first participate in the Bristol Bay fishery before entering the directed hair crab fishery.

Tank inspections were conducted beginning at 10:00 a.m. on October 31, 30 hours prior to the fishery opening. ADF&G personnel conducted a total of 141 tank inspections in Dutch Harbor, 70 in King Cove, 44 in Akutan, and 2 in Saint Paul. (A total of 257 vessels received tank inspections; 256 vessels delivered crab during the fishery). The majority of the fleet was registered using the "Quick Registration" process where vessel holds and gear are inspected within the several days leading up to regular tank inspections. Operators of vessels, which have been pre-inspected, can then proceed to signing locations and have their vessel registrations validated within minutes of the beginning of the tank inspection period. This quick registration process was first implemented for the 1997 *C. opilio* fishery. In addition to vessel hold inspections, ADF&G staff examined fishing gear aboard all vessels for pot mesh, tag and tunnel size requirements.

The 1997 Bristol Bay king crab fishery was managed by means of daily inseason reports from fishermen. A total of 180 vessel operators, or 70% of the total participants from both the small (<125 feet) and large (126 feet and larger) vessels groups, signed up to report numbers of pots fished and number of crab retained daily. The total number of vessels that actually reported ranged from 190 (74% of the fleet) on November 3 to 36 (14% of the fleet) on November 5. The number of vessels reporting declined after the fishery closure was announced on November 4th. Reports were received via marine telex and over single side band radio. Vessels participating in marine telex reporting submitted catch information on a 12 hour basis, while single side band reporters gave information every 24 hours.

Fishery performance, calculated from the daily vessel reports, indicated a catch per unit effort (CPUE) of 8.5 crab per pot during the first 26 hours of fishing. CPUE rose to 12 and 12.4 on November 3 and 4, respectively. By 18:00 on November 4 the red king crab fleet had harvested a projected 3,660,552 pounds and fishery performance suggested that the midpoint GHL of 7.0 million would be met by 18:00 hours on November 5. A fishery closure for 18:00 hours on November 5 was announced at 21:45 p.m. on November 4, 20 hours in advance of the closure. The fishery closure announcement was faxed to all processors and fisheries related organizations on the department's Westward Region fax distribution list and put out over single side band radio on frequency 4125 at 21:45 p.m. on November 4, 1997.

Catch projections based on inseason reports through the closure of the fishery indicated a total harvest of 9.6 million pounds and a fishery CPUE of 18.5 crabs. These figures would prove to be somewhat inflated as the postseason fish ticket information yielded an 8.8 million pound harvest total and a CPUE of 14 for the fishery. However, in the 20 hours following the closure announcement, the fleet landed approximately 3 million pounds of red king crab with a CPUE of slightly over 18 crabs. The Department did not expect landings of such magnitude in such a small time frame. The 1997 fishery CPUE of 14 was lower than the 16 observed in the 1996 fishery but higher than the 6 to 12 crabs seen in the four seasons from 1990 to 1993. Inseason CPUE in 1997 ranged from 8.5 crabs on November 2 to 18.5 crabs on November 5. Table 5-1 contains information on historical Bristol Bay fishery performance, as well as 1997 fishery performance.

A total of 90,510 pots were pulled during the 1997 Bristol Bay red king crab fishery. This is an increase over the 72,438 and 76,433 pots lifted in the 1996 and 1993 fisheries, respectively. Comparing the 90,510 pot pulls reported during the 1997 fishery to the 27,499 pots registered, it appears fishermen pulled their pots an average of 3.3 times over the course of the fishery. This compares to an average of 1.9 and 4.3 pulls for each pot registered for the 1996 and 1993 seasons, respectively. Fishermen reported acceptable levels of catch from pots that had soaked as little as 8 hours with very acceptable levels of catch being reported from gear that had soaked 12 hours. This is in contrast to reports from fishermen in 1996 who required 15 plus hours of soak time to effect acceptable catches. The past two seasons are in contrast to the 1993 season where most gear soaked an average of 24 hours before being retrieved.

The average weight of Bristol Bay red king crab harvested in 1997 was 6.7 pounds. This is the same as the 6.7 average weight observed in 1996 and greater than the 6.5 average weight observed in 1993. The 1997 average weight is among the highest recorded in the 1990's and is well above the averages seen in the 1970's and 80's. As was the case in 1996, a large percentage of crabs harvested during the 1997 fishery were post recruits and are thought to be responsible for the larger average weight.

Exvessel price of Bristol Bay red king crab for the 1997 season was $3.26 per pound; the second lowest price paid since 1986. Total fishery value for 1997 was $28.5 million. This compares to an exvessel value of $4.01 per pound and a fishery value of $33.6 million for the 1996 season (Table 5-2 and Figure 5-3).

Post-recruit crabs made up 72% of this year's harvest. The remaining 28% were made up of recruit size crab, with the majority being new shelled. The mean carapace length of crabs harvested in 1997 was 152 millimeters. (Table 5-3).

The majority of the 1997 harvest came from five statistical areas located in the center of the Bristol Bay Management Area between 162° and 164° West Longitude and 56° and 57° North Latitude (Table 5-4). This is the traditional area of harvest and the same general area where the majority of the harvest occurred in 1996 and 1993.

Under the provisions of 5 AAC 34.827 (c), vessels were permitted to leave baited gear on the grounds for up to 10 days following the closure announcement because less than 24 hours notice was given when the announcement was issued. The majority of vessels chose, however, to bring their full complement of gear to their point of delivery. One vessel experienced a major mechanical breakdown and was unable to make a landing. One vessel operator was cited for fishing within the Bristol Bay registration area within the 14 days prior to the fishery in that area according to 5 AAC 34.053 (1).

Table 5-5 contains information on the 1997 Bristol Bay red king crab fishery.

Status of Stocks

Based on analysis of the 1997 NMFS survey results, all components of the Bristol Bay red king crab stock increased from levels observed in 1996. This was expected for all segments of the stock except for legal males, which increased from an estimated 5.58 million in 1996 to 9.4 million animals in 1997. Large females (>89 mm carapace length) increased from 11.9 million in 1996 to 25.3 million crabs in 1997. Though these results are encouraging for future harvests, the increased abundances are not likely the result of recruitment into the stock. Rather, as the increased abundance is within the margin of error for the survey, estimation error in last year or this year's survey results is a more plausible explanation than the apparent doubling of large females.

Estimates based on the Length-Based Analysis (LBA) were more conservative than the survey analysis, but also showed increases in abundance for all segments of the stock from 1996 to 1997. LBA estimates of legal males increased from 5.26 million animals in 1996 to 5.90 in 1997. Large female abundance, according the LBA increased from 10.18 in 1996 to 23.7 million crabs in 1997.

This stock remains depressed and as a result will be managed based on a 10% exploitation rate of the mature male population.

KING CRAB STATISTICAL AREA Q
BERING SEA

Description of Area

The Bering Sea king crab registration Area Q, includes all waters north of Cape Sarichef, south of Point Hope, and east of the U.S.-Russian Convention Line of 1867; it excludes those waters of Bristol Bay, and south of 55°30' North latitude and west of 171° West longitude. Area Q is separated into the Pribilof and Northern Districts. The Pribilof District includes waters south of Cape Newenham. The Northern District incorporates all waters north of Cape Newenham, and is further divided into three sections. The Saint Matthew Island Section includes waters north of Cape Newenham and south of Cape Romanzof. The Norton Sound Section includes all waters north of Cape Romanzof, south of Cape Prince of Wales, and east of 168° West longitude. The Saint Lawrence Island Section encompasses all remaining waters of the district (Figure 5-4).

Historic Background

The king crab fishery in the Pribilof District began in 1973 when vessels targeted blue king crabs in the vicinity of St. George and St. Paul Islands, the two largest in the Pribilof Islands group. The first reported catch in this area was 1.2 million pounds taken by eight vessels between July and October. Crabs averaged 7.3 pounds, and catch per unit of effort (CPUE) was 26 crabs per pot. Average weight remained relatively constant through the 1987/88 season. The CPUE of 26 crabs per pot has never again been attained by the fleet; an average of 17 crabs per pot for the following

three seasons dropped to less than eight crabs per pot for the 1977/78 through 1982/83 seasons. Three crabs or less per pot were observed for the 1983/84 season and the five subsequent seasons. Due to low population estimates in this district, the blue king crab fishery was closed beginning with the 1988/89 season (Table 5-6 and Figure 5-5).

The 1993 National Marine Fisheries Service (NMFS) summer trawl survey of the Bering Sea indicated a marked increase in the abundance of red king crabs around the Pribilof Islands. Blue king crabs have historically been the dominant species of king crab in this area. While no threshold level of abundance was established for Pribilof red king crabs, survey results indicated a harvestable surplus did exist. As a result, a red king crab fishery was opened for the first time in the Pribilof district in September of 1993 with a guideline harvest level (GHL) of 3.4 million pounds. Due to the continued depressed nature of blue king crab stocks in this area, no commercial fishery for blue king crabs was permitted in 1993. In 1994, the Pribilof District was open only to the commercial harvest of red king crabs. In 1995 and 1996, slight increases in blue king crab abundance and a continued harvestable surplus of red king crabs resulted in a combined species GHL. Table 5-6 summarizes commercial red and blue king crab landings from the Pribilof District from 1973 to present.

In the St. Matthew Section of the Northern District, king crab stock abundance information from the NMFS survey of indicated a harvestable surplus of blue king crab ranging from 1.7 to 8.0 million pounds between 1983 and 1996. The midpoint GHL for the 1994-97 period was 3.0, 2.4, 4.3 and 5.0 million pound, respectively. The commercial harvest in those years was 3.8, 3.2, 3.1 and 4.6 million pounds, respectively (Table 5-7).

Regulation changes adopted by the Alaska Board of Fisheries (BOF) in 1993 moved the opening date of the St. Matthew king crab fishery from September 1 to September 15, concurrent to the king crab fishery in the Pribilof District. This action was taken to improve effort distribution between the Pribilof and St. Matthew fisheries, thereby reducing the number of vessels participating in each fishery. Also at this time, regulations were adopted which set pot limits, based on overall length, on all vessels fishing king crabs in the Bering Sea. In the Northern District of the Bering Sea, which includes the St. Matthew Island Section, vessels over 125 feet were limited to 75 pots while those equal to or less than 125 feet were allowed a maximum of 60 pots. In the Pribilof District, pot limits were established at 50 and 40 for vessels greater than 125 feet and 125 feet and less in overall length, respectively.

1997 Fishery - Pribilof District

For the third consecutive season, the 1997 king crab fishery in the Pribilof District opened to the commercial harvest of both red and blue king crabs. Results from the 1997 NMFS trawl survey of the Bering Sea, conducted in June and July, indicated a harvestable surplus of 1.3 million pounds of blue king crabs and 2.35 million pounds of red king crab in the Pribilof area. Due too poorer than expected fishery performance since the area reopened in 1993, a conservative 1.5 million pound, combined species GHL was established for 1997 season. This combined species (red and blue king crabs) GHL was a 16% reduction from the 1996 combined species harvest guideline of 1.8 million pounds.

A total of 54 catcher-only vessels purchased 2,230 buoy tags from ADF&G offices in Dutch Harbor and Kodiak for the 1997 Pribilof red and blue king crab season. One vessel which had purchased tags sank prior to the season closure and subsequently, did not make a landing. Additional six vessels, which had participated in the St. Matthew blue king crab fishery, purchased tags and entered the fishery in the final week of the Pribilof season. Two floating processors, which had participated in the St. Matthew blue king fishery, registered and purchased crab in the vicinity of St. Paul at the end of the Pribilof season.

ADF&G personnel stationed in Akutan, King Cove, Dutch Harbor and St. Paul offered tank inspections, beginning at 12:00 noon on September 14. Weather conditions in the Pribilofs allowed the majority of the fleet, 32 vessels, to receive tank inspections in St. Paul. Fourteen vessels received tank inspections in Dutch Harbor, and one vessel each in King Cove and Akutan.

The total number of participants in the 1997 Pribilof fishery, 54 vessels, was a down from the 66, 127, 104 and 112 vessels which participated in the 1993-1996 Pribilof king crab fisheries, respectively. The significant decrease in vessel effort in 1996 and 1997 is presumably due to smaller Pribilof king crab quotas than previous years and the larger 1996 and 1997 quotas in the concurrent St. Matthew fishery. In 1997 a total of 2,270 pots were registered for the Pribilof area. This was a decrease from the 2,730, 5,400, 4,675 and 4,860 pots registered for the preceding four seasons (Table 5-8).

The 1997 Pribilof red and blue king crab fishery opened concurrent to the St. Matthew blue king crab fishery on September 15 at 12:00 noon. Similar to the 1995 and 1996 seasons, management of the 1997 fishery were based on daily inseason vessel catch reports. This is in contrast to the 1994 season, which was managed on prior year's fishery performance. A total of 31 vessels (65% of the fleet) signed up to report via single side band radio (SSB) or marine satellite communications (MCI). This compares to 30 vessels (48% of the fleet) which signed up to report during the 1996 season. Catch projections based on inseason reports indicated a total of 1.4 million pounds of red and blue king crabs combined would be harvested by 12:00 noon on September 28. Based on these projections, 24 hour notice was given and the fishery was closed after 14 days of fishing at 12:00 noon on September 29. Continuous gale force winds contributed to the 1997 fishery's length as many vessels were unable to sustain fishing effort during the unfavorable weather. The 1997 fishery was the longest fishery since the season reopened in 1993. The actual harvest of 756,818 pounds of red king crabs and 512,374 pounds of blue king crabs, a combined harvest of 1.3 million pounds, was below the mid-point 1.5 million pound harvest guideline, but well within the GHL range (Tables 5-6 and 5-8).

The 1997 harvest, from reported 30,400 pot lifts (red and blue king crabs combined), came predominately from the seven statistical areas directly surrounding the Pribilof Islands. This is similar to the areas fished in the 1994 through 1996 seasons. (Tables 5-9 and 5-10).

A total of nine shore based processors, and two floating processors purchased crabs during the 1997 Pribilof area king crab fishery. The 1997 exvessel price of $3.09 per pound for red king crabs and $2.82 per pound for blue king crabs was higher than the price paid during the 1996 season, where exvessel price was the lowest price paid in 10 years. The 1997 exvessel price of Pribilof blue king crabs was $.61 higher than the price paid for St. Matthew blue king crabs, likely due to the larger

average size of Pribilof blue king crabs. Total exvessel value of the 1997 Pribilof blue king crab fishery was $1.4 million. Total exvessel value of the 1997 Pribilof red king crab fishery was $2.3 million. Total fishery value (both red and blue king crabs combined) was $3.7 million. This compares to a total fishery value of $0.6 million in 1996, $3 million in 1995, $8.6 million in 1994 and $13 million in 1993 (Table 5-8 and Figure 5-6).

A total of 110 landings contained red king crabs and comprised the 756,818 pound red king crab harvest total for the 1997 season. Average weight of red king crabs harvested in 1997 was 8.4 pounds, significantly higher than the 7.9 pound average observed in the 1996 fishery. The CPUE for red king crabs was up from less than one crab in 1996 to three in 1997 (Table 5-6).

A total of 105 landings contained blue king crabs and comprised the 512,374 pound harvest total of blue king crabs for the 1997 season. Average weight of blue king crabs was 7.5 pounds, only slightly higher than the 7.3 pound average observed during the 1996 fishery. A CPUE of two was a decrease from the 1996 season CPUE of four (Table 5-6).

Stock Status

Blue king crabs in the Pribilof District are in a low population state and experienced declines in legal males, pre-recruits, and large females in 1997's survey population estimates. Female abundance is considered imprecise due to inshore, rocky substrate preferred by females and poorly sampled by trawling. Red king crabs currently indicate long term decline through both survey and fishery data. Localized, high concentrations of red king crabs were not apparent during the 1997 survey, though in years past this had occurred frequently. Both red and blue king crabs in this area are managed at or below the GHL midpoint.

1997 Fishery - St. Matthew Island Section (Northern District)

Based on the 1997 NMFS summer trawl survey of the Bering Sea, a midpoint GHL of 5.0 million pounds was set for the 1997 St. Matthew blue king crab fishery (Figure 5-7). A total of 117 vessels, including one catcher-processor, purchased buoy tags from ADF&G offices in Dutch Harbor and Kodiak. This was similar to the 122 vessels, which participated in the 1996 fishery (Table 5-7).

For the 1997 fishery, a total of 78 vessels were tank inspected at Dutch Harbor, 28 at King Cove, 6 at Akutan, and 5 at St. Paul. This is similar to the 1996 season when 75 vessels were inspected in Dutch Harbor, 26 in King Cove, 12 in Akutan and 9 at St. Paul. In all locations except St. Paul harbor, department staff provided pre-tank and gear inspections two to five days prior to the regular tank inspection window in an attempt to expedite the tank inspection process. This "Quick Registration" process allows vessels to obtain a tank and gear inspection prior to the regular inspection, and then proceed to designated signing locations established by ADF&G for registration validation at the start of the regular inspection period. Many vessels did obtain a pre-inspection on their gear and tanks prior to the 1997 season, but few proceeded to Quick Registration signing

locations. Most vessel operators indicated they did not take advantage of the Quick Registration process because they needed less than 72 hours to reach the fishing grounds at St. Matthew Island.

The 117 vessels, which registered for the 1997 season remains well below the 174 vessels that, registered for the 1992 fishery (Table 5-11). A total of 7,650 pots were registered for the 1997 St. Matthew fishery, compared to an average of 6,390 pots for the period from 1993 through 1996 (Table 5-11).

The 1997 fishery opened at 12:00 noon on September 15, concurrent to the Pribilof District king crab fishery. The 1997 fishery was managed on daily in-season vessel catch reports. A total of 68 vessels (58% of the fleet) signed up to report via single side band radio (SSB) and marine satellite communications (MCI). This is an increase from the 34% of the fleet which signed up to report during the 1996 fishery. Total number of vessels which actually reported during the 1997 fishery reached a maximum of 46 (39% of the fleet) on September 21 and a minimum of 10 on September 23, the day following the closure.

Daily vessel catch reports indicated that catches declined from a CPUE of 17.7 crabs on September 16 to 9.5 crabs at the time of the closure announcement at 12:00 noon on September 21. Catch projections based on performance of the fleet at the time of the closure indicated the total harvest would be 5.1 million pounds. Unexpected declines in CPUE, which fell to 4.9 crabs during the final day of the fishery, lowered the projected season total to 4.8 million pounds. Overall CPUE for the 1997 fishery was 12 crabs. This compares to overall fishery CPUE of 7, 14 and 14 crabs per pot pull for the prior three seasons. At seven days, the 1997 fishery was one day shorter than in 1996, which was the longest since 1983 (Tables 5-11 and 5-12).

Average weight of St. Matthew blue king crabs for the 1997 season was 4.9 pounds. This is higher than the 4.7 pound average weight recorded for the 1996 fishery and the heaviest on record since 1985 (Tables 5-7 and 5-13).

The total 1997 harvest of 4,649,660 pounds came predominately from two statistical areas south of St. Matthew Island (Table 5-13) and is similar to the location of the 1992-96 harvests. However, unlike previous years, additional landings were reported from a wider area due to lower catch rates in the traditional fishing area. This situation also occurred in 1996 and resulted in more fishing in areas not normally explored.

A total of 81,117 pots were pulled during the 1997 fishery. This is less than the 91,205 pots pulled during the 1996 fishery, but greater than any of the previous seasons dating back to 1983 (Tables 5-7 and 5-11).

A total of eight shore based processors, three floating processors, and one independent buyer purchased crabs during the 1997 St. Matthew fishery. The 1997 exvessel price for St. Matthew blue king crabs was $2.21 per pound, nearly identical to the $ 2.20 price paid in 1996. Discounting the 1996 season, the price paid per pound in 1997 was the lowest since 1985 when the fishermen were given $1.60 per pound (Table 5-11 and 5-12). The total exvessel value of the 1997 St. Matthew blue king crab fishery was $9.8 million, approximately $3.1 million greater than the value of the 1996 season. (Tables 5-11 and Figure 5-8).

Only one catcher-processor participated in the 1997 St. Matthew blue king crab fishery. This is a reduction from three catcher-processors that participated in the 1996 season and well below the 8 and 9 which participated in the 1992 and 1991 fisheries, respectively (Table 5-14). Information on the number of pots pulled and average number of crab harvested per pot for catcher-processors is confidential since fewer than three vessels participating in the 1997 fishery.

Stock Status

Blue king crabs in the St. Matthew Island area appear to be above established threshold levels. Given the rocky substrate of the St. Matthew survey area, annual abundance estimates may be affected by the availability of the stock accessible to trawling. (Otto 1997) The 1997 NMFS summer survey estimated legal male abundance at 4.06 million crabs. This resulted in a GHL midpoint of 5.0 million pounds. This is an increase from the 4.3 million pound GHL midpoint set for the 1996 season and the highest GHL on record since an 8.0 million pound GHL established for the 1983 season (Table 5-15). The increase in harvestable surplus observed since 1995 is encouraging and indicates that this stock appears to be in stable condition.

BERING SEA GOLDEN KING CRAB

Introduction

Commercial harvest of Bering Sea golden or brown king crabs, *Lithodes aequispinus,* is allowed under conditions of a permit issued by the commissioner of ADF&G as provided in 5 AAC 34.910. (It should be noted that *L. aequispinus* is often referred to as brown king crab and appears as such in the Alaska Department of Fish and Game's Commercial Fishing Regulations.) The first recorded commercial golden king crab harvest in the Bering Sea was in 1982 in the Pribilof District and in 1983 in the Saint Matthew Island Section of the Northern District (Tables 5-16 and 5-17).

At the spring 1993 Board of Fisheries (BOF) meeting, a pot limit was imposed on all vessels fishing king crab in the Bering Sea. Vessels in the Pribilof District were allowed a maximum of 50 pots, while vessels in the Saint Matthew Island Section were allowed a maximum of 75 pots.

1997 Fishery - Pribilof District

Eight vessels registered for the Pribilof District golden king crab fishery in 1997. Seven vessels made 23 landings for a total catch of 179,249 pounds. This compares to six vessels and 32 landings for a total catch of 329,009 pounds in 1996 and 7 vessels and 22 landings for a harvest of 341,700 pounds in 1995. From 1995 through 1997, the catch per unit effort (CPUE) has remained constant at nine crabs per pot. The average weight of crabs landed in the 1997 fishery was 4.1 pounds per crab. In 1996 the average weight of golden king crabs was 3.6 pounds. In 1994 and 1995 brown king crabs averaged 4.1 pounds (Table 5-16). Table 5-18 contains historic

economic performance of the Pribilof District of the Bering Sea golden king crab fishery from 1991 to 1997. The 1997 Pribilof District golden king crab harvest came predominantly from three statistical areas south of St. George Island (Table 5-19).

1997 Fishery - Saint Matthew Island Section of the Northern District

No vessels registered for the Saint Matthew Island Section golden king crab fishery in 1997. Historic catch effort and economic information is contained in Tables 5-17 and 5-20.

Stock Status

There are no annual abundance estimates made for Bering Sea golden king crabs. High catches in the early years of the fishery declined as the virgin stock was exploited and recruitment was unable to sustain the fishery at initial harvest levels. Recent increases in Pribilof District harvest may only be due may only be due to increased effort as additional vessels entered this fishery.

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 ACC 34.082. Fishing effort for scarlet king crab in the Bering Sea has primarily been as bycatch in the *Chionoecetes tanneri* Tanner crab and brown king crab fisheries in that area. Although vessels have been registering for scarlet king crab since 1992, no commercial landings occurred prior to 1995. Only two vessels participated in 1996, and subsequently, all catch information is confidential.

1997 Fishery

No vessels registered to harvest scarlet king crabs in the Bering Sea during 1997. Table 5-21 contains information on historic Bering Sea scarlet king crab fishery and economic performance.

Stock Status

No annual abundance estimates are available for scarlet king crab stocks. Onboard observers have been required on most vessels targeting deep water crab species since 1994, collecting information on size, sex, and species composition of the retained and non-retained scarlet king crab catch. This information will be used to help develop management measures for these stocks in the future.

BERING SEA DISTRICT TANNER CRAB

Introduction

The Bering Sea District of Statistical Area J includes all waters of the Bering Sea north of the latitude of Cape Sarichef at 54°36' North latitude and east of the U.S.-Russian Convention Line of 1867. This district is divided into the Eastern and Western Subdistricts by a line at 173° West Longitude. The Eastern subdistrict is further divided at the latitude of Cape Romanzof and 168° West longitude into the Norton Sound section to the east and the General Section to the west (Figure 5-9). The two species of Tanner crabs most commercially harvested in the Bering Sea District are *Chionoecetes bairdi* and *C. opilio.*

Chionoecetes bairdi Tanner crab

Historic Background

The first reported *C. bairdi* or Tanner crab catches were made in 1968, incidental to the king crab fishery in Bristol Bay. In 1974, a directed Tanner crab fishery began. Harvest in the directed fishery peaked at an all time high of 66.6 million pounds during the 1977/78 season. In the fall of 1978, the National Marine Fisheries Service (NMFS) predicted sharp declines in Tanner crab abundance beginning with the 1978/79 fishing season. Tanner crab stocks declined as anticipated, and by 1984 the commercial harvest fell to 1.2 million pounds. Further stock decline lead to a fishery closure during the 1986 and 1987 seasons (Table 22).

In an attempt to slow the harvest rate to allow sufficient time for in-season management of Bering Sea king and Tanner crab fisheries, the Alaska Board of Fisheries passed regulations in the spring of 1992 which set a 250 pot limit on all vessels fishing the Bristol Bay king and Bering Sea Tanner crab fisheries. On November 30, the National Marine Fisheries Service (NMFS) repealed these pot limit regulations. This action was due to perceived inconsistencies with provisions of the Bering Sea/Aleutian Island king and Tanner crab Federal Management Plan (FMP) which mandated application of pot limits in a nondiscriminatory manner. In the spring of 1993, the Alaska Board of Fisheries passed new regulations, which set pot limits based on overall vessel length. Vessels in excess of 125 feet were limited to maximum of 250 pots. Vessels 125 feet and under were allowed a maximum of 200 pots. These pot limits were, and continue to be, implemented through a buoy tag program from the Dutch Harbor and Kodiak Alaska Department of Fish and Game (ADF&G) offices.

Also during the Spring 1993 Board of Fisheries meeting, regulations were adopted which opened and closed that portion of the Bering Sea east of 168° West longitude to fishing for Tanner crabs concurrent to the regulatory opening and emergency order closure of the Area T red king crab fishery. The Board of Fisheries mandated a reopening of the Bering Sea between 163° and 173° West longitude for the directed Tanner crabs fishery 10 days following the closure of Area T king crab fishery. In the event the Bristol Bay red king crab fishery failed to open, that portion of the

Eastern Bering Sea west of 163° West Longitude would be allowed to open on November 1 to a directed fishery for Tanner crabs. These actions were based on observer bycatch data and historic harvest patterns which indicated the majority of female king crab bycatch in the Bristol Bay king and Bering Sea Tanner crab fisheries came from waters east of 163° West longitude.

During the 1994 and 1995 seasons the Bristol Bay red king crab fishery failed to open due to the depressed nature of that stock. As a result, the Tanner crab fishery opened on November 1 in that portion of the Eastern Bering Sea west of 163° West Longitude. In 1994, the GHL for Tanner crab in that portion of the Eastern Subdistrict open to fishing, was 7.5 million pounds. The total Tanner crab harvest in 1994 was 7.6 million pounds. In 1995, the Tanner crab GHL in the Eastern Subdistrict, west of 163° west Longitude, was 5.5 million pounds. The total commercial Tanner crab harvest in that year was 4.2 million pounds (Table 22). The 1996 fishery opened November 1, concurrent with the Bristol Bay red king crab fishery. During the red king crab fishery, 994,776 pounds of Tanner crab was harvested as incidental bycatch. The 1996 directed fishery for Tanner crabs opened in that portion of the Eastern Subdistrict west of 163° West Longitude, ten days following the closure of red king crab in Bristol Bay and had an established GHL of 6.2 million pounds. The Western Subdistrict was not opened in 1996 due to lack of legal Tanner crabs encountered in the 1996 NMFS survey in that area. Poor fishery performance resulted in the Eastern Subdistrict closure with only 811,301 pounds harvested, well short of the 6.2 million pounds GHL.

1997 Fishery

The Bering Sea *Chionoecetes bairdi* Tanner crab fishery did not open in 1997 due to low abundance and poor fishery performance in the 1996 fishery. Tables 5-22 through 5-25 contain information on historic fishery catch and economic performances.

Stock Status

The 1997 survey abundance estimates for large males (≥135mm carapace width) is the second lowest in the history of the survey. While the estimate of large females is the lowest on record for the survey. Legal males, pre-recruits, and large females experienced a 63%, 61%, and 64% decrease, respectively, from the 1996 survey abundance estimates. Most legal males encountered were in the Eastern District, with the highest abundance in central Bristol Bay. The cohort which began recruiting into the fishery in 1988-1992 has declined as a result of natural mortality and fishery removals. Ninety five percent of legal males encountered during the 1997 survey were old shelled and not expected to molt again in their life spans. Low abundance of males in the 50-115mm carapace width suggests that recruitment into the fishery will continue to be poor for several years. Given these two underlying factors, it is foreseeable that the Bering Sea Tanner crab population will continue to decline for several years. The stock is considered very depressed and will be managed conservatively.

Chionoecetes opilio TANNER CRAB

Historic Background

The first commercial landings of *Chionoecetes opilio* Tanner crab, or snow crab, were made during 1977 incidental to *C. bairdi* Tanner crab. Reduction in *C. bairdi* harvests resulted in increased *C. opilio* harvests through the 1981 fishery (Figure 5-10). Harvest of snow crab then fell from 52.7 million pounds in 1981 to 26.1 million by 1983. In 1984 harvest increased slightly, and the 1985 fishery produced 66 million pounds. The harvest was 97.9 million pounds in 1986, and it continued to increase annually to a high of 328.6 million pounds in 1991. Although stocks began to decline, the harvest of *C. opilio* remained over 100 million pounds through the 1994 season. In 1996 the harvest fell to 65.7 million pounds, the lowest in the preceding eleven seasons.

1997 Fishery

The 1997 Bering Sea *C. opilio* fishery opened by regulation at 12:00 noon, January 15. A total of 226 vessels, including 12 catcher-processors participated. Ten floating processors registered and processed crab on the fishing grounds. The total harvest was 119.4 million pounds (including deadloss) from 1,126 deliveries (Table 5-26). Management of the 1997 fishery was based on weekly processor reports, and inseason observer and port sampler data. The fishery closed by emergency order at 12:00 noon on March 21 (Table 5-27). A total of 753,636 pots were reported pulled during the fishery. A summary of harvest statistics for the 1977 through 1997 seasons is shown in Table 5-26 and Figure 5-11.

A preseason midpoint guideline harvest level (GHL) of 117 million pounds was established (Table 5-28). This GHL was based on male crab four inches and larger in carapace width (CW), and was divided between the Eastern and Western Subdistricts at 102 and 15 million pounds, respectively. The 1997 GHL was more than twice the 1996 GHL midpoint of 50.7 million pounds (29.5 million pounds from the Eastern Subdistrict and 21.2 million pounds from the Western Subdistrict). The 1997 harvest of 119.4 million pounds exceeded the preseason GHL midpoint by two percent.

Tank inspections for the 1997 season, conducted by ADF&G staff, began at 12:00 noon on January 12 in Dutch Harbor and King Cove, and at 12:00 noon on January 14 in Akutan and St. Paul. The majority of the fleet, 144 vessels, received inspections in Dutch Harbor. There were 49 tank inspections in King Cove, 18 in St. Paul and 17 in Akutan (228 vessels were inspected, 226 vessels participated in the fishery).

The 1997 fishery started slowly due to price dispute between shore processors and fishermen. This dispute kept most catcher-only vessels in port until January 27. The majority of the catcher-only vessels did not begin to set gear until January 31. Catcher-processors accomplished most of the initial fishery harvest, with a total of 2.3 million pounds taken by the end of the second weekly reporting period (January 26).

Weather and sea conditions during the 1997 season were not too severe; little fishing time was lost due to inclement weather. The fleet was able to exploit most productive grounds. This year the

majority of the crab were encountered in the Eastern Subdistrict, mainly to the southeast and west of the Pribilof Islands, and fishing effort was concentrated on this segment of the population (Table 5-29).

Vessels fishing north of the Pribilof Islands and in the Western Subdistrict experienced lower catch rates. In the Western Subdistrict, catches were predominantly from the traditional fishing areas along the 100 fathom contour in the eastern portion of that area. The reduction in ice cover during the 1997 season resulted in additional landings from areas west of St. Matthew Island, as far north as 60° 30' North latitude population (Table 5-29).

During the 1997 fishery the majority of crab harvested east of the Pribilof Islands were in a new-shell condition. Samples collected during the 1997 fishery averaged 96.5% new-shell crab. This compares to 75.8%, 89.6% and 93.1% new-shell crab observed in samples collected during the prior three seasons (Table 5-26). Observer and port sampler data document a higher percentage of "dirty" (skip molt) crab from north of the Pribilof Islands (6.2%) and in the Western Subdistrict (5.6%) as compared to south and east of the islands (3.3%).

The weekly harvest in the Eastern Subdistrict ranged from 1.3 million pounds taken in the first full week of fishing effort (during the price dispute), to a peak of 22.9 million pounds during the fifth week of the fishery (Figure 5-12). In the Western Subdistrict, catch ranged from 323 thousand pounds for the week ending January 26 (the first full week) to 3.8 million pounds for the last week of the fishery ending March 21. Total harvests from the Eastern and Western Subdistricts were 105.6 and 13.9 million pounds, respectively (Table 5-30).

Catch per unit of effort (CPUE), defined as catch per pot pull, in the Eastern Subdistrict ranged from 57 to 288 legal size crabs per pot (Figure 5-12). The peak CPUE was during the week ending February 2, just after conclusion of the price dispute when only catcher-processors were fishing. In the Western Subdistrict, CPUE ranged from 57 to 283 and also peaked the week ending February 2. The overall CPUE for both areas averaged 133 crabs per pot (Table 5-30). This is a significant increase in overall CPUE from the 102 crabs per pot observed during the 1996 fishery.

Analysis of observer and port sampling data, and fish ticket data shows the average weight for crabs landed during the 1997 fishery was 1.2 pounds (Table 5-26). This is the same as for the last two seasons, but a decline from the overall average weight of 1.3 pounds since 1985. The percentage of legal crab under four inches was 21.1% in 1997, down slightly from 23.3% observed in the 1996 fishery. Prior to this season the percentage of legal crab under four inches in the catch had steadily increased by four to five percent per year over the past several years.

Exvessel price per pound of *C. opilio* at the conclusion of the strike was $0.75 on the grounds and in St. Paul, and $0.90 in Dutch Harbor, Akutan and King Cove. The price quickly went to $0.65 on the grounds and $0.75 at shore-side processors in Dutch Harbor, Akutan and King Cove. During the last week of February processors in the Pribilof Islands raised their price to $0.75, matching the price offered by processors elsewhere. By the end of the season the price per pound averaged $0.79. The 1997 harvest of 117.1 million pounds (live crab weight) was worth an estimated $92.5 million. This compares to an exvessel price of $1.33 per pound and total fishery value of $85.6 million for the 1996 fishery (Table 5-28).

In addition to the commercial catch, 461 pounds of *C. opilio* were harvested in March and October of 1997, under special charter, to be used in observer training practicums. No *C. opilio* were harvested in test fish operations during 1997.

C. opilio Stock Status

Data from the 1996 NMFS Bering Sea trawl survey, presented in the NMFS Alaska Fisheries Science Center Processed Report 97-02, indicated total abundance of large males (over four inches CW) was 171.6 million crabs, a major increase (149%) over the 68.8 million large male crabs estimated from the 1995 survey. However, small male (78-101 mm) and large female ($\geq$ 50 mm) crabs decreased by 34% and 43%, respectively, from the same survey estimates. According to the 1996 survey, the majority (87%) of large male crabs was located east of the 173° West Longitude, the boundary line between the Eastern and Western Subdistricts. Recruitment for the 1997 fishery apparently was from the growth and southward migration of a population of small males, which was previously in high concentration at the northern limit of the survey area. Based on survey results, NMFS biologists indicate stable abundance of large males is likely next year, but a lack of very small male crabs encountered in the survey indicate a possible decline in abundance in the future.

Chionoecetes Tanneri TANNER CRAB

Historic Background

The first reported landings of *Chionoecetes tanneri* or grooved Tanner crabs from the Bering Sea occurred in 1988 after the Alaska Board of Fisheries (BOF) established a special permit season for deepwater Tanner crabs during their spring meeting. Also in 1993, the Department restricted the harvest to male crabs 5 inches or greater in carapace width. Differential pot limits based on vessel size, enacted by the BOF in the Spring of 1993, were not applied to vessels fishing for deepwater Tanner crab in the Bering Sea until 1994.

To obtain biological information on *C. tanneri* crabs, the Department implemented 100% onboard observer coverage in 1994, as allowed by the permit provisions in 5 AAC 35.082 (5 AAC 35.511 as of October 1996). Effort and landings decreased when Tanner crab pot limits for the Bering Sea were applied to vessels fishing for deepwater Tanner crab.

At the March 1995, meeting the BOF determined that pot limits did not apply to the deepwater permit fisheries of the Westward Region. Effort increased significantly to a harvest of over one million pounds and the value of the fishery exceeded $1.3 million in 1995.

In 1997, the Department set guideline harvest levels (GHLs) derived from previous seasons catch information from areas where extensive fishing had occurred. Additionally, due to industry concerns about viability of undersized and female deepwater crabs discarded at sea, the Department began to require a minimum of two escape rings per pot with a minimum ring diameter of 4.5 inches. The Bering Sea, along with the Alaska Peninsula and Eastern Aleutians,

were among the areas where, historically, effort had been extensive. A GHL of 200,000 pounds was established for each of these areas of heavy effort with GHL's of 100,000 pounds to allow for exploration in the Kodiak and Western Aleutian regions.

1997 Fishery

No vessels registered to fish *C. tanneri* in the Bering Sea District in 1997. Table 5-31 contains information on historical fishery and economic performance for the Bering Sea *C. tanneri* fishery.

Stock Status

No stock assessment surveys are conducted for *Chionoecetes tanneri* crabs in the Bering Sea. Consequently no population estimates are available. Onboard observers have been required on all vessels targeting *C. tanneri* since 1994. This measure has provided information on the size, sex, and species composition of the retained and non-retained catch which was used in the development of the management strategy put into place in 1997 by the Department for this deepwater species.

Chionoecetes angulatus TANNER CRAB

Historic Background

Chionoecetes angulatus or triangle Tanner crab in the Bering Sea have been harvested in the past as bycatch in the *C. tanneri* or grooved Tanner crab fishery. Vessel operators have verbally reported retention of *C. angulatus* before 1994. During 1994 an incidental catch of this species was documented by onboard observer sample data. However, fish tickets recorded prior to 1995 do not show a commercial harvest. In 1995 *C. angulatus* was the target species of two deliveries. The following year, 1996, less than three vessels delivered *C. angulatus* as bycatch.

1997 Fishery

No vessels registered for *c. angulatus* in 1997 in the Bering Sea District. Table 5-32 contains information on historical catch and economic performance in the Bering Sea District.

Stock Status

There are no population estimates for Bering Sea *Chionoecetes angulatus*. Limited information has been collected by onboard observers required on all vessels participating under the terms of the permit required for this and other deepwater crab fisheries. The information collected will be used to help develop management measures needed for this deepwater species.

BERING SEA KOREAN HAIR CRAB

Area Description

The Bering Sea hair crab registration district includes all waters north of 54° 36' North latitude, south of 58° 39' North latitude, and east of the U.S.-Russian Convention Line of 1867 (Figure 5-13). This region is divided into the Pribilof Islands Area (west of 168° West longitude), and the Bristol Bay Area (east of 168° West longitude).

Historic Background

Korean hair crab, *Erimacrus isenbeckii*, sold commercially as "kegani" by the Japanese, were fished commercially for the first time by the U.S. fleet in 1978/79 (Figure 5-14). Most fishing effort has been concentrated in waters adjacent to the Pribilof Islands. When fishermen and processors first expressed interest in hair crab, the season was opened by emergency order and ran concurrently with the Bering Sea Tanner crab fishery. During the 1980 Board of Fisheries meeting, a year long season was established under the terms of a permit issued by the Alaska Department of Fish and Game. Between 1979 and 1991, the majority of hair crab landed were reported as incidental catch in the Bering Sea Tanner crab fisheries. Beginning with the 1993 Bering Sea hair crab fishery, terms of the special permit issued by the commissioner of ADF&G included 100% observer coverage on all hair crab vessels for the purposes of collecting data on the targeted species and to monitor bycatch. At their Spring 1994 meeting in Anchorage, the Alaska Board of Fisheries defined hair crab pots as a pot with a rigid tunnel opening located in the top of the pot, with a tunnel perimeter not exceeding 26 inches, and a base that does not exceed 48 inches in any one direction.

As a result of a steady increase in the number of vessels participating in this fishery, the Alaska Legislature, during it's 1996 session, passed House Bill 538 authorizing the Commercial Fisheries 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 (1992-1995). Licenses were issued to 23 vessels for those waters beyond 5 nautical miles of St. George and St. Paul Islands (Pribilof Islands). Also included in this legislation were provisions which allow any vessel 58 feet and under to fish within 5 nautical miles of St. George and St. Paul Islands proper. While House Bill 538 specifically requires 100% observer coverage on all vessels participating in the Bering Sea hair crab fishery, the Alaska Department of Fish and Game (ADF&G) exempted vessels under 44 feet in length from mandatory observer coverage for observer safety considerations.

1997 Fishery

The 1997 National Marine Fisheries Service (NMFS) summer trawl survey of the Bering Sea indicated the abundance of hair crabs in the Bering Sea decreased 11% from levels observed in 1996. Estimates of abundance are considered somewhat imprecise, as these crabs are known to

bury themselves in the substrate and live in rocky in-shore areas not well suited to trawling. Based on the 1997 survey, the abundance of large (3.25" and larger) male hair crabs was estimated at 4.34 million crabs. The 1996 survey showed a large male hair crab abundance estimate of 4.90 million crabs while the 1995 survey estimate was 6.54 million large male crabs.

Calculations of total allowable harvest, based on an exploitation rate of 20% and an average weight of 1.4 pounds per crab, yielded an 800,000 pound guideline harvest level (GHL) for the 1997 season. This is a reduction from the 1.1, 1.8 and 0.9 million pound harvest guidelines established for the 1994, 1995 and 1996 seasons respectively.

Based on the 1997 survey, 62% (2.69 million) of the large male crabs were once again observed in the vicinity of the Pribilof Islands west of 168° West longitude. Very few large male crab were observed in survey tows conducted in the Bristol Bay area east of 168° West Longitude. As a result, fishing was once again confined to areas west of 168° West Longitude. A small increase in legal male abundance was observed in that portion of the Bering Sea north of the Pribilof Islands. To provide vessels an opportunity to explore this area of increased abundance, the area normally open to fishing was extended north from Cape Newenham, at 58°39' North latitude, to 60° North latitude (Figure 5-13).

The 1997 Bering Sea Korean hair crab fishery opened at 12:00 noon on November 1. No vessels registered for the hair crab fishery at that time. Instead, all moratorium qualified hair crab vessels chose to first participate in the concurrent Bristol Bay red king crab fishery. Within a week of the closure of Bristol Bay, 16 vessels registered and participated in the directed hair crab fishery. The 1997 fishery closed by emergency order at 22:00 hrs or 10:00 p.m. on November 25, and was confined to that portion of the Bering Sea south of 60° North Latitude and west of 168° West Longitude. The total harvest from 52 landings was 668,096 pounds (Figure 5-14), approximately 131,904 pounds short of the preseason GHL. From the total harvest 17,522 pounds were reported as deadloss (Table 5-33).

The 16 vessels that participated in 1997 were in excess of 44 feet and therefore carried an observer. Observers were required to report, via single side band radio, to ADF&G in Dutch Harbor each Monday, Wednesday and Friday until November 21. Inseason harvest projections then indicated that 600,714 pounds had been harvested. Shellfish observers were then requested to send their catch information on a daily basis thereby allowing ADF&G staff to more closely monitor harvest rates. Observers reported the number of crabs retained, pots pulled, number of pots sampled, and percentage of legal-sized crabs discarded from their bycatch samples.

Based on observer data, catch per unit of effort (CPUE) for the first week of fishing was 3.52 crabs per pot. During the second week of fishing CPUE decreased to 2.00 crabs per pot. After the closure announcement had been issued on November 22, daily CPUE dropped to a fishery low of 0.66 on November 23. This marked decreased in CPUE was due largely to inclement weather that prohibited most vessels from operating efficiently. CPUE climbed back to 1.73 on the November 25 closure, but never did return to the fishery's average CPUE of 1.93 (Table 5-33). In 1996, approximately 50% of legal sized male crabs were covered with barnacles and thus, discarded at sea due to poor appearance and subsequent poor marketability. In 1997 only 8% of legal sized crab were discarded due to poor shell appearance.

Preliminary harvest reports from processors indicated that in the first week of the 1997 season 219,704 pounds of hair crabs were landed from 11 deliveries. In the second week of fishing, 15 landings yielded 251,074 pounds. Eighteen landings in the third and final week resulted in a 191,402 pound harvest. A total of 211,970 pots were pulled during the 1997 season, compared to a total of 410,548 pots pulled in the 1996 fishery (Table 5-33).

Weight of crabs retained during the 1997 fishery averaged 1.6 pounds and, unlike crabs seen in 1996, was devoid of large quantities of barnacles. Average weights have increased by tenth of pound increments from 1.2 pounds in 1993 to the 1.6 pound average recorded in the 1997 fishery. The average weight observed in the 1997 fishery was still far below the historical high of 2.2 pounds per crab observed in the 1980/81 fishery (Table 5-33).

Hair crabs harvested in 1997 were purchased by shore processors and live crab shippers in the Pribilof Islands and Dutch Harbor. Approximately 60% of the total harvest were delivered to the port of St. Paul with the remaining 40% going to processors in Dutch Harbor. Number one crabs, with clean carapaces and all legs intact, were purchased in St. Paul and Dutch Harbor for $3.50 per pound. Grade 1B crabs, with dull coloration or smaller in size but relatively clean, were purchased for $3.15 per pound in St. Paul, with no comparable grade or price in Dutch Harbor. Number two grade crabs, with discernible amounts of barnacle growth or legs missing, brought $2.25 and $2.50 at shore plants in the Pribilofs and Dutch Harbor, respectively. Average exvessel price for all grades and delivery locations was $2.97 per pound. The total estimated value of the 1997 fishery was $1.9 million. This compares to an exvessel value of $2.65 per pound and a fishery value of $1.9 million for the 1996 fishery (Table 5-34 and Figure 5-15).

At 25 days, the 1997 fishery was equal to the shortest fishery on record, which occurred in 1995 (Table 5-34). The 1997 fishery closed prior to achieving the 800,000 pound season GHL, this closure was based on projections made November 22 which suggested the GHL midpoint would be fully attained by November 25 at 22:00 hrs. CPUE declined significantly between the time of the closure announcement to the actual closure. Five of the 16 vessels registered in the hair crab fishery ceased operations at least 24 hours before the closure time, with one quitting within hours of the closure announcement. Four other hair crab vessels quit within 24 hours prior to closure. Additionally, fishery performance in the last few days of the fishery was well below department projections, based on the first two and a half weeks of fishing.

The majority of the 1997 harvest came from the four statistical areas immediately surrounding St. Paul Island. This is the same areas from which the harvest has occurred in prior seasons.

Status of Stocks

The 1997 trawl survey conducted by NMFS indicates that the hair crab population is declining. Average weight continues to increase in the fishery, as does the occurrence of older shelled animals. The majority of male crabs seen were above the minimum legal size of 3.25". Recruitment of smaller crabs was not readily apparent from survey results. Additionally, trawl survey abundance estimates may experience variable annual catchability between years due to substrate, inshore distributions, and burying behavior of Hair crab.

BERING SEA SNAILS

Description of Area

Recent fishing of snails in the Bering Sea District has been limited to waters north of Cape Sarichef (54° 36' North latitude) and west of 168° West longitude (Figure 5-16).

Historic Background

Commercial fishing for snails in the Bering Sea began with the Japanese in the early 1970's. The Japanese fished for snails in the Bering Sea between 1971 and 1987; however, little information is available from this early history. In 1977 the Japanese began providing records to the United States concerning the Japanese fishery as mandated by the Fishery Conservation and Management Act of 1976 (MacIntosh 1979). Twenty-one vessels were licensed to fish; however, it is unknown how many actually participated. Data recorded in 1971 through 1974 from the National Marine Fisheries Service recorded fourteen vessels participating in 1971, five vessels in 1972, no vessels in 1973, and six vessels in 1974. There was no fishing activity in 1975 and 1976 and then in 1977 records indicate three vessels participated in the fishery (MacIntosh 1980). In the 1980's all fishing was conducted by catcher-processor vessels. The majority of the retained catch during this early fishery was composed of the Pribilof Neptune (*Neptunea pribiloffensis*). Smaller components of the retained catch were composed of the genus *Buccinum (B. angulossum* and *Buccinum scalariforme*) (MacIntosh 1980). Exvessel prices were estimated to be worth $242 thousand in 1977 and escalated to $1.3 million by 1979. A small Soviet snail fishery began 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 the Soviet fishery in 1989. Most of the equipment the Soviets used was purchased from the Japanese fleet. The Soviet venture only lasted one year with minimal return. Gear used during the early foreign fishery was converted Tanner crab pots. Pots were longlined in depths of 550 to 850 meters (Nagai 1974). Data from the Foreign Fisheries Observer Program indicate that the Japanese fleet had an average soak time of 50 hours while the Soviet fleet had an average soak time of 80 hours. The Japanese pulled an average of 2,779 pots per day and the Soviets pulled an average of 1,219 pots per day.

The domestic fishery began in 1992. Two vessels registered in 1992; one as bycatch in the Tanner crab fishery and the second as a directed fishery after the June closure of the hair crab season. In 1993, observer coverage was required to collect data on the resource and assess bycatch (see 5AAC 39.210). It was found during this coverage that crab bycatch was minimal. For example, bycatch of legal blue and red king crab were less than 0.1 animals per pot. Female *opilio* had the highest incidence of bycatch at 0.9 animals per pot (Tracy 1995). Following the 1993 season, observer coverage has not been required. Interest and effort have steadily increased since the 1992 fishery. Four vessels participated in 1993 landing 312,876 pounds. Catches increased to 2,027,328 pounds in 1994 and 3,572,992 in 1995 (Table 5-35 & Figure 5-17).

Although the exvessel value has remained constant, the value of the fishery has increased from $125 thousand in 1993 to over $1.0 million in 1996 (Table 5-36).

LITERATURE CITED

MacIntosh, R. 1980, The snail resource of the eastern Bering Sea and its fishery. Marine fisheriesReview. 42:15-20.
MacIntosh, R. 1979 Alaska's snail resource. Alaska Seas and Coasts. Vol. 6. No. 5
Tracy, Donn. 1995. Alaska Department of Fish and Game biological summary of the 1993 mandatory shellfish observer program database. Alaska Department of Fish and Game, Commercial Fisheries Management and Development, Regional Information Report No. 4K95-14.

1997 Fishery

Four vessels registered to harvest snails from the Bering Sea in 1997, however, only three vessels made landings. Two vessels registered to participate in a directed snail fishery, while the two other vessels registered to retain snails as incidental bycatch during directed crab fisheries. Three vessels actually participated in the 1997 fishery with a total of 17 landings yielding 932,048 pounds. This compares to five vessels with 67 landings for a yield of 3,510,498 pounds in the 1996 fishery (Table 5-35). The 1997 fishery exvessel value was $307,770 based on 854,917 live pounds delivered at $0.36 per pound. (Table 5-36) This is in comparison to an exvessel fishery value of $1,053,149 for the 1996 fishery.

Fishing in the 1997 season was restricted to grounds west of 164° West longitude and north of 54° 36' North latitude. These restrictions were conditions of the permit issued under 5 AAC 38.062 and were enacted to allow for exploration of grounds to the east of the Pribilof Islands. Also as a condition of the permit, 100% onboard observer coverage was required for the purposes of data collection from the retained and non-retained snails as well as monitoring bycatch rates of juvenile king and Tanner crabs. The average number of snails per pot was 16 for the 1997 fishery. The 1996 fishery executed northwest of the Pribilof Islands, yielded a catch per unit effort (CPUE) of 16 snails per pot. The majority of the catch for the 1997 season was composed of *Neptunea* and *Buccinum* species.

Stock Status

There is distribution and relative abundance information pertaining to snails caught in the eastern Bering Sea trawl survey conducted by NMFS. However, inconsistent identification, enumeration and catchability of snails preclude any accurate population estimates for Bering Sea snail populations.

BERING SEA MISCELLANEOUS SHELLFISH SPECIES

Description of Area

For those shellfish other than King and Tanner crabs, the Bering Sea District is defined as all waters of the Bering Sea north of the latitude of Cape Sarichef at (54° 36' North latitude) and east of the U.S. - Russian Convention Line of 1867 (Figure 5-18). For shrimp management that portion of the Bering Sea east of Cape Sarichef is described as the North Peninsula District (Figure 5-19).

Introduction

Shellfish species included in this section are those which are harvested in relatively small amounts compared to commercial king and Tanner crab fisheries which occur in the Bering Sea. Those species of current or historic interest include octopus, Dungeness crabs, shrimps and *Paralomis multispina*, a deepwater crab closely related to king crabs. Historic catch information and economic performance of these miscellaneous fisheries is found in Table 5-37, and Dungeness crab fishery information in Table 5-38.

Octopus

Nineteen vessels registered to fish for octopus in the Bering Sea during 1997; seventeen of those registrations were for incidental bycatch only. A total of 1,107 pounds were delivered from eight landings during 1997 (Table 5-37). All octopus landed from the Bering Sea during 1997 was as incidental bycatch in the various groundfish fisheries of that area.

Dungeness

One vessel registered and harvested Dungeness crab, *Cancer magister*, in the North Peninsula District during 1997, therefore catch information is confidential. Catch information from 1996 is confidential as only one vessel made landings; in 1995 a total of six vessels made 19 deliveries for a harvest of 134,406 pounds. Table 5-38 contains information on commercial fishing effort and economic performance of the North Peninsula District Dungeness fishery.

Shrimp

No vessels registered the North Peninsula District pot or trawl shrimp fishery in 1997. No vessels participated in this fishery in 1996 or 1995.

Paralomis multispina

No vessels registered or fished for *Paralomis multispina* in the Bering Sea District during 1997. One vessel, whose landings are confidential, participated in the 1996 *P. multispina* fishery. Although one vessel was registered for *P. multispina* in 1995, no commercial harvest was reported.

BERING SEA KING AND TANNER CRAB BUOY IDENTIFICATION TAGS ANNUAL REPORT

Introduction and Background

The Alaska Board of Fisheries 1992 Spring meeting discussed gear limitations for Bering Sea/Aleutian Islands king and Tanner crab fisheries. The Board requested an agenda change on March 20, 1991 to hear this issue out of cycle in response to petitions submitted by the industry. The request was supported by preliminary Alaska Department of Fish and Game data indicating high levels of gear deployed in the Bering Sea fisheries were creating conservation and management difficulties.

The Board made a decision to limit the number of pots that a vessel may use when harvesting Bering Sea king and Tanner crab. New regulations became effective on August 1, 1992. According to State statute the entire program is to be self supporting through buoy identification tag sales. Twenty days later on November 10, 1992 a temporary suspension of buoy ID sticker requirements were temporarily suspended due to sticker failure in adhering to buoys after extended exposure to water and weather. Pot limits, however, remained in effect for the Bering Sea *C. bairdi* Tanner crab fishery.

On November 30,1992 National Marine Fisheries Service officially repealed the Bering Sea pot limits because of inconsistencies in the Bering Sea\Aleutian Island king and Tanner crab Federal Management Plan.

At their February 1993 meeting the Board of Fisheries passed differential pot limit regulations which are dependent upon overall vessel length. According to current regulation, vessels in excess of 125 feet in length overall are entitled to the maximum number of pots allowed for a fishery, while vessels 125 feet and under in length overall are allowed 80% of the number allowed for the larger vessel size class. The number of pots allowed is different for each fishery, (Table 5-39).

Implementation

According to **AS 16.05.050 POWERS AND DUTIES OF THE COMMISSIONER.** The commissioner has,. . . The following powers and duties: (16) . . . to establish and charge fees equal to the cost of services provided by the department . . and **AS 16.05.632 IDENTIFICATION**

OF SHELLFISH POTS OR BUOYS, OR BOTH, USED IN THE TAKING OF KING CRAB AND REQUIREMENTS FOR BUOYS.

> (a) Registration tags for the identification of shellfish pots or buoys, or both, used in the taking of king crab are required in areas in which the board has regulations limiting the total amount of shellfish pots allowed per vessel. Registration tags shall (6) be issued and renewed for a fee equal to the cost of obtaining the registration tags plus reasonable administrative costs, under procedures determined to be appropriate by the Department of Fish and Game.

Beginning with the 1992/1993 Bristol Bay and Bering Sea crab seasons the Department leased additional office space and employed a Fish and Wildlife Technician III to administer the buoy identification sales program.

In May 1993 the decision was made to use a heavy duty nylon zip tie tag. These tags are available from the manufacturer in a variety of different colors, which may be rotated tri-annually through fisheries with an imposed pot limit. Each tag has a 1.5 inch by 4 inch flag printed with a unique number.

On August 27, 1997 the Alaska Board of Fisheries adopted new pot limit regulations for the Bristol Bay red king crab fisheries. Put into regulation is an eleven tiered pot limit guideline based on a season's Guideline Harvest Level and the number of participating vessels. In order to determine the pot limit, vessels wishing to participate in the Bristol Bay red king crab fishery must register on or before October 3; approximately one month before the November 1 fishery opening. These regulations are valid until December 31, 1998 at which time they will expire to be reevaluated by the Board. (Table 5-40).

Replacement Tags

The Board considered non-replacement of lost pots and double tag requirements but found that the hardship to the industry, without a provision for a tag replacement program, would be unnecessarily burdensome. The Division of Fish and Wildlife Protection anticipated difficulty proving cases if replacement tags were issued. Special conditions regarding replacement were included in the regulations to accommodate the concerns of Fish and Wildlife Protection. The Board rejected a double sticker requirement suggested by Protection.

The replacement of lost tags is permitted by **5 AAC 34.825.** (f), **5 AAC 34.925.** (j), and **5 AAC 35.525.** (i)

> (4) . . . replacement of lost identification tags is permitted if the vessel operator and three crew members, in person, submit to the ADF&G office in Dutch Harbor, a sworn statement or affidavit, describing how the tags were lost and listing the numbers of the lost tags.

An official AFFIDAVIT TO OBTAIN REPLACEMENT BUOY IDENTIFICATION STICKERS, reviewed and approved by Fish and Wildlife Protection, is available in the Dutch Harbor office.

During the interim between the 1994 Bristol Bay red king crab and Bering Sea *C. bairdi* fisheries and again prior to the 1995 *C. opilio* season numerous complaints were received in the Dutch Harbor office regarding problems that vessels delivering to remote areas such as King Cove and St. Paul would have in replacing tags under the current regulations. Most fishermen felt the cost in time and/or money used to transport the permit holder and three crew members to Dutch Harbor to fill out required forms and purchase replacement tags was prohibitive. Some expressed feelings that the present requirement would force them to fish illegally rather than conform to the regulations. To compound problems, after the New Year, many vessels were operated by alternate skippers who inherited the arduous task of determining which tags and how many were missing before they could apply for replacements. Issuing a set of tags coded and colored specifically for the *C. opilio* season was a common suggestion since tags, other than those purchased as replacements, can be obtained through the mail or by an agent. Consequently separate tag sets were manufactured for the 1995 *C. opilio* season. A total of 88 replacement tags were issued during all 1994/95 Bering Sea crab fisheries in contrast to the total of 3,510 replacement tags that were issued during the 1993/94 Bering Sea Tanner and king crab fisheries. Reissuing tags for the January *C. opilio* season has prevented a repeat of the 1993/94 tag replacement problems.

Vessel Length Verification

All vessels in excess of 125 feet in length overall wishing to obtain the maximum number of buoy identification tags for crab fisheries with imposed pot limits must present an original or notarized copy of valid documentation from the U.S. Coast Guard or certified marine surveyor showing the vessel to be in excess of 125 feet overall. Overall length is defined as 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 motor brackets and similar fittings or attachments. This definition of length overall is found in the U.S. Code of Federal Regulations, Shipping, 46 CFR 69.9 and Fishery Conservation and Management, 50 CFR 672.2.

The vessel operator/permit holder is required to show documentation of vessel length the first time buoy tags are purchased and any time a change to the vessel's overall length occurs. The Department's Dutch Harbor office has established a qualifying list of vessels whose length is documented in excess of 125 feet. A total of 120 vessels are presently on the Department's qualifying list.

Administration of the Buoy Identification Program

Bering Sea buoy identification tags are issued from ADF&G office in Dutch Harbor and in limited amounts from the ADF&G office in Kodiak. An administrative fee of $2.00 per tag is currently charged. Tags are issued only if a valid permit card for the specified fishery has been issued to the person purchasing tags. Uniquely numbered tag sets are assigned to vessel ADF&G numbers which guarantee that only one set of tags is issued per vessel.

The Department will, when requested, send, from the Dutch Harbor office, buoy tags through the U.S. Mail, priority, insured with a return receipt. Two weeks prior to each season the department discontinues tag mailings because of potential logistical problems that can be caused by weather delayed mail service.

1997/98 Tag Sales

For the concurrent September Bering Sea king crab fishery opening, St. Matthew blue king crab tag sales totaled 117 sets. At the closure of the St. Matthew fishery 6 of these vessels purchased tags and registered for the remainder of the Pribilof red and blue king crab fishery which brought the total tag sales to 54 sets (Table 5-41). Nineteen of these sale transactions were through the U.S. mail. Included in the total number of tag sales are the Kodiak Department's sales of 29 tag sets for St. Matthew's, and 14 sets for the Pribilof fishery.

Bristol Bay red king crab tag sales totaled 259 sets (Table 5-41). Forty six of these sales were processed through mail order. Included in the total number of tag sales are the 30 tag sets sold out of the department's Kodiak office. Ten replacement tags were issued previous to the season start.

Bering Sea *C. Opilio* tag sales totaled 229 sets (Table 5-41). Fifty four of these sales were processed through mail order. Included in the total number of tag sales are the department's Kodiak office sales of 44 tag sets. A total of 533 replacement tags were issued over the course of the two month fishery. Most losses were due to pots missing on the grounds. Fifty six tags broke off the line or bag with most of these sheared by ice on the grounds.

Tag purchases for vessels participating in the new Community Development Quota (CDQ) opilio Tanner crab fishery totaled 21 sets of tags. No replacement tags were sold during the CDQ fishery.

Conclusion

A quality control problem with the tag manufacturer created some problems with an otherwise smooth program operation. Many of the tag sets were incorrectly numbered and counted. Correcting for this took up valuable staff time in both the Kodiak and Dutch Harbor offices.

Table 5-1. Bristol Bay, Area T of the Bering Sea, commercial red king crab catch statistics, 1966-1997.

Year	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average Length[c]	Average CPUE[d]	% Old Shell	Deadloss[b]
1966	9	15	140,554	997,321	2,720	7.1		52		
1967	20	61	397,307	3,102,443	10,621	7.8		37		
1968	59	261	1,278,592	8,686,546	47,496	6.8		27		
1969	65	377	1,749,022	10,403,283	98,426	5.9		18		
1970	51	309	1,682,591	8,559,178	96,658	5.1		17		
1971	52	394	2,404,681	12,955,776	118,522	5.4		20		
1972	64	611	3,994,356	21,744,924	205,045	5.4		19		
1973	67	441	4,825,963	26,913,636	194,095	5.6		25		N/A
1974	104	605	7,710,317	42,266,274	212,915	5.5		36		N/A
1975	102	592	8,745,294	51,326,259	205,096	5.7		43		1,639,483
1976	141	984	10,603,367	63,919,728	321,010	6.0	148	33	27.4	875,327
1977	130	1,020	11,733,101	69,967,868	451,273	5.9	148	26	13.0	730,279
1978	162	926	14,745,709	87,618,320	406,165	5.9	147	36	6.9	1,273,037
1979	236	889	16,808,605	107,828,057	315,226	6.4	152	53	10.4	3,555,891
1980	236	1,251	20,845,350	129,948,463	567,292	6.2	151	37	11.0	1,858,668
1981	177	1,026	5,307,947	33,591,368	542,250	6.3	151	10	47.4	711,289
1982	90	255	541,006	3,001,210	141,656	5.5	145	4	24.6	95,834
1983	NO COMMERCIAL FISHERY									
1984	89	137	794,040	4,182,406	112,556	5.2	142	7	26.5	35,601
1985	128	130	796,181	4,174,953	85,003	5.2	142	9	25.8	6,436
1986	159	230	2,099,576	11,393,934	178,370	5.4	142	12	25.5	284,127
1987	236	311	2,122,402	12,289,067	220,871	5.8	145	10	19.0	120,388
1988	200	201	1,236,131	7,387,795	153,004	6.0	147	8	15.1	23,537
1989	211	287	1,684,706	10,264,791	208,684	6.1	148	8	17.7	81,334

Continued

Table 5-1. (Page 2 of 2)

Year	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average Length[c]	Average CPUE[d]	% Old Shell	Deadloss[b]
1990	240	331	3,120,326	20,362,342	262,131	6.5	152	12	14.7	116,527
1991	302	324	2,630,446	17,177,894	227,555	6.5	152	12	12.1	119,670
1992	281	289	1,196,958	8,043,018	205,940	6.7	153	6	22.3	9,000
1993	292	361	2,261,287	14,628,639	253,794	6.5	152	9	15.2	133,442
1994	NO COMMERCIAL FISHERY									
1995	NO COMMERCIAL FISHERY									
1996[e]	196	198	1,249,005	8,405,614	76,433	6.7	153	16	24.3	24,166
1997[f]	256	265	1,315,969	8,756,490	90,510	6.7	152	15	11.0	13,771

[a]Deadloss included.

[b]In Pounds.

[c]In millimeters.

[d]Defined as catch per pot pull.

[e]Not including 117,500 pounds landed in Test Fishery.

[e]Not including 154,897 pounds landed in Test Fishery.

Table 5-2. Bristol Bay commercial red king crab economic performance, 1980-1997.

Year	GHL[a]	Season Total[b]	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total[c]	Days	Dates
1980	70-120	128,089,795	236	1,251	78,352	567,292	$0.90	$115.3	40	09/10-10/20
1981	70-100	32,880,079	177	1,026	75,756	542,250	$1.50	$49.3	91	09/10-12/15
1982	10-20[d]	2,905,376	90	255	36,166	141,656	$3.05	$8.9	30	09/10-10/10
1983	NO COMMERCIAL FISHERY									
1984	2.5- 6.0	4,146,805	89	137	21,762	112,556	$2.60	$10.8	15	10/01-10/16
1985	3.0-5.0	4,168,517	128	130	30,117	85,003	$2.90	$12.1	8	09/25-10/02
1986	6.0-13.0	11,109,807	159	230	32,468	178,370	$4.05	$45.0	13	09/25-10/07
1987	8.5-17.7	12,168,679	236	311	63,000	220,871	$4.00	$48.7	12	09/25-10/06
1988	7.5	7,364,258	200	201	50,099	153,004	$5.10	$37.6	8	09/25-10/02
1989	16.5	10,183,457	211	287	55,000	208,684	$5.00	$50.9	12	09/25-10/06
1990	17.1	20,245,815	240	331	69,906	262,131	$5.00	$101.2	12	11/01-11/13
1991	18.0	17,058,224	302	324	89,068	227,555	$3.00	$51.2	7	11/01-11-08
1992	10.3	8,034,018	281	289	68,189	205,940	$5.00	$40.2	7	11/01-11/08
1993	16.8	14,495,197	292	361	58,881	253,794	$3.80	$55.1	9	11/01-11/10
1994	NO COMMERCIAL FISHERY									
1995	NO COMMERCIAL FISHERY									
1996	5.0	8,381,448	196	198	39,461	76,433	$4.01	$33.6	4	11/01-11/05
1997	7.0	8,742,719	256	265	27,499	90,510	$3.26	$28.5	4	11/01-11/05

[a]Guideline Harvest Level (millions of pounds).

[b]Millions of pounds, deadloss not included.

[c]Millions of dollars.

[d]Inseason revision to 4.7 million pounds.

Table 5-3. Bristol Bay commercial red king crab harvest composition by fishing season, 1973-1997.

Season	Date Opened-Closed	Harvest[a]	Percent Recruit	Percent Postrecruit	Size Limit[b]	Price per Pound
1973	06/15-09/09	26.9	63	37	6¼	$0.84
1974	07/29-10/12	42.3	60	40	6¼	$0.38
1975	08/01-11/16	51.3	21	79	6¼[c]	$0.38
1976	08/15-12/07	63.9	56	44	6½	$0.58
1977	09/15-12/08	69.9	67	33	6½	$1.11
1978	09/10-10/23	87.6	75	25	6½	$1.23
1979	09/15-10/14	107.8	47	53	6½	$1.01
1980	09/10-10/20	129.9	44	56	6½	$0.90
1981	09/10-10/20	33.6	14	86	6½[e]	$1.50
1982	09/10-10/10	3	68	32	6½	$3.05
1983	NO COMMERCIAL FISHERY					
1984	10/01-10/16	4.2	59	41	6½	$2.60
1985	09/25-10/02	4.2	66	34	6½	$2.90
1986	09/25-10/07	11.4	65	35	6½	$4.05
1987	09/25-10/06	12.3	77	23	6½	$4.00
1988	09/25-10/02	7.4	59	41	6½	$5.10
1989	09/25-10/06	10.3	58	42	6½	$5.00
1990	11/01-11/13	20.4	49	51	6½	$5.00
1991	11/01-11/08	17.2	44	56	6½	$3.00
1992	11/01-11/08	8	33	67	6½	$5.00
1993	11/01-11/10	14.6	33	67	6½	$3.80
1994	NO COMMERCIAL FISHERY					
1995	NO COMMERCIAL FISHERY					
1996[d]	11/01-11/05	8.4	31	69	6½	$4.01
1997[d]	11/01-11/05	8.8	28	72	6½	$3.26

[a]Deadloss included, millions of pounds.

[b]Minimum carapace width in inches.

[c]6½ inches after 11/01.

[d]New shell greater than 149 mm defined as postrecruits.

[e]7inches after 10/20.

Table 5-4. Bristol Bay commercial red king crab catch by statistical area, 1997.

Statistical Area	Number of Landings	Number of Crab[a]	Pounds[a]	Pots Lifted	Average CPUE	Average Weight	Deadloss[b]
625700	4	5,718	38,180	395	14.5	6.68	11
635530	5	11,869	81,070	1,007	11.8	6.83	56
615700	6	43,202	287,935	1,578	27.4	6.66	924
615601	15	51,432	342,750	3,809	13.5	6.66	458
635630	24	57,604	386,618	4,921	11.7	6.71	354
635600	29	76,983	515,507	6,414	12	6.7	434
615630	53	228,996	1,551,540	13,604	16.8	6.78	4,218
625600	73	202,066	1,356,784	17,636	11.5	6.71	2,299
625630	126	610,035	4,003,308	38,727	15.8	6.56	4,847
Other[c]	14	28,064	192,798	2,419	8.2	7.15	170
TOTALS	265[d]	1,315,969	8,756,490	90,510	14.5	6.65	13,771

[a]Deadloss included.

[b]Pounds.

[c]Total of eleven statistical areas.

[d]Total landings for the fishery, does not reflect statistical area landing totals.

Table 5-5. Bristol Bay red king crab test fishery catch statistics, 1996-1997.

Year[d]	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss[b]
1996	1	2	17,043	117,500	648	26	6.89	1,918
1997	1	4	24,622	154,897	658	37	6.29	18,198

[a]Deadloss included.

[b]In Pounds.

[c]Defined as catch per pot pull.

[d]Prior to 1996 test fishery statistics were not broken out from commercial catch.

Table 5-6. Bering Sea, Area Q, Pribilof District commercial red and blue king crab catch statistics, 1973/94-1997.

Year[a]	Number of Vessels	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Average CPUE[d]	Average Weight[c]	Average Length[e]	Deadloss[c]
1973/74	8	13	174,420	1,276,533	6,814	26	7.3	N/A	0
1974/75	70	101	908,072	7,107,294	45,518	20	7.8	157.8	0
1975/76	20	54	314,931	2,433,714	16,297	19	7.7	159.1	0
1976/77	47	113	855,505	6,611,084	71,738	12	7.7	158.1	0
1977/78	34	104	807,092	6,456,738	106,983	8	7.9	158.9	159,269
1978/79	58	154	797,364	6,395,512	101,117	8	8.1	159.3	63,140
1979/80	46	115	815,557	5,995,231	83,527	10	7.7	155.9	284,555
1980/81	110	258	1,497,101	10,970,346	167,684	9	7.3	155.7	287,285
1981/82	99	312	1,202,499	9,080,729	176,168	7	7.6	158.2	250,699
1982/83	122	281	587,908	4,405,353	127,728	5	7.5	159.8	51,703
1983/84	126	221	276,364	2,193,395	86,428	3	7.9	159.9	4,562
1984/85	16	25	40,427	306,699	15,147	3	7.6	155.5	0
1985/86	26	49	77,607	532,735	23,483	3	6.9	146.5	7,500
1986/87	16	25	36,988	258,939	15,800	2	7.0	N/A	5,450
1987/88	38	68	95,131	701,337	40,507	2	7.4	152.7	9,910
1988/89				SEASON CLOSED					
1989/90				SEASON CLOSED					
1990/91				SEASON CLOSED					
1991/92[f]				SEASON CLOSED					
1992/93				SEASON CLOSED					
1993g	112	135	380,217	2,607,634	35,942	11	6.9	154.4	0
1994g	104	121	167,520	1,338,953	28,976	6	8.0	162.1	2,929
1995g	117	151	107,521	871,173	33,531	3	8.1	162.5	15,316
1995h	119	152	172,987	1,267,454	34,721	5	7.3		46,263

-Continued-

Table 5-6. (Page 2 of 2)

Year[a]	Number of Vessels	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Average CPUE[d]	Average Weight[c]	Average Length[e]	Deadloss[c]
1995[i]	127	162	280,508	2,138,627	37,643	8	NA		61,579
1996[g]	66	90	25,383	200,304	29,425	<1	7.9		319
1996[h]	66	92	127,676	937,032	30,607	4	7.3		14,997
1996[i]	66	92	153,059	1,137,336	60,032	3	7.4		15,316
1997[g]	53	110	90,641	756,818	28,458	3	8.4		18,807
1997[h]	51	105	68,603	512,374	27,652	3	7.5		16,747
1997[i]	53	110	159,244	1,269,192	30,400	5	8.0		35,554

[a]Blue king crab, 1973 - 1988.

[b]Deadloss included.

[c]In pounds.

[d]Defined as catch per pot pull.

[e]Carapace length (millimeters).

[f]10,869 pounds illegal red king crab harvested.

[g]Red king crab.

[h]Blue king crab.

[i]Blue and red king crab fisheries combined.

Table 5-7. Commercial harvest of blue king crabs in the St. Matthew Island section of statistical Area Q, 1977-1997.

Season	Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a,b]	Pots Pulled	CPUE[c]	Percent Recruits	Average Weight[b]	Average Length[d]	Deadloss[b]
1977	10	24	281,665	1,202,066	17,370	16	7	4.3	130.4	129,148
1978	22	70	436,126	1,984,251	43,754	10	N/A	4.5	132.2	116,037
1979	18	25	52,966	210,819	9,877	5	80.8	4	128.8	128.8
1980	CONFIDENTIAL									
1981	31	119	1,045,619	4,627,761	58,550	18	N/A	4.4	N/A	53,355
1982	96	269	1,935,886	8,844,789	165,618	12	19.6	4.6	135.1	142,973
1983	164	235	1,931,990	9,454,323	133,944	14	26.7	4.8	137.2	828,994
1984	90	169	841,017	3,764,592	73,320	11	34	4.5	135.5	31,983
1985	79	103	484,836	2,427,110	51,606	9	9	5	139	2,613
1986	38	43	219,548	1,003,162	22,093	10	10	4.6	134.3	32,560
1987	61	62	234,521	1,075,179	28,440	8	5	4.6	134.1	400
1988	46	46	302,053	1,325,185	10,160	30	65	4.4	133.3	22,358
1989	69	69	247,641	1,166,258	30,853	8	9	4.7	134.6	3,754
1990	31	38	391,405	1,725,349	26,264	15	4	4.4	134.3	17,416
1991	68	69	726,519	3,372,066	37,104	20	12	4.6	134.1	216,459
1992	174	179	544,956	2,474,080	56,630	10	9	4.6	134.1	0
1993	92	136	629,874	2,999,921	58,647	11	6	4.8	135.4	0
1994	87	133	827,015	3,764,262	60,860	14	60	4.6	133.3	46,699
1995	90	111	666,905	3,166,093	48,560	14	47.0	4.8	135	90,191
1996	122	189	661,115	3,080,916	91,205	7	45.7	4.7	134.6	36,892
1997	117	166	939,822	4,649,660	81,117	12	34.2	4.9	139.5	209,490

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Carapace length (millimeters).

Table 5-8. Economic performance of the commercial red and blue king crab fishery in the Pribilof District of the Bering Sea, 1980/81-1997.

Year[a]	GHL[b]	Season Total[c]	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total[d]	Days	Dates
1980/81	5.0-8.0	10.7	110	258	31,636	167,684	$0.90	$9.60	60	09/15-11/15
1981/82	5.0-8.0	9.1	99	312	25,408	176,168	$1.50	$13.60	47	09/10-10/28
1982/83	5.0-8.0	4.4	122	281	34,429	127,728	$3.05	$13.40	15	09/10-09/25
1983/84	4.0e	2.2	126	221	36,439	86,428	$3.00	$6.60	10	09/01-09/11
1984/85	0.5-1.0	0.3	16	25	3,122	15,147	$2.50	$0.10	15	09/01-09/16
1985/86	0.3-0.8	0.5	26	49	6,038	23,483	$2.90	$1.40	26	09/25-10/21
1986/87	0.3-0.8	0.3	16	25	4,376	15,800	$4.05	$1.20	55	09/25-11/20
1987/88	0.3-1.7	0.7	38	68	9,594	40,507	$4.00	$2.80	86	09/25-12/20
1988/89				NO COMMERCIAL FISHERY						
1989/90				NO COMMERCIAL FISHERY						
1990/91				NO COMMERCIAL FISHERY						
1991/92				NO COMMERCIAL FISHERY						
1992/93				NO COMMERCIAL FISHERY						
1993[f]	3.4	2.6	112	135	4,860	35,942	$4.98	$13.00	6	09/15-09/21
1994[f]	2.0[e]	1.3	104	121	4,675	28,976	$6.45	$8.60	6	09/15-09/21
1995[f]	2.5[h]	0.9	117	151	5,400[h]	33,531	$3.37	$2.90	7	09/15-09/22
1995[g]	2.5	1.3	126	159	5,400	37,298	$2.92	$3.90	7	09/15-09/22
1996[f]	1.8[h]	0.2	66	91	2,730[h]	29,425	$2.76	$0.60	11	09/15-09/26
1996[g]	1.8[h]	0.9	66	92	2,730[h]	30,607	$2.65	$2.40	11	09/15-09/26

-Continued-

Table 5-8. (Page 2 of 2)

Year[a]	GHL[b]	Season Total[c]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total[d]	Season Length Days	Season Length Dates
1997[f]	1.5[h]	0.7	53	110	2,270	28,458	$3.09	$2.30	14	09/15-09/29
1997[g]	1.5[h]	0.5	48	105	2,270	27,652	$2.82	$1.40	14	09/15-09/29

[a]Blue king crab, 1980-1988.

[b]Guideline harvest level.

[c]Millions of pounds, deadloss not included.

[d]Millions of dollars.

[e]Set not to exceed.

[f]Red king crab.

[g]Blue king crab.

[h]Combined red and blue king crab.

Table 5-9. Pribilof District red king crab commercial catch by statistical area, 1997.

Statistical Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
685700	6	2,955	25,740	1,293	8.7	2.3	4,100
695631	21	17,043	137,334	4,110	8.1	4.1	493
695700	62	51,233	426,323	15,784	8.3	3.2	6,709
695730	5	270	2,115	1,330	7.8	0.2	59
705630	5	4,517	38,029	1,427	8.4	3.2	498
705701	24	13,429	115,969	3,654	8.6	3.7	3,705
Other	5	1,194	11,308	860	9.5	1.4	3,243
TOTALS	128[e]	90,641	756,818	28,458	8.4	3.2	18,807

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Includes 3 statistical areas.

[e]Actual total landings for the fishery.

Table 5-10. Pribilof District blue king crab commercial catch by statistical area, 1997.

Statistical Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
685700	9	9,264	72,051	1,658	7.8	6	3,047
695631	21	4,293	31,844	4,054	7.4	1	1,792
695700	58	38,367	285,392	14,985	7.4	3	6,820
695730	5	8,790	64,210	1,330	7.3	7	50
705630	5	407	2,847	1,427	7.0	<1	0
705701	21	6,393	47,623	3,418	7.5	2	3,474
Other[d]	4	1,089	8,407	780	7.7	2	1,564
TOTALS	105[e]	68,603	512,374	27,652	7.5	3	16,747

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Includes 3 statistical areas.

[e]Actual total landings for the fishery

Table 5-11. Economic performance of the commercial blue king crab fishery in the St. Matthew Island Section of the Northern District of the Bering Sea, 1983-1997.

Year	GHL[a,b]	Season Total[b]	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total[c]	Days	Dates
1983	8	8.6	164	235	38,000	133,944	$3.00	$25.80	17	08/20-09/06
1984	2.0-4.0	3.7	90	169	14,800	73,320	$1.75	$6.50	7	09/01-09/08
1985	0.9-1.9	2.4	79	103	13,000	51,606	$1.60	$3.80	5	09/01-09/06
1986	0.2-0.5	1	38	43	5,600	22,093	$3.20	$3.20	5	09/01-09/06
1987	0.6-1.3	1.1	61	62	9,370	28,440	$2.85	$3.10	4	09/01-09/05
1988	0.7-1.5	1.3	46	46	7,780	10,160	$3.10	$4.00	4	09/01-09/05
1989	1.7	1.2	69	69	11,983	30,853	$2.90	$3.50	3[d]	09/01-09/04
1990	1.9	1.7	31	38	6,000	26,264	$3.35	$5.70	6	09/01-09/07
1991	3.2	3.2	68	69	13,100	37,104	$2.80	$9.00	4	09/16-09/20
1992	3.1	2.5	174	179	17,400	56,630	$3.00	$7.40	3[d]	09/04-09/07
1993	4.4	3	92	136	5,895	58,647	$3.23	$9.70	6	09/15-09/21
1994	3	3.7	87	133	5,685	60,860	$4.00	$15.00	7	09/15-09/22
1995	2.4	3.1	90	111	5,970	48,560	$2.32	$7.10	5	09/15-09/20
1996	4.3	3.1	122	189	8,010	91,205	$2.20	$6.70	8	09/15-09/23
1997	5	4.6	117	166	7,650	81,117	$2.21	$9.80	7	09/15-09/22

[a]Guideline Harvest Level.

[b]Millions of pounds, deadloss not included.

[c]Millions of dollars.

[d]Actual length - 60 hours.

Table 5-12. Commercial harvest of king crabs by season and species, for the the St. Matthew Island section of the Northern District of the Bering Sea, 1977-1997.

Season	Date Opened	Date Closed	Species	Harvest[a]	Minimum Size[b]	Price per Pound
1977	Jun-07	Aug. 16	Blue	1,202,066	5 1/2	$1.00
			Red	543,041	5	
1978	Jul-15	Sept. 3	Blue	1,984,251	5 1/2	$0.95
	Jul-15	Aug. 16	Red	2,007,910	4 3/4	
1979	Jul-15	Aug. 24	Blue	210,819	5 1/2	$0.70
	Jul-15	Aug. 16	Red	3,024,228	4 3/4	
1980	Jul-15	Sept. 3	Blue			$0.75
	Jul-15	Jul-31	Red	353,683	4 3/4	
1981	Jul-15	Aug. 21	Blue	4,627,761	5 1/2	$0.90
	Jul-15	Sept. 3	Red	63,983	4 3/4	
1982	Aug-01	Aug. 16	Blue	8,844,789	5 1/2	$2.00
	Aug-01	Aug. 16	Red	3,690	4 3/4	$2.00
	May-01	Aug. 1	Brown	193,507	5 1/2	$2.00
1983[de]	Aug-20	Sept. 6[d]	Blue	9,506,880[e]	5 1/2	$3.00
	Aug-20	Sept. 6	Red	1,635	4 3/4	$2.50
	May-01	Aug. 1	Brown		5 1/2	-
1984	Aug-01	Sept. 8	Blue	3,764,592	5 1/2	$1.75
	Aug-01	Sept. 8	Red	-	4 3/4	-
	May-01	Dec. 31	Brown[d]	-	5 1/2	-
1985	Sep-01	Sept. 6	Blue	2,427,110	5 1/2	$1.60
	Aug-01	Sept. 6	NO CATCH REPORTED		4 3/4	
	Jan-01	Dec. 31	NO CATCH REPORTED		5 1/2	
1986	Sep-01	Sept. 6	Blue	1,003,162	5 1/2	$3.20
	Aug-01	Sept. 6	NO CATCH REPORTED		4 3/4	
	Jan-01	Dec. 31	NO CATCH REPORTED		5 1/2	

Continued

Table 5-12. (Page 2 of 2)

Season	Date Opened	Date Closed	Species	Harvest[a]	Minimum Size[b]	Price per Pound
1987	Sep-01	Sep-05	Blue	1,075,179	5 1/2	$2.85
	Aug-01	Sep-05	NO CATCH REPORTED		4 3/4	
	Jan-01	Dec-31	Brown	424,394	5 1/2	$2.60
1988	Sep-01	Sep-05	Blue	1,325,185	5 1/2	$3.10
	Aug-01	Sep-05	NO CATCH REPORTED		4 3/4	
	Jan-01	Dec-31	Brown	160,441	5 1/2	$3.10
1989	Jan-01	Sep-04	Blue	1,166,258	5 1/2	$2.90
			Blue	0[f]	5 1/2	NA
	Aug-01	Sep-04	Red	4,518	4 3/4	NA
	Jan-01	Dec-31	Brown	4,407	5 1/2	NA
1990	Sep-01	Sep-07	Blue	1,725,349	5 1/2	$3.35
1991	Sep-16	Sep-20	Blue	3,372,066	5 1/2	$2.80
1992	Sep-04	Sep-07	Blue	2,474,080	5 1/2	$3.00
1993	Sep-15	Sep-21	Blue	2,999,921	5 1/2	$3.23
1994	Sep-15	Sep-22	Blue	3,764,262	5 1/2	$4.00
1995	Sep-15	Sep-22	Blue	3,166,093	5 1/2	$2.32
1996	Sep-15	Sep-16	Blue	3,080,916	5 1/2	$2.20
1997	Sep-15	Sep-22	Blue	4,649,660	5 1/2	$2.21

[a]In pounds, deadloss included.

[b]Carapace width in inches.

[d]Some of Northern District open until September 20.

[e]St. Lawrence Island harvest of 52,557 lbs. included.

[f]Combined with red king crab to total 4,518 pounds.

Table 5-13. Blue king crab commercial harvest by statistical area, for the St. Matthew Island Section of the Northern District of the Bering Sea, 1997.

Statistical Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
725930	11	26,982	136,731	2,465	5.1	10.9	2,808
726001	76	349,087	1,724,458	31,008	4.9	11.3	69,128
735930	15	57,263	278,014	4,427	4.9	12.9	8,298
736001	92	473,710	2,355,592	40,392	5	11.7	122,683
736031	3	9,205	40,549	911	4.4	10.1	744
Other[d]	7	23,575	114,316	1,914	4.8	12.3	5,829
Total	166[e]	939,822	4,649,660	81,117	4.9	12	209,490

[a]Deadloss included.

[b]In Pounds.

[c]Defined as catch per pot pull.

[d]Includes 6 statistical areas.

[e]Actual landings for fishery.

Table 5-14. St. Matthew blue king crab comparative average commercial catches of catcher-processor vs. catcher-only vessels, 1991-1997.

Season	1997	1996	1995	1994	1993	1992	1991
Number of Catcher-Processor Vessels	1	3	1	6	3	8	9
Number of Catcher-only Vessels	116	119	89	87	89	166	59
Pounds of Catcher-Processor Harvest	Confidential	77,641	Confidential	352,069	165,625	191,801	740687
Percent of Catcher-Processor Harvest	Confidential	2.5	Confidential	10.7	5.5	7.7	22.0
Average Catcher-Processor Harvest	Confidential	25,880	Confidential	58,678	55,208	23,975	82,298
Average Catcher-Only Harvest	Confidential	25,238	Confidential	39,221	31,846	13,749	44,600
Catcher-Processor Average CPUE	Confidential	6.6	Confidential	14	14	16	26
Catcher-Only Average CPUE	11.6	7.2	14	14	11	9	18
Average # Pots Pulled Catcher-Only	694	745	541	636	632	325	525
Total Harvest	4,649,660	3,081,491	3,166,093	3,764,262	2,999,921	2,474,080	3,372,065

Table 5-15. Comparative mid-point estimates, emergency order projections and actual commercial harvests for the St. Matthew Island section blue king crab fishery, 1983-1997.

Year	Guideline Harvest Levels[a]	Projected Harvest[a]	Actual Harvest[a,b]
1983	8.0	8.0	9.5
1984	2.0 - 4.0	4.0	3.8
1985	0.9 - 1.9	2.0	2.4
1986	0.2 - 0.5	1.0	1.0
1987	0.6 - 1.3	1.3	1.1
1988	0.7 - 1.5	1.5	1.3
1989	1.7	1.7	1.2
1990	1.9	1.9	1.7
1991	3.2	3.2	3.4
1992	3.1	3.1	2.5
1993	4.4	4.4	3.0
1994	3.0	3.0	3.8
1995	2.4	2.4	3.2
1996	4.3	4.3	3.1
1997	5.0	5.0	4.6

[a]Millions of pounds.

[b]Deadloss included.

Table 5-16. Golden king crab fishery statistics in the Pribilof District of the Bering Sea, Area Q, 1981/82-1997.

Year	Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a,b]	Pots Pulled	CPUE[c]	Average Weight[b]	Average Length[d]	Deadloss[b]
1981/82				CONFIDENTIAL					
1982/83[e]	10	19	15,330	69,970	5,252	3	4.6	151	570
1983/84[f]	50	115	253,162	856,475	26,035	10	3.4	127	20,041
1984[g]				NO REPORTED LANDINGS					
1985				CONFIDENTIAL					
1986				CONFIDENTIAL					
1987				CONFIDENTIAL					
1988				CONFIDENTIAL					
1989				CONFIDENTIAL					
1990				NO REPORTED LANDINGS					
1991				CONFIDENTIAL					
1992				CONFIDENTIAL					
1993	5	15	17,643	67,458	15,395	1	3.8	NA	0
1994	3	5	21,477	88,985	1,845	12	4.1	NA	730
1995	7	22	82,456	341,700	9,481	9	4.1	NA	716
1996	6	32	91,947	329,009	9,952	9	3.6	NA	3,570
1997	7	23	43,305	179,249	4,673	9	4.1	NA	5,554

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]In millimeters.

[e]Six and one-half inch season.

[f]Five and one-half inch season.

[g]Permit fishery July through December.

Table 5-17. Golden king crab fishery statistics catch for the Saint Matthew Island Section in the Northern District of the Bering Sea, Area Q, 1982/83 -1997.

Year	Number of			Harvest[a,b]	Pots	CPUE[c]	Average		Deadloss
	Vessels	Landings	Crabs[a]		Pulled		Weight[b]	Length[d]	
1982/83	22	30	51,714	193,507	7,825	7	3.7	138	957
1983/84	NO REPORTED LANDINGS								
1985	NO REPORTED LANDINGS								
1986	NO REPORTED LANDINGS								
1987	11	29	101,618	424,394	14,525	7	4.2	142	11,750
1988	11	23	36,270	160,441	11,672	3	4.4	150	14,000
1989	CONFIDENTIAL								
1990	NO REPORTED LANDINGS								
1991	NO REPORTED LANDINGS								
1992	CONFIDENTIAL								
1993	NO REPORTED LANDINGS								
1994	CONFIDENTIAL								
1995	4	4	245	1,200	383	1	4.9	N/A	0
1996	CONFIDENTIAL								
1997	NO REPORTED LANDINGS								

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]In millimeters.

5-18. Pribilof District golden king crab fishery economic performance 1991-1997.

Year	Season Total[a]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total	Season Length Days	Season Length Dates
1991					Confidential				
1992					Confidential				
1993	67,458	5	15	3,200	15395	$2.42	$163,248	365	1/1-12/31
1994	88,255	3	5	130	1845	$3.81	$336,252	365	1/1-12/31
1995	338,750	7	22	420	9481	$3.12	$1,056,900	365	1/1-12/31
1996	316,600	6	32	280	9952	$2.02	$639,532	365	1/1-12/31
1997	173,695	7	23	340	4673	$2.23	$387,340	365	1/1-12/31

[a]Deadloss not included.

Table 5-19. Pribilof District commercial golden king crab catch by statistical area, 1997.

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
685600	3	2,139	11,620	294	7	5.4	217
695600	15	13,597	60,448	2,512	5	4.5	853
705600	8	21,790	81,665	1,384	16	3.8	3,382
Other	8	5,779	25,516	483	12	4.4	1,102
Total	34[d]	43,305	179,249	4,673	9	4.1	5,554

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Actual total landings for the fishery.

5-20. St. Matthews Island section of the Northern District golden king crab fishery economic performance, 1991-1997.

Year	Season Total[a]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total	Season Length Days	Season Length Dates
1991				No Landings				365	1/1-12/31
1992				Confidential					
1993				No Landings				365	1/1-12/31
1994				Confidential					
1995	1,200	4	4	270	383	$3.12	$3,744	365	1/1-12/31
1996				Confidential					
1997				No Landings				365	1/1-12/31

[a]Deadloss not included.

Table 5-21. Bering Sea scarlet king crab *Lithodes couesi* fishery statistics, 1992-1997.

Year	Harvest[a]	Vessels	Pots Pulled	Exvessel Value	Fishery Value[b]	Average Weight[c]	Average CPUE	Deadloss
1992	NO REPORTED HARVEST							
1993	NO REPORTED HARVEST							
1994	NO REPORTED HARVEST							
1995	26,684	4	24,551	$2.12	$0.06	2.4	<1	465
1996	CONFIDENTIAL							
1997	NO VESSELS REGISTERED							

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

Table 5-22. Commercial harvest statistics, by season, for the Bering Sea C. bairdi fishery, 1968-1997.

Year	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Average Width[d]	% New Shell	Deadloss[b]
1969	NA	131	353,300	1,008,900	29,800	12	2.9	-	-	NA
1970	NA	66	482,300	1,014,700	16,400	29	2.1	-	-	NA
1971	NA	22	61,300	166,100	7,300	8	2.7	-	-	NA
1972	NA	14	42,061	107,761	4,260	10	2.6	-	-	NA
1973	NA	44	93,595	231,668	15,730	6	2.5	-	-	NA
1974	NA	69	2,531,825	5,044,197	22,014	115	2	-	-	NA
1974/75	28	80	2,773,770	7,028,378	38,462	72	2.5	-	-	NA
1975/76	66	304	8,956,036	22,358,107	141,206	63	2.5	-	-	NA
1976/77	83	541	20,251,508	51,455,221	297,471	68	2.5	-	-	NA
1977/78	120	861	26,350,688	66,648,954	516,350	51	2.5	152.8	88	218,099
1978/79	144	817	16,726,518	42,547,174	402,697	42	2.5	152.7	95	76,000
1979/80	152	804	14,685,611	36,614,315	488,434	30	2.5	151.4	90	56,446
1981	165	761	11,845,958	29,630,492	559,626	21	2.5	149.4	86.6	101,594
1982	125	791	4,830,980	11,008,779	490,099	10	2.3	148.8	85.4	138,159
1983	108	448	2,286,756	5,273,881	282,006	8	2.3	148.8	70.5	60,029
1984	41	134	516,877	1,208,223	61,357	8	2.3	146.5	40	5,025
1985	44	166	1,283,474	3,151,498	104,707	12	2.4	150	65	14,096
1986	SEASON CLOSED									
1987	SEASON CLOSED									
1988	98	248	897,059	2,210,394	112,334	8	2.5	143.5	70.2	10,724
1989	109	359	2,907,021	7,012,965	184,892	16	2.4	149.4	80.8	34,664
1990	179	1,032	10,717,924	24,549,299	711,137	15	2.3	148.1	96.5	87,475
1990/91	255	1,756	16,608,625	40,081,555	883,391	19	2.4	149.7	95.3	210,769
1991/92	285	2,339	12,924,034	31,796,381	1,244,633	10	2.5	150.4	93.2	279,741
1992/93	294	2,084	15,265,880	35,130,866	1,200,885	13	2.3	148	90.5	343,955

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Table 5-22. (Page 2 of 2)

Year	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Average Width[d]	% New Shell	Deadloss[b]
1993/94	296	862	7,235,498	16,891,320	576,464	13	2.3	150.7	93.9	258,389
1994	183	349	3,351,639	7,766,886	249,536	13	2.3	150	92.5	132,780
1995	196	256	1,877,303	4,233,061	247,853	8	2.3	149.3	58.6	44,508
1996[e]	196	347	734,296	1,806,077	149,289	5	2.5	152.1	46.6	14,608
1997	SEASON CLOSED									

[a]Deadloss included.

[b]In Pounds.

[c]Defined as catch per pot pull.

[d]Carapace width in millimeters.

[e]Includes incidental catch with Bristol Bay red king crab fishery.

Table 5-23. Economic performance of the Bering Sea *C. Bairdi* commercial fishery, 1979/80-1997.

Year	GHL[a,b]	Season Total[b]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total[c]	Season Length Days	Season Length Dates
1979/80	28-36	36.5	152	804	40,273	488,434	$0.52	$19.00	189	11/01-05/11
1981	28-36	29.6	165	761	42,910	559,626	$0.58	$17.20	88	01/15-04/15
1982	16-Dec	10.9	125	791	36,396	490,099	$1.06	$11.50	118	02/15-06/15
1983	5.6	5.2	108	448	15,255	282,006	$1.20	$6.20	118	02/15-06/15
1984	7.1	1.2	41	134	9,851	61,357	$0.95	$1.10	118	02/15-06/15
1985	3	3.1	44	166	15,325	104,707	$1.40	$4.30	149	01/15-06/15
1986	NO COMMERCIAL FISHERY									
1987	NO COMMERCIAL FISHERY									
1988	5.6	2.2	98	248	38,765	112,334	$2.17	$4.80	93	01/15-04/20
1989	13.5	7	109	359	43,607	184,892	$2.90	$20.30	110	01/15-05/07
1990[d]	29.5	24.5	179	1,032	46,440	711,137	$1.85	$45.30	89	01/15-04/24
1990/91	42.8	39.7	255	1,756	75,356	883,391	$1.12	$44.50	126	11/20-03/25
1991/92	32.8	31.5	285	2,339	85,401	1,244,633	$1.50	$47.30	137	11/15-03/31
1992/93	39.2	35.1	294	2,084	71,481	1,200,885	$1.69	$58.80	137	11/15-03/31
1993e	10.7	4.1	283	347	62,302	250,501	$1.90	$7.60	10	11/01-11/10
1993/94[f]	9.1	12.8	261	515	53,737	325,963	$1.90	$24.00	42	11/20-01/01
1994[f]	7.5	7.6	183	349	38,670	249,536	$3.75	$28.50	20	11/01-11/21
1995[f]	5.5	4.2	196	256	40,827	247,853	$2.80	$11.70	15	11/01-11/16
1996[e]	2.2g	1	192	195	38,300	75,753	$2.51	$2.50	4	11/01-11/05
1996[f]	6.2	0.8	135	152	29,955	73,522	$2.48	$2.00	12	11/15-11/27
1996[h]	8.4	1.8	327	347	68,602	149,275		$4.50	16	

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Table 5-23. (page 2 of 2)

Year	GHL[a,b]	Season Total[b]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total[c]	Season Length Days	Season Length Dates
1997	NO COMMERCIAL FISHERY									

[a]Guideline Harvest Level

[b]Millions of pounds, deadloss not included.

[c]Millions of dollars.

[d]Winter fishery.

[e]East of 168° West longitude (indicidental to Bristol Bay red king crab).

[f]163° -173° West longitude (directed fishery).

[g]East of 163° West longitude.

[h]Total vessel count for both fisheries, some vessels fished both fisheries.

Table 5-24. Bering Sea commercial *C. bairdi* Tanner crab seasons, 1968-1997.

Season	Date Opened	Date Closed	Number of Vessels	Harvest[a]	Average Wt.Lbs.	Average CPUE[b]	Price/ Pound
1968[c]			NA	17.9	2.8	5	NA
1969[c]			NA	1008.9	2.9	12	NA
1970[c]			NA	1014.7	2.1	29	NA
1971[c]			NA	166.1	2.7	8	NA
1972[c]			NA	108.8	2.6	10	NA
1973[c]			NA	231.7	2.5	6	NA
1974[c]			NA	5044.2	2	115	NA
1974/75	07/29	06/15	28	7027.4	2.5	72	$0.20
1975/76	08/01	07/15	66	22358.1	2.5	63	$0.19
1976/77	08/01	07/07	83	51455.2	2.5	68	$0.30
1977/78	09/15	06/15	120	66649	2.5	51	$0.38
1978/79	11/10	05/24	144	42547.2	2.5	42	$0.52
1979/80	11/01	05/11	152	36614.3	2.5	30	$0.52
1981	01/15	04/15	165	29630.5	2.5	21	$0.58
1982	02/15	06/15	125	11008.8	2.3	10	$1.06
1983[d]	02/15	05/22	108	5273.9	2.3	8	$1.20
		06/15					
1984	02/15	06/15	41	1208.2	2.3	8	$0.95
1985	01/15	06/15	44	3151.5	2.4	12	$1.40
1986			SEASON CLOSED				
1987			SEASON CLOSED				
1988	01/15	04/20	98	2210.4	2.5	8	$2.17
1989	01/15	05/07	109	7013	2.4	16	$2.90
1990	01/15	04/09[e]					
		04/24[f]	179	24549.3	2.3	15	$1.85
1990/91	11/20	03/25	255	40081.6	2.4	19	$1.12
1991/92	11/15	03/31	285	31796.4	2.5	10	$1.50
1992/93	11/15	03/31	294	35130.9	2.3	13	$1.69
1993/94	11/01	11/10[g]	283	4114.9	2.4	7	$1.90
	11/20	01/01[h]	261	12776.4	2.3	17	$1.90
1994	11/01	11/21[h]	183	7766.9	2.3	13	$3.75
1995	11/01	11/16[h]	196	4233.1	2.3	8	$2.80
1996[g]	11/01	11/05	192	994.8	2.5	5	$2.51
1996[h]	11/15	11/27	135	811.3	2.4	5	$2.48
1997			SEASON CLOSED				

[a]Thousands of pounds - deadloss included.

[b]Defined as catch per pot pull.

[c]Incidental to the king crab fishery.

[d]Partial Bering Sea closure.

[e]East of 165° West longitude.

[f]East of 165° West longitude.

[g]East of 168° West longitude.

[h]163° -173° West longitude.

Table 5-25. Bering Sea *C. bairdi* commercial catch by subdistrict, 1974/75-1997.

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

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Table 5-25. (page 2 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1982	Southeastern		539	3,825,433	8,812,302	322,634	2.3	12	69,829
	Pribilofs		252	1,005,547	2,196,477	167,465	2.2	6	68,330
	TOTAL	125	791	4,830,980	11,008,779	490,099	2.3	10	138,159
1983	Northern		10	29,478	48,454	5,950	1.7	5	167
	Southeastern		287	1,984,673	4,633,354	192,538	2.3	10	52,879
	Pribilofs		151	272,505	592,073	83,528	2.2	3	6,983
	TOTAL	108	448	2,286,756	5,273,881	282,006	2.3	8	60,029
1984	Southeastern		91	470,181	1,099,142	44,546	2.3	11	4,688
	Pribilofs		43	46,759	109,081	16,811	2.3	3	337
	TOTAL	41	134	516,877	1,208,223	61,357	2.3	8	5,025
1985	Southeastern	38	143	1,278,109	3,139,041	96,976	2.4	13	14,096
	Pribilofs	15	23	5,365	12,457	7,731	2.3	1	0
	TOTAL	44	166	1,283,474	31,513,498	104,707	2.4	12	14,096
1986	SEASON CLOSED								
1987	SEASON CLOSED								
1988	Eastern	98	248	897,059	2,210,394	112,334	2.5	8	10,724
	Western	0	0	0	0	0	0	0	0
	TOTAL	98	248	897,059	2,210,394	112,334	2.5	8	10,724

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Table 5-25. (page 3 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1990	Eastern		1,105	10,708,996	24,529,165	701,924	2.3	15	87,475
	Western		17	8,928	20,134	9,213	2.3	1	0
	TOTAL	179	1,032	10,717,924	24,549,299	711,137	2.3	15	87,475
1990/91	Eastern	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
	Western	0	0	0	0	0	0	0	0
	TOTAL	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
1991/92	Eastern	285	2,339	12,924,034	31,796,381	1,244,633	2.5	10	279,741
1992/93	Eastern	293	2,011	15,074,084	34,821,043	1,150,834	2.3	13	340,955
	Western	70	96	191,796	309,823	50,051	1.6	4	3,000
	TOTAL	294	2,084	15,265,880	35,130,866	1,200,885	2.3	13	343,955
1993/94	East of 168°[d]	283	347	1,696,430	4,114,949	250,501	2.4	7	103,715
	163° to 173°[e]	261	515	5,539,068	12,776,371	325,963	2.3	17	154,674
	TOTAL	296	862	7,235,498	16,891,320	576,464	2.3	13	258,389
1994	163° to 173°	183	349	3,351,639	7,766,886	249,536	2.3	13	132,780
1995	163° to 173°	196	256	1,877,303	4,233,061	247,853	2.3	8	44,508
1996	East of 168°[d]	192	195	393,257	994,776	75,753	2.5	5	8,464
	163° to 173°[e]	135	152	341,039	811,301	73,522	2.4	5	6,144
	TOTAL	196	347	734,296	1,806,077	149,275	2.5	5	14,608

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Table 5-25. (page 4 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1997				SEASON CLOSED					

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]November 1 - November 10, 1993.

[e]November 20, 1993 - January 1, 1994.

Table 5-26. Bering Sea commercial *C. opilio* Tanner catch statistics by season, 1977/78-1997.

Year	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	CPUE[c]	% New Shell	Average Weight[b]	Average Width[d]	Deadloss
1977/78	15	38	1,267,546	1,716,124	13,247	96	NA	1.4	NA	0
1978/79	102	490	22,118,498	32,187,039	190,746	116	83	1.5	113.1	759,137
1979/80	134	597	25,286,777	39,572,668	255,102	99	90	1.6	118.1	228,345
1981	153	867	34,415,322	52,750,034	435,742	79	79.2	1.5	117	2,269,979
1982	122	803	24,089,562	29,355,374	469,091	51	78	1.2	109.4	1,092,655
1983[f]	109	461	23,853,647	26,128,410	287,127	83	NA	1.1	NA	1,324,466
1984[f]	52	367	24,009,935	26,813,074	173,591	138	78	1.1	105.4	798,795
1985[f]	75	718	52,903,246	65,998,875	372,045	142	80	1.3	108	1,064,184
1986[f]	88	992	76,499,123	97,984,539	543,744	141	73.7	1.3	109.5	1,378,533
1987[f]	103	1,038	81,307,659	101,903,388	616,113	132	84	1.2	108.9	978,449
1988[f]	171	1,285	105,716,337	135,354,637	776,907	136	71.2	1.3	109.5	3,260,020
1989[f]	168	1,341	112,618,881	149,455,848	663,442	170	85.2	1.3	111.2	1,844,682
1990[f]	189	1,565	128,977,638	161,821,350	911,613	141	97.4	1.3	109.1	1,796,664
1991[f]	220	2,788	265,123,960	328,647,269	1,391,583	191	95.1	1.2	110.2	3,464,036
1992	250	2,763	227,376,582	315,302,034	1,281,796	177	97.6	1.4	111.7	2,325,852
1993	254	1,836	169,558,842	230,787,000	971,046	175	92.5	1.4	111.6	1,573,952
1994	273	1,293	114,779,014	149,775,765	716,524	160	93.1	1.3	110.4	1,799,323
1995	253	869	60,611,411	75,252,677	506,802	117	89.6	1.2	108.6	1,287,169
1996	234	766	52,912,823	65,712,797	520,651	102	75.8	1.2	107.5	1,333,014
1997	226	1,126	99,899,744	119,452,070	753,636	133	96.5	1.2	107.3	2,351,555

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Southeastern and Pribilof subdistricts only 1978 to 1987.

[e]Carapace width in millimeters.

[f]Partial district and subdistrict closures, see Table 5-27.

Table 5-27. Historical Bering Sea *Chionoecetes opilio* Tanner crab season dates and area closures.

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	12/31/84	Bering Sea District closure north of 58°N. lat. reopened after king season and Bering Sea District[b]
1985	1/15/85	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]
	10/9/85	12/31/85*	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 through the 1/15/86 start date for 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]

-Continued-

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Season	Opened	Closed	Comments
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. & east of 178° W. long. closure
		06/22/87	Northern Subdistrict north of 60°30' N lat. & 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 reopened and Western Subdistrict 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

[a]State managed domestic fishery.
[b]Concurrent state and federal date.

Table 5-28. Economic performance of the commercial Bering Sea *C. opilio* Tanner crab fishery, 1979/80-1997.

Year	GHL[a]	Season Total[a,b]	Number of Vessels	Number of Landings	Number of Pots Registered[c]	Number of Pots Pulled	Value Exvessel	Season Total[d]	Season Length[e]
1979/80	N/A	39.3	134	597	35,503	255,102	$0.21	$82.50	307
1981	39.5-91.0	50.5	153	867	39,789	435,742	$0.26	$13.10	229
1982	16.0-22.0	28.3	122	803	35,522	469,091	$0.73	$20.70	167
1983[f]	15.8	24.8	109	461	15,396	287,127	$0.35	$8.70	120
1984[f]	49	26	52	367	12,493	173,591	$0.30	$7.80	320
1985[f]	98	64.9	75	718	15,325	372,045	$0.30	$19.50	333
1986[f]	57	96.6	88	992	13,750	543,744	$0.60	$60.00	252
1987[f]	56.4	100.9	103	1,038	19,386	616,113	$0.75	$75.70	158
1988[f]	110.7	130.8	171	1,285	38,765	776,907	$0.77	$100.70	120
1989[f]	132	147.6	168	1,341	43,607	663,442	$0.75	$110.70	112
1990[f]	139.8	160	189	1,565	46,440	911,613	$0.64	$102.30	148
1991[f]	315	325.2	220	2,788	76,056	1,391,583	$0.50	$162.60	159
1992	333	313	250	2,763	77,858	1,281,796	$0.50	$156.50	97
1993	207.2	229.2	254	1,836	65,081	971,046	$0.75	$171.90	59
1994	105.8	148	273	1,293	54,837	716,524	$1.30	$192.40	45
1995	55.7	74	253	869	53,707	506,802	$2.43	$180.00	33
1996	50.7	64.4	234	766	50,169	520,651	$1.33	$85.60	45
1997	117	117.1	226	1,126	47,036	753,636	$0.79	$92.50	65

[a]Millions of pounds.

[b]Deadloss not included.

[c]Includes *C. bairdi* gear prior to 1992.

[d]Millions of dollars.

[e]In days.

[f]Partial district and subdistrict closures, see Table 5-27.

Table 5-29. Bering Sea commercial *C. opilio* Tanner crab catch by statistical area, 1997.

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
645530	5	276,983	380,948	2,816	98	1.4	1,306
655500	8	270,398	371,403	3,222	84	1.4	2,059
655530	21	828,441	1,074,362	9,925	84	1.3	8,775
655600	8	236,382	300,014	3,313	71	1.3	4,205
665430	11	315,519	407,933	3,409	93	1.3	8,128
665500	57	2,181,514	2,885,616	23,443	93	1.3	41,219
665530	120	6,911,435	8,882,613	56,438	123	1.3	75,649
665600	41	1,885,110	2,246,707	15,527	121	1.2	49,315
665630	8	322,805	403,769	2,931	110	1.3	3,661
675430	3	41,324	51,039	471	88	1.2	631
675500	83	4,956,902	6,246,156	37,520	132	1.3	110,569
675530	149	10,804,078	13,303,758	75,182	144	1.2	196,807
675600	145	8,920,252	10,308,915	59,505	150	1.2	248,577
675630	38	2,190,573	2,551,581	12,962	170	1.2	47,896
675700	3	100,260	115,304	678	148	1.2	790
685500	7	171,471	208,997	2,931	59	1.2	1,868
685530	61	6,060,005	7,272,596	34,500	176	1.2	117,342
685600	176	12,678,093	14,354,825	73,079	174	1.1	400,294
685630	88	5,485,678	6,225,060	35,255	156	1.1	206,442
685700	8	536,831	609,281	4,464	120	1.1	12,334
695600	24	883,713	1,016,301	7,942	111	1.2	24,892
695631	10	438523	511,714	4,273	103	1.2	3,186
705600	12	479,241	543,092	4,443	108	1.1	6,637
705630	8	170,888	201,196	1,504	114	1.2	5,354

-Continued-

Table 5-29. (Page 2 of 2)

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
715600	21	1,703,306	1,948,939	11,299	151	1.1	36,083
715630	81	4,475,568	5,223,125	35,799	125	1.2	149,352
715700	44	1,721,546	2,044,764	20,575	84	1.2	48,383
715730	5	47,279	59,493	849	56	1.3	4,606
725600	4	131,306	169,353	1,127	117	1.3	1,176
725630	91	6,822,111	8,079,244	46,159	148	1.2	146,478
725700	77	4,293,010	5,060,744	37,407	115	1.2	70,298
725730	32	1,388,898	1,643,501	13,187	105	1.2	50,655
735630	13	755,287	943,130	5,553	137	2.3	26,241
735700	47	2,246,838	2,636,642	20,146	112	1.2	50,427
735730	70	3,699,053	4,378,552	31,836	116	1.2	71,674
735800	26	987,304	1,182,037	11,930	83	1.2	30,045
735830	10	577,669	703,843	3,285	176	1.2	5,836
745800	12	146,283	175,755	1,755	83	1.2	1,842
745830	30	1,491,552	1,781,347	12,242	122	1.2	24,042
755830	9	83,634	102,008	1,088	77	1.2	1,342
755900	3	47,981	60,488	764	63	1.3	836
765930	4	133,514	184,694	2,330	57	1.4	4,880
775930	5	208,243	286,399	2,276	92	1.4	2,043
785930	3	165,149	239,418	1,359	122	1.5	2,907
786030	4	442,562	591,671	5,495	81	1.3	8,387
Other	35	1,185,232	1,483,743	11,442		1.3	36,086
Total	1,126[d]	99,899,744	119,452,070	753,636	133	1.2	2,351,555

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Actual total landings for the fishery.

Table 5-30. Bering Sea commercial *C. opilio* Tanner crab harvest by season and subdistrict, 1977/78-1997.

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1977/78	Southeastern		33	1,063,872	1,439,959	11,560	1.4	92	0
	Pribilof		5	203,674	276,165	1,687	1.4	121	
	TOTAL	15	38	1,267,546	1,716,124	13,247	1.4	96	0
1978/79	Southeastern	101	476	21,279,794	31,102,832	184,491	1.5	115	659,137
	Pribilof	10	14	838,704	1,084,039	6,225	1.5	135	100,000
	TOTAL	102	490	22,118,498	32,187,039	190,746	1.5	116	759,137
1979/80	Southeastern	133	561	23,199,446	36,406,391	237,375	1.6	98	187,945
	Pribilof	19	36	2,087,331	3,166,777	17,727	1.5	118	40,400
	TOTAL	134	597	25,286,777	39,572,668	255,102	1.6	99	228,345
1981	Southeastern		624	24,498,642	37,866,229	309,304	1.6	79	1,475,078
	Pribilof		243	9,916,617	14,886,705	126,438	1.5	78	794,901
	TOTAL	153	867	34,415,322	52,750,034	435,742	1.5	79	2,269,979
1982	Southeastern		468	10,207,174	13,079,583	257,193	1.3	40	422,979
	Pribilof		335	13,882,388	16,276,421	211,898	1.2	66	669,676
	TOTAL	122	803	24,089,562	29,355,374	469,091	1.2	51	1,092,655
1983	Southeastern		153	3,553,281	4,197,304	94,470	1.2	38	165,298
	Pribilof		239	19,076,553	20,514,000	153,458	1	124	1,078,643
	Northern		69	1,223,813	1,417,106	39,199	1.1	31	80,525
	TOTAL	109	461	23,853,647	26,128,410	287,127	1.1	83	1,324,466

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Table 5-30. (page 2 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1984	Southeastern		76	3,534,370	3,990,621	33,091	1.1	107	54,678
	Pribilof		230	17,909,096	19,727,493	112,078	1.1	160	708,706
	Northern		61	2,566,469	3,094,960	28,422	1.2	90	35,411
	TOTAL	52	367	24,009,935	26,813,074	173,591	1.1	138	798,795
1985	Southeastern	55	301	21,963,882	27,373,232	158,819	1.4	138	461,001
	Pribilof	60	301	24,089,526	29,804,093	142,937	1.2	169	505,146
	Northern	24	116	6,849,838	8,821,550	70,289	1.3	97	98,037
	TOTAL	75	718	52,903,246	65,998,875	372,045	1.3	142	1,064,184
1986	Southeastern	47	112	8,491,694	10,957,578	63,889	1.3	133	44,755
	Pribilof	80	508	39,851,767	50,525,150	281,337	1.3	142	472,342
	Northern	67	372	28,155,662	36,501,811	198,518	1.3	142	861,436
	TOTAL	88	992	76,499,123	97,984,539	543,744	1.3	141	1,378,533
1987	Southeastern	28	64	4,116,778	5,106,473	24,619	1.2	167	24,619
	Pribilof	94	458	38,604,802	47,676,734	261,337	1.2	148	261,337
	Northern	99	516	38,586,079	49,120,181	330,157	1.2	117	330,157
	TOTAL	103	1,038	81,307,659	101,903,388	616,113	1.2	132	978,449
1988	Eastern	162	770	59,811,702	75,781,258	431,310	1.3	139	775,104
	Western	151	515	45,904,635	58,278,927	335,597	1.3	137	2,484,916
	TOTAL	171	1,285	105,716,337	134,060,185	776,907	1.3	136	3,260,020

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Table 5-30. (page 3 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1989	Eastern	163	871	77,698,698	104,399,693	391,451	1.3	198	1,128,971
	Western	127	470	34,920,183	45,056,155	271,991	1.3	128	715,711
	TOTAL	168	1,341	112,618,881	149,455,848	663,442	1.3	170	1,844,682
1990	Eastern	177	956	76,331,829	94,831,897	512,259	1.2	149	1,010,755
	Western	152	659	52,645,809	66,989,453	399,354	1.3	132	785,909
	TOTAL	189	1,565	128,977,638	161,821,350	911,613	1.3	141	1,796,664
1991	Eastern	218	2,013	190,139,612	240,090,666	912,751	1.3	208	1,593,021
	Western	186	867	74,984,348	88,556,603	478,832	1.2	157	1,871,015
	TOTAL	220	2,788	265,123,960	328,647,269	1,391,583	1.2	191	3,464,036
1992	Eastern	250	N/A	217,375,564	302,363,005	1,228,280	1.4	177	2,268,467
	Western	55	N/A	10,001,018	12,939,029	53,516	1.3	187	57,385
	TOTAL	250	2,763	227,376,582	315,302,034	1,281,796	1.4	177	2,325,852
1993	Eastern	251	1,384	110,760,099	151,328,721	675,996	1.4	164	1,108,520
	Western	185	633	58,798,743	79,458,279	295,050	1.4	199	465,432
	TOTAL	254	1,836	169,558,842	230,787,000	971,046	1.4	175	1,573,952
1994	Eastern	220	820	56,012,017	72,008,424	375,928	1.3	149	901,674
	Western	171	586	58,766,997	77,767,341	340,596	1.3	173	897,649
	TOTAL	273	1,293	114,779,014	149,775,765	716,524	1.3	160	1,799,323

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Table 5-30. (page 4 of 4)

Season	Subdistrict	Number of Vessels	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
1995	Eastern	217	627	32,630,348	39,736,986	313,910	1.2	104	657,051
	Western	153	357	27,981,063	35,515,691	192,892	1.3	145	630,118
	TOTAL	253	869	60,611,411	75,252,677	506,802	1.2	120	1,287,169
1996	Eastern	161	462	23,676,069	28,244,924	252,227	1.2	94	555,118
	Western	146	351	29,236,754	37,467,873	268,424	1.3	109	777,896
	TOTAL	234	766	52,912,823	65,712,797	520,651	1.2	102	1,333,014
1997	Eastern	225	1,040	88,410,807	105.557,817	648,815	1.2	133	2,115,217
	Western	83	164	11,488,937	13,894,253	104,821	1.2	108	236,338
	TOTAL	226	1,126	99,899,744	119,452,070	753,636	1.2	133	2,351,555

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

Table 5-31. Bering Sea *Chionoecetes tanneri* Tanner crab fishery statistics, 1992-1997.

Year	Harvest[a]	Number of Crabs[a]	Number of Vessels	Pots Pulled	Exvessel Value	Fishery Value[b]	Average Weight[c]	Average CPUE	Deadloss
1992				CONFIDENTIAL					
1993	658,796	342,095	6	35,650	$0.94	$0.60	1.9	9	71,000
1994	332,454	165,365	4	13,739	$1.20	$0.40	2	11	30,585
1995	1,005,721	38,313	8	60,993	$1.40	$1.31	2.1	7	69,177
1996	106,886	40,849	3	14,504	$1.08	$0.10	2.1	3	11,186
1997				NO LANDINGS					

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

Table 5-32. Bering Sea *Chionoecetes angulatus* Tanner crab fishery statistics, 1992-1997.

Year	Harvest[a]	Number of Vessels	Number of Crabs[a]	Pots Pulled	Exvessel Value	Fishery Value[b]	Average Weight[c]	Average CPUE	Deadloss
1992				NO REPORTED HARVEST					
1993				NO REPORTED HARVEST					
1994				NO REPORTED HARVEST					
1995	49,007	4	41,914	22,180	$1.35	$0.05	1.2	1	14,147
1996				CONFIDENTIAL					
1997				NO REPORTED HARVEST					

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

Table 5-33. Korean hair crab catch statistics from the Bering Sea, 1978-1997.

Year	Number of Vessels	Number of Landings	Crab[a]	Harvest[a,b]	Registered	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
1978/79	11	16	2,457	5,213		9,908	<1	2.1	0
1979/80	9	17	25,417	53,914		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[e]	7	26	197,209	396,630		22,392	9	2.0	19,436
1985[e]	3	9	34,410	66,042		3,905	9	2.0	593
1986[e]	3	7	7,289	14,835		4,720	2	2.0	500
1987[e]				CONFIDENTIAL					
1988[e]				NO FISHING					
1989[e]				NO FISHING					
1990[e]				NO FISHING					
1991[e]	7	42	441,533	377,708		44,444	10	.9	0
1992[e,f]	9	20	203,758	240,767		38,808	5	1.2	11,495
1992[e,g]	10	47	1,127,948	1,198,590		125,943	9	1.1	65,674
1993[e,f]	4	5	2,347	3,038		9,345	<1	1.3	0
1993/94[e,g,h,j]	19	129	1,936,795	2,331,686		585,913	3	1.2	124,596
1994[e,g]	10	55	897,070	1,199,246	13,350	287,954	3	1.3	49,275
1995[e,g]	21	81	1,485,097	2,059,988	25,750	441,494	3	1.4	73,882

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Table 5-33. (Page 2 of 2)

Year	Number of Vessels	Number of Landings	Crab[a]	Harvest[a,b]	Pots Registered	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
1996	19	99	485,735	745,804	20,680	410,548	1	1.5	32,495
1997	16	52	420,121	668,096	18,180	211,970	2	1.6	17,522

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Millions of dollars.

[e]Permit fishery.

[f]Spring fishery.

[g]Fall fishery.

[h]Fishery opened Nov. 1, 1993 and closed April 20, 1994.

[j]Includes 7 vessels which landed hair crab incidental to C. bairdi.

Table 5-34. Bering Sea Korean hair crab economic performance, 1978/79-1997.

Year	Season GHL[a,b]	Season Total[b]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total[c]	Season Days	Season Dates
1978/79		5,213	11	16		9,908	$0.54	$.003	257	04/19-12/31
1979/80		53,914	9	17		14,506	$0.75	$0.04	244	01/01-08/30
1980/81[d,e]		2,174,114	67	192		172,695	$0.80	$1.7	242	11/01-06/30
1981/82		902,835	48	159		117,518	$0.55	$0.5	288	11/01-08/15
1982/83		1,088,964	52	161		84,346	$0.65	$0.7	297	10/08-08/01
1983/84		378,476	19	48		20,414	$1.20	$0.5	335	08/01-06/30
1984[f]		377,194	7	26		22,392	$1.60	$0.6	184	07/01-12/31
1985[f]		65,449	3	9		3,905	$1.60	$0.1	365	01/01-12/31
1986[f]		14,335	3	7		4,720	$1.15	$0.2	365	01/01-12/31
1987[f]			CONFIDENTIAL						365	01/01-12/31
1988[f]			NO FISHING							
1989[f]			NO FISHING							
1990[f]			NO FISHING							
1991[f]		377,708	7	42		44,444	$3.08	$1.2	365	01/01-12/31
1992[f,g]		229,272	9	20		38,808	$2.25	$0.5	32	01/01-06/04
1992[f,h]		1,132,916	10	47		125,943	$2.46	$2.8	156	10/01-11/01
1993[i,g]		3,038	4	5		9,345	NA	NA	45	04/01-05/15
1993/94[f,h,i]	3.0[j]	2,207,090	19	129	14,345	585,913	$2.42	$5.3	171	11/01-04/20
1994[f,h]	1.1	1,149,971	10	55	13,350	287,954	$3.55	$4.0	41	11/01-12/12
1995[f,h]	1.8	1,986,106	21	81	25,750	441,494	$2.87	$5.7	25	11/01-11/26

-Continued-

Table 5-34. (page 2 of 2).

Year	Season GHL[a,b]	Season Total[b]	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total[c]	Season Days	Season Dates
1996[f,h]	0.9	713,309	19	99	20,680	410,548	$2.65	$1.9	31	11/01-12/02
1997[h]	0.8	650,574	16	52	18,180	211,970	$2.97	$1.9	25[k]	11/01-11/25

[a] Prior to 1993 the fishery was managed to historical harvest levels.

[b] Does not include deadloss.

[c] Millions of dollars.

[d] Season opened within three miles year round.

[e] Emergency Order reopened within three miles.

[f] Permit fishery.

[g] Spring fishery.

[h] Fall fishery.

[i] Includes 7 vessels which landed hair crab incidental to C. bairdi.

[j] GHL was 2.5 and 0.5 million pounds West and East of 168° W. long., respectively.

[k] Season opened at noon and closed at 10:00 pm.

Table 5-35. Bering Sea snail catch statistics by season, 1992 - 1997.

Year	Number of		Number of Pots		Harvest[c]	CPUE	Pounds per Pot[b]	Deadloss
	Vessels	Landings	Registered	Pulled				
1992					Confidential			
1993	4	10	13,800	44,686	312,876	25.01	7	NA[a]
1994	4	42	14,850	279,349	2,027,328	21.34	7.26	62,571
1995	4	38	18,800	262,096	2,352,825	28.05	8.98	22,371
1996	5	67	31,300	741,326	3,572,992	16.07	4.82	62,494
1997	3	17	14,500	191,893	932,048	15.67	4.86	77,131

[a]Historical data unavailable in some years.

[b]Whole weight.

[c]Deadloss Included

Table 5-36. Bering Sea snail economic performance, 1993-1997.

Year	Season Total[a]	Number of Vessels	Number of Landings	Value Exvessel	Value 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

[a]Weight in pounds

Table 5-37. Bering Sea Miscellaneous catch statistics by season, 1996-1997.

Year	Fishery	Number of		Number of Pots		Harvest[a]	CPUE	Deadloss
		Vessels	Landings	Registered	Pulled			
1995	Octopus	10	15	2,273	19,154	9,307	0.04	0
	Shrimp	NO COMMERCIAL HARVEST						
	Paralomis multispina	NO COMMERCIAL HARVEST						
1996	Octopus	9		NA[b]	NA[b]	27,115	NA[b]	NA[b]
	Shrimp	NO VESSEL PARTICIPATION						
	Paralomis multispina	CONFIDENTIAL						
1997	Octopus	19	8[c]	NA[b]	NA[b]	1,107	NA[b]	NA[b]
	Shrimp	NO VESSEL PARTICIPATION						
	Paralomis multispina	NO VESSEL PARTICIPATION						

[a]Deadloss Included

[b]Historical data unavailable in some years.

[c]All landings incidental to other fisheries.

Table 5-38. North Peninsula District Dungeness crab fishery statistics; 1992-1997.

Year	Harvest[a]	Number of Crabs[a]	Number of Vessels	Pots Pulled	Value Exvessel	Value Total[b]	Average Weight[c]	Average CPUE	Deadloss
1992				NO COMMERCIAL EFFORT					
1993				CONFIDENTIAL					
1994				CONFIDENTIAL					
1995	134,407	63,732	6	34,499	$1.32	$0.18	2.1	4	367
1996				CONFIDENTIAL					
1997				CONFIDENTIAL					

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

Table 5-39. Bering Sea fisheries with imposed pot limits, 1997/98.

Fishery	Pot Limits	
	<=125 Feet	>125 Feet
Norton Sound King Crab	40	50
St. Lawrence King Crab	40	50
Pribilof King Crab	40	50
St. Matthew King Crab	60	75
Bristol Bay King Crab	100	125
Bering Sea Tanner	200	250

Table 5-40. Multi-tiered pot limit guidelines established by the Board of Fisheries and adopted for regulation on August 27, 1997 to be valid through December 31, 1998.

GHLa Range (Million Pounds)	Number of Vessels	Number of Pots		Management Type
		Vessels <125ft	Vessels >125ft	
<4.0	Any	0	0	Season Closed
4.0 to 5.9	<200	80	100	Inseason
	200-250	60	75	Inseason
	>250	60	75	Pre-announced Closure
6.0 to 8.9	<200	120	150	Inseason
	200-250	100	125	Inseason
	>250	100	125	Pre-announced Closure
9.0 to 12	<200	200	250	Inseason
	200-250	160	200	Inseason
	>250	160	200	Pre-announced Closure
>12	Any	200	250	Inseason

[a]Guideline harvest level

Table 5-41. Number of Bering Sea buoy tags printed and issued by fishery, 1997/98.

Fishery	Number of Tags Printed[a]	Number of Tag Sets issued <=125[b]	Number of Tag Sets issued >125[b]	Number of Tags Issued <=125[b]	Number of Tags Issued >125[b]
Pribilof Red and Blue King Crab	6,250	47	7	1,880	350
Pibilof Brown King Crab	surplus tags used	5	2	200	100
St. Matthew Blue King Crab	10,000	75	42	4,500	3,150
Bristol Bay Red King Crab	62,500	181	78	18,120	9,750
Bering Sea Opilio Tanner Crab	62,500	149	80	29,025	19,830
Bering Sea CDQc Opilio Tanner Crab	surplus tags used	15	6	2,850	1,400
Totals	141,250	472	215	56,575	34,580
Totals for Vessels of Both Size Categories	141,250	687		91,155	

[a]Tags were printed in sets of 250 then separated numerically into appropriate sized sets for each fishery.

[b]Vessel length in feet.

[c]Community Development Quota.

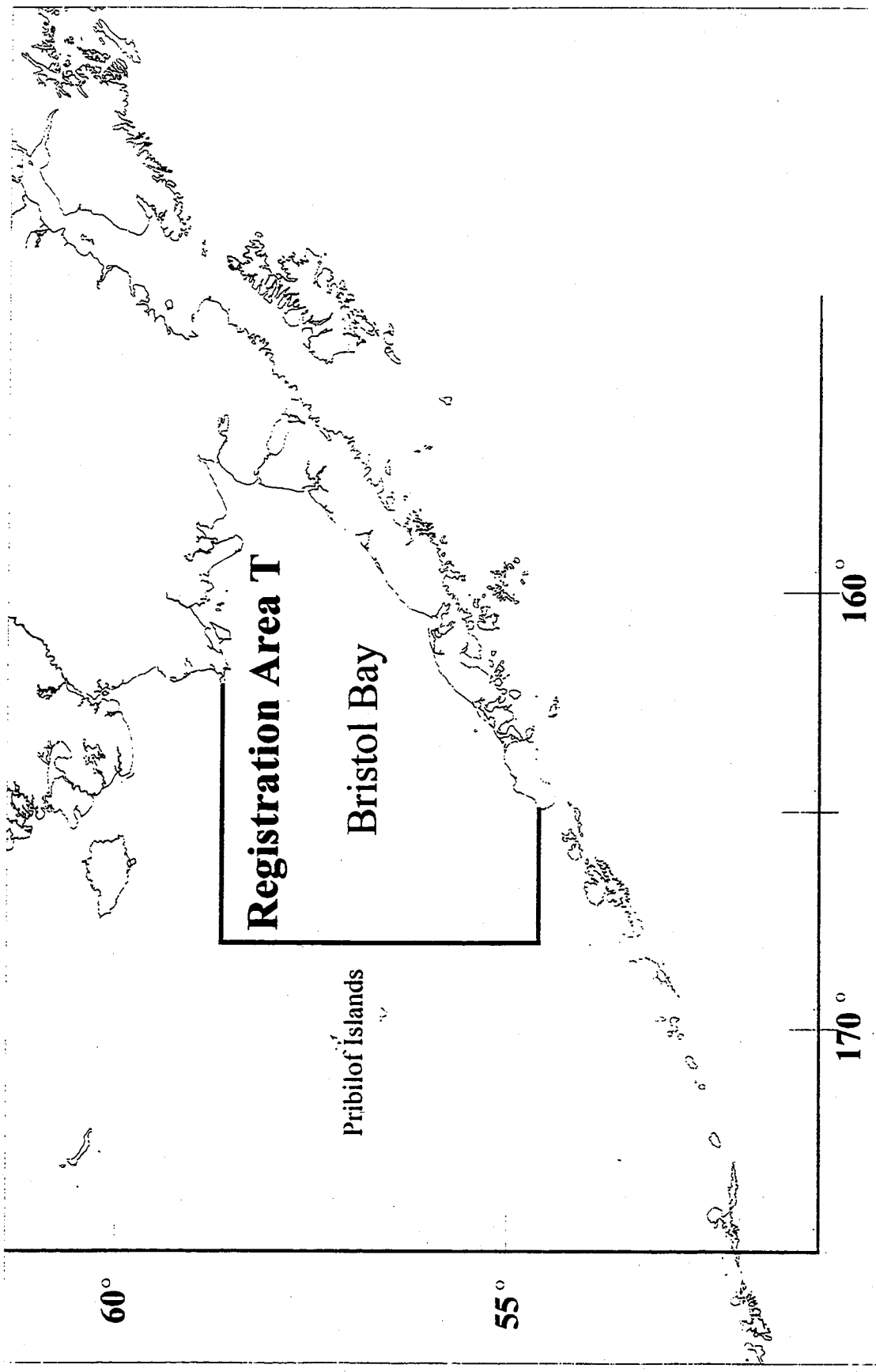

Figure 5-1. Bristol Bay king crab management area, Registration Area T.

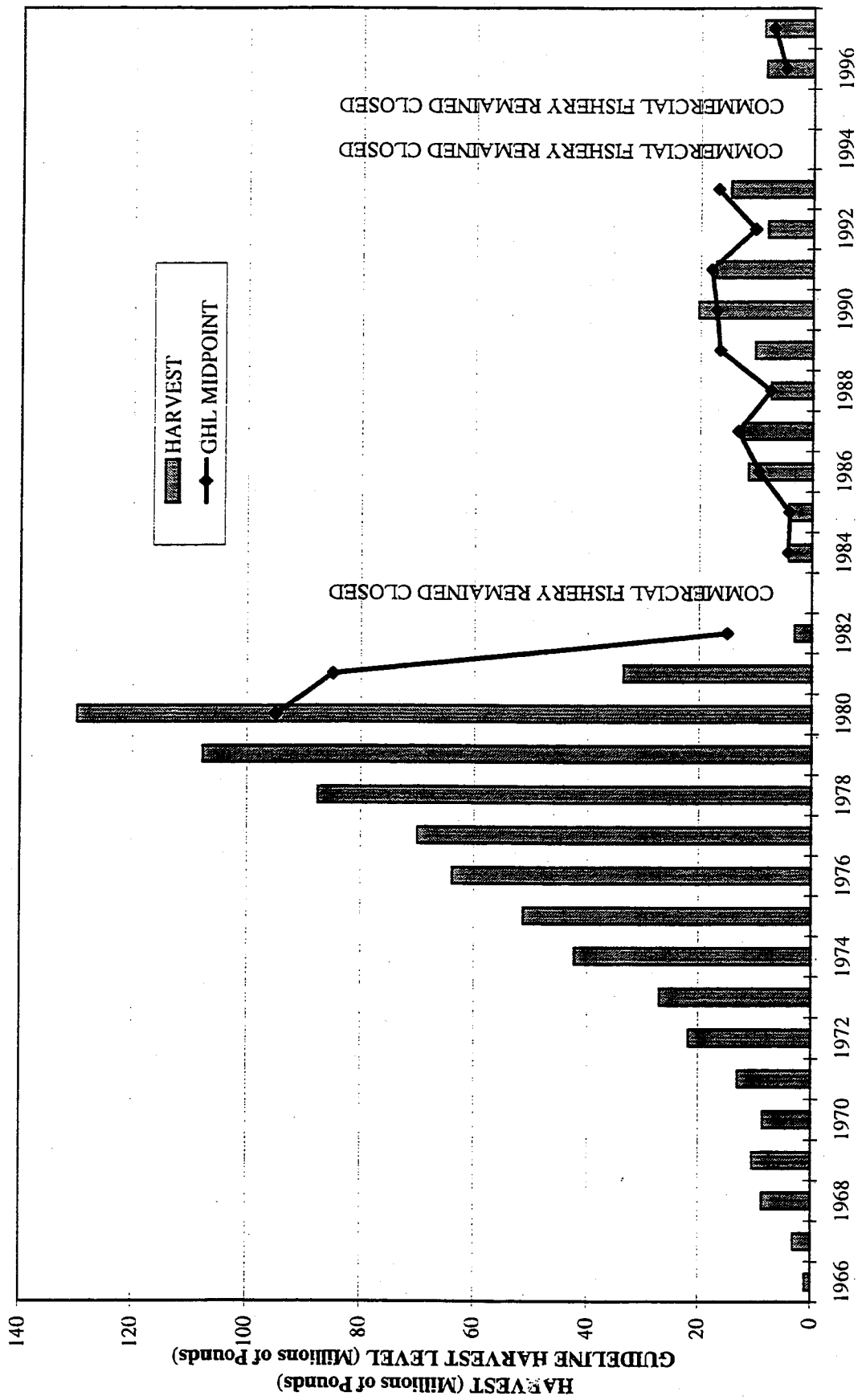

Figure 5-2. Historic Bristol Bay red king crab harvest and Guideline Harvest Midpoint, 1966 - 1997.

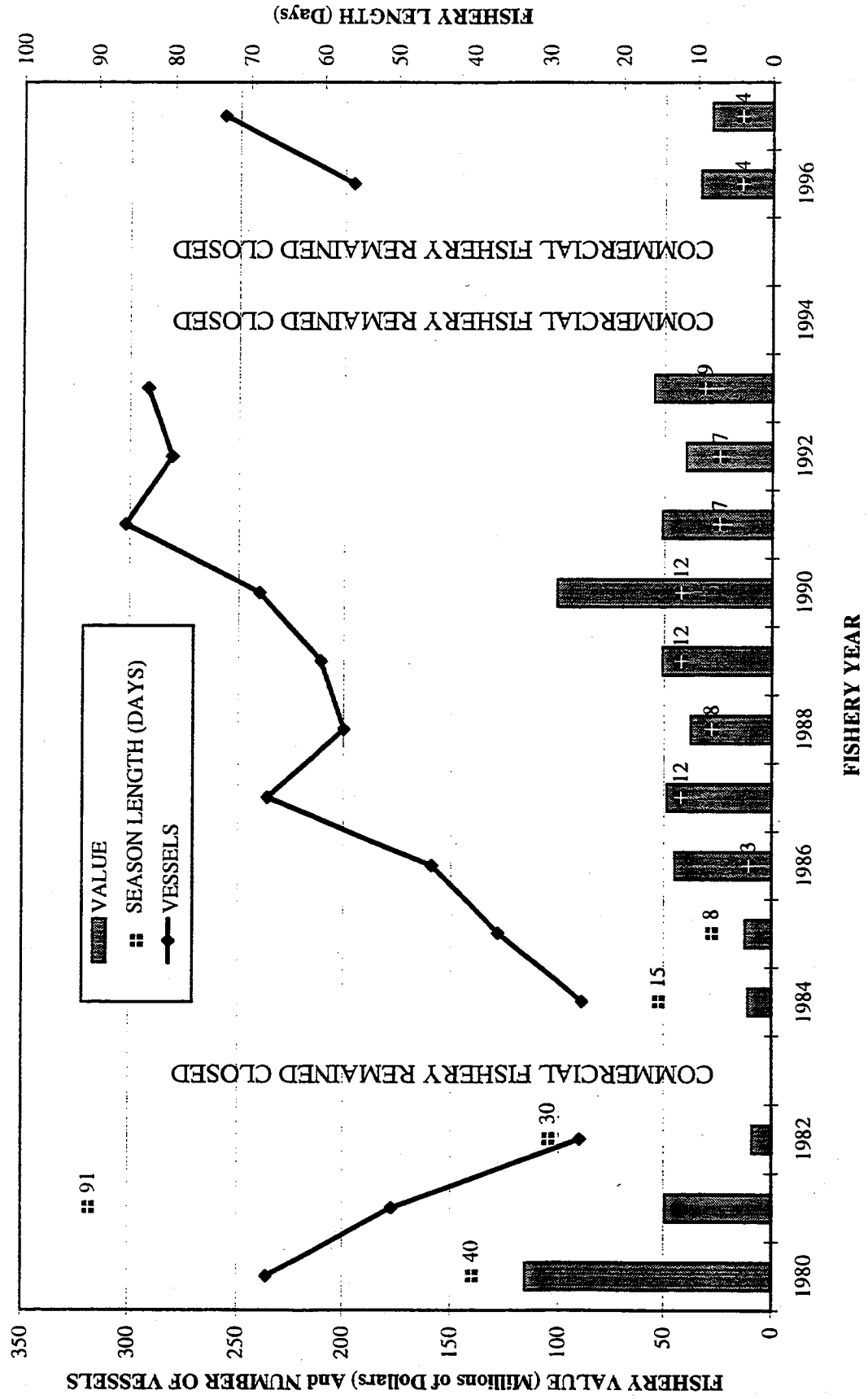

Figure 5-3. Economic performance of the Bristol Bay red king crab fishery in terms of vessel effort, season length (days), and total fishery value, 1980 - 1997.

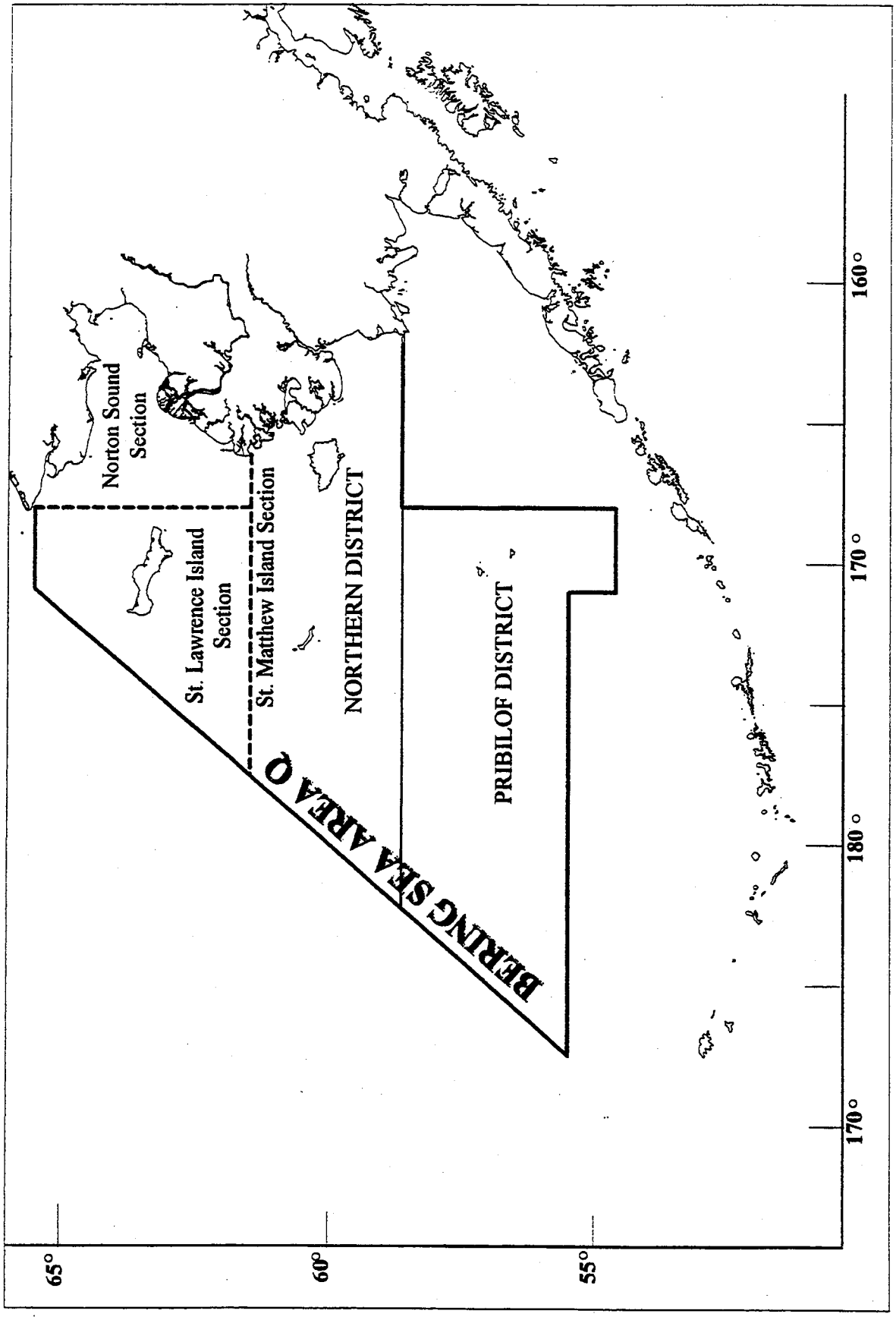

Figure 5-4. Bering Sea, Area Q, king crab registration area with districts and sections.

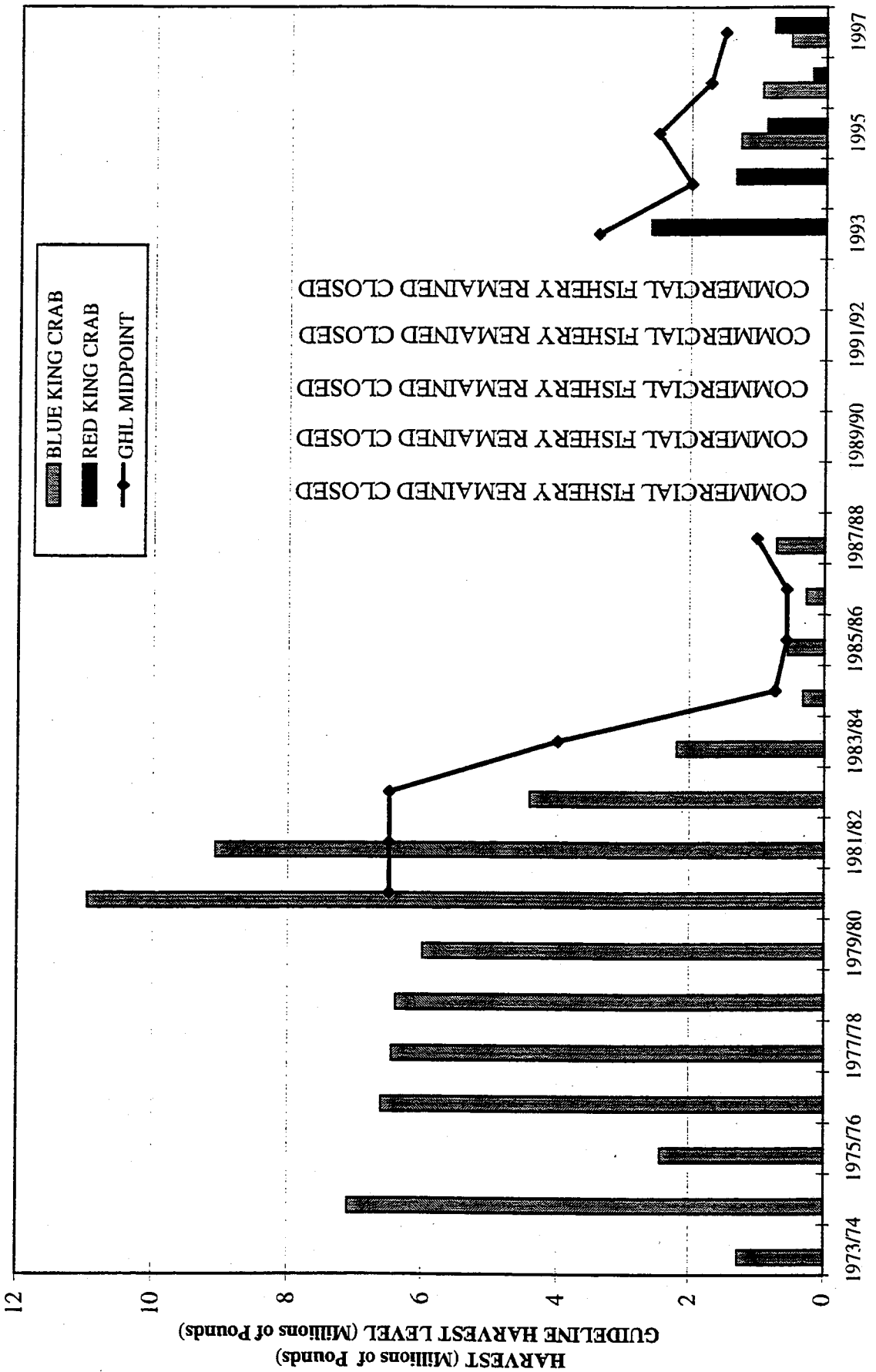

Figure 5-5. Historic red and blue king crab harvest in pounds with Guideline Harvest Level midpoints for the Pribilof District of the Bering Sea, 1973 - 1997.

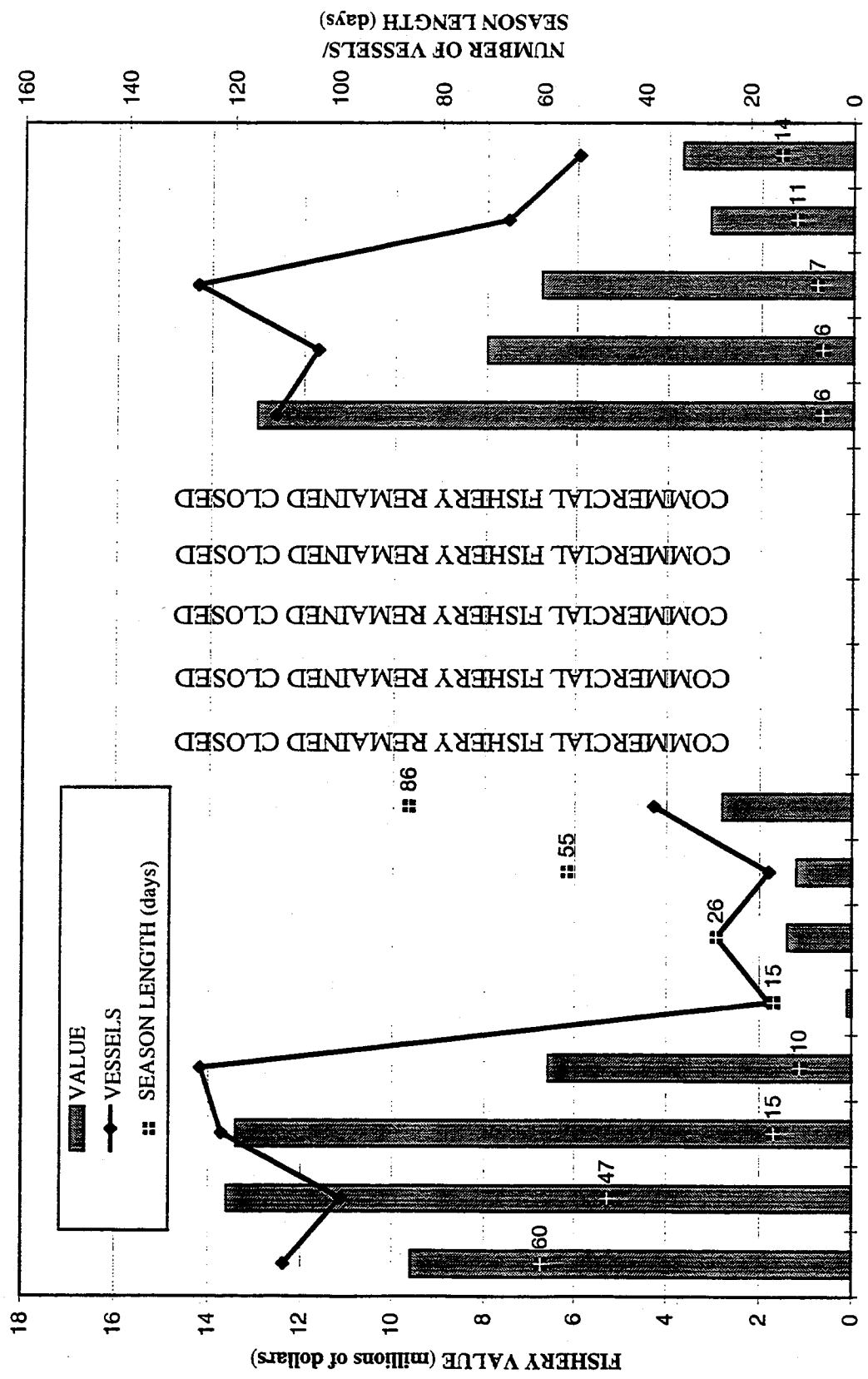

Figure 5-6. Economic performance of the Pribilof District king crab fishery in terms of vessel effort, season length (days), and total fishery value, 1980 - 1997.

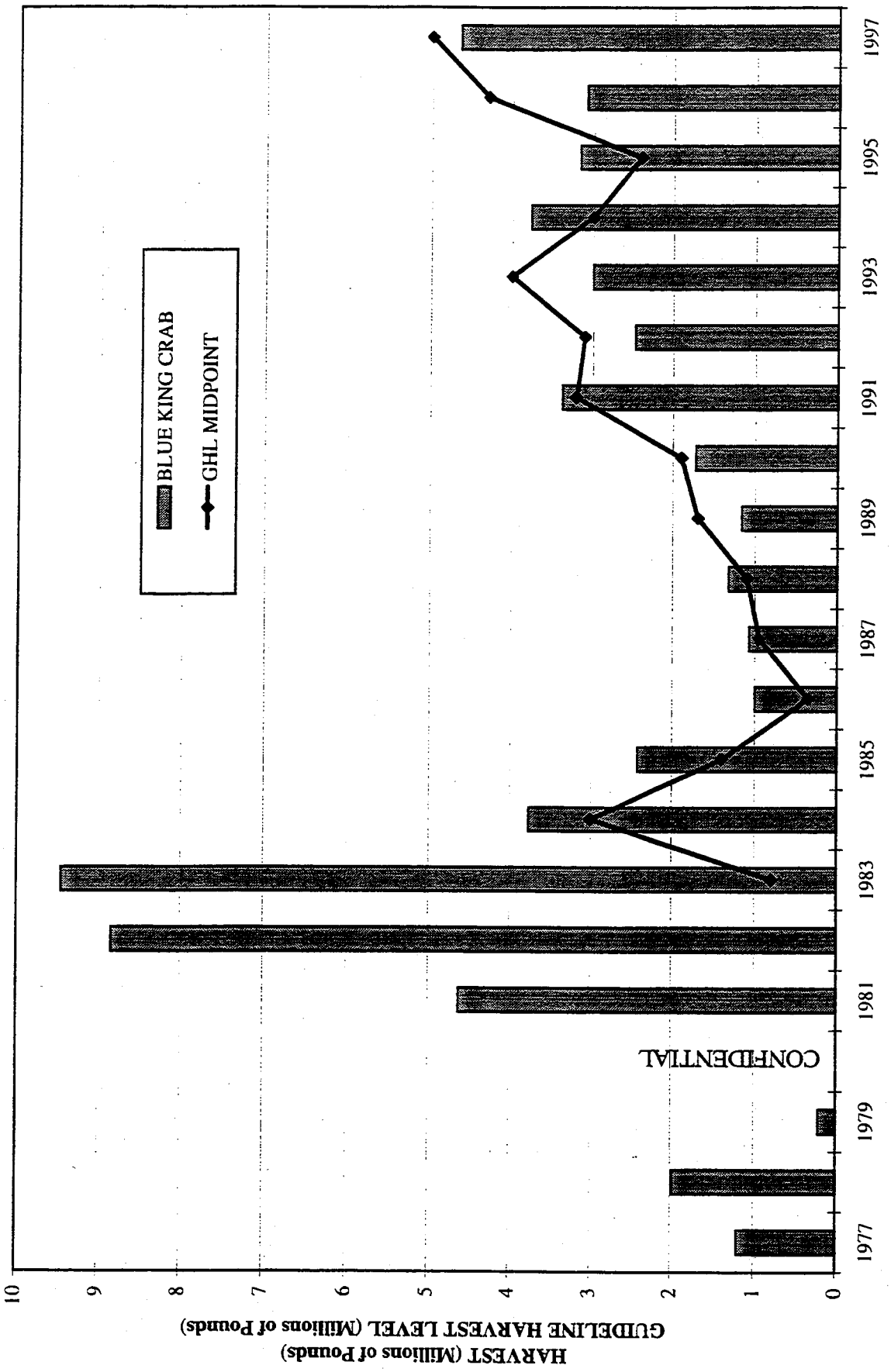

Figure 5-7. Historic blue king crab harvest in millions of pounds with Guideline Harvest Level Midpoint for the St. Matthew Island Section of the Northern District, 1977 - 1997.

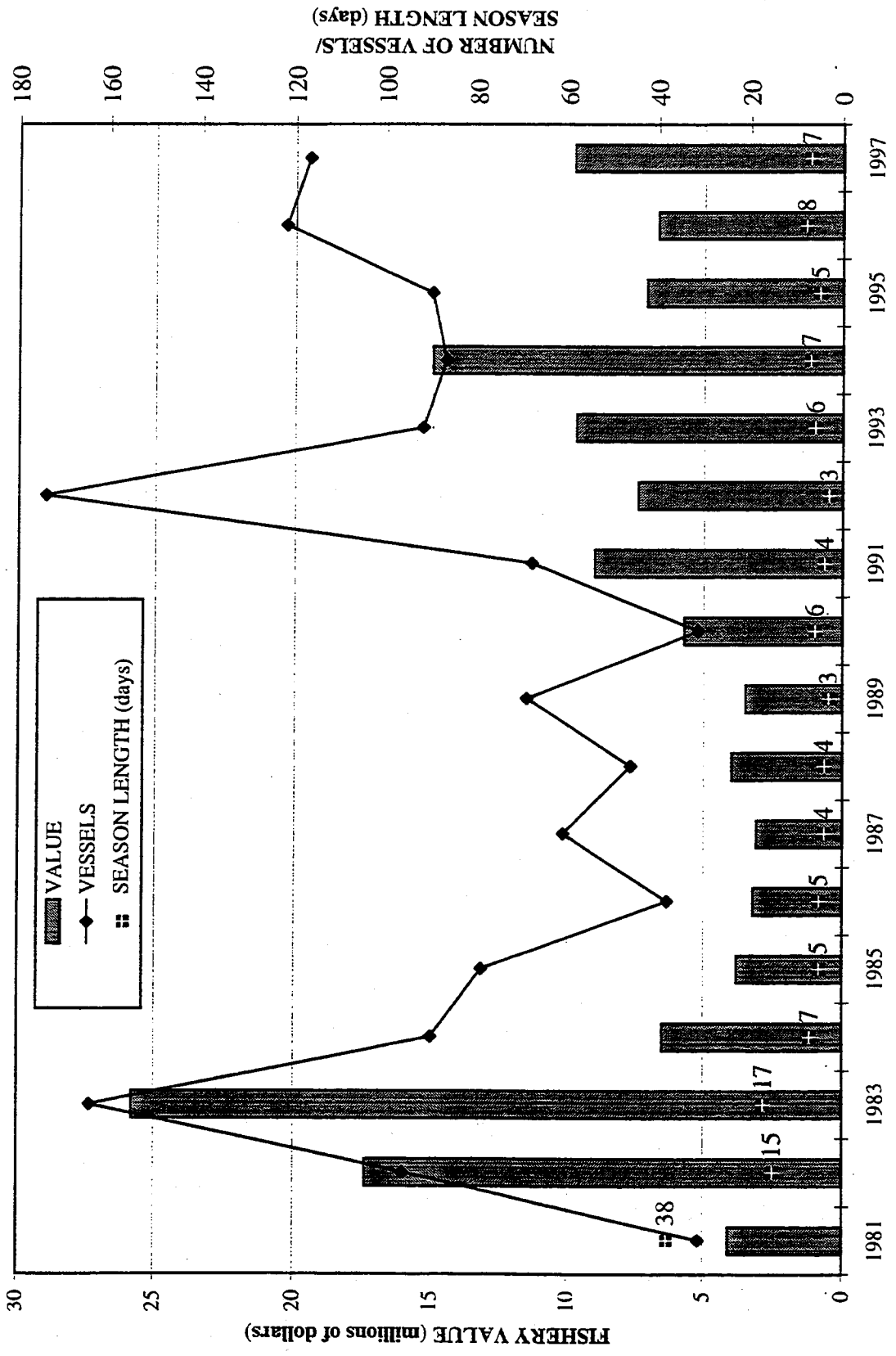

Figure 5-8. Economic performance of the St. Matthew Island Section of the Northern District king crab fishery in terms of vessel effort,season length (days), and total fishery value, 1981 - 1997.

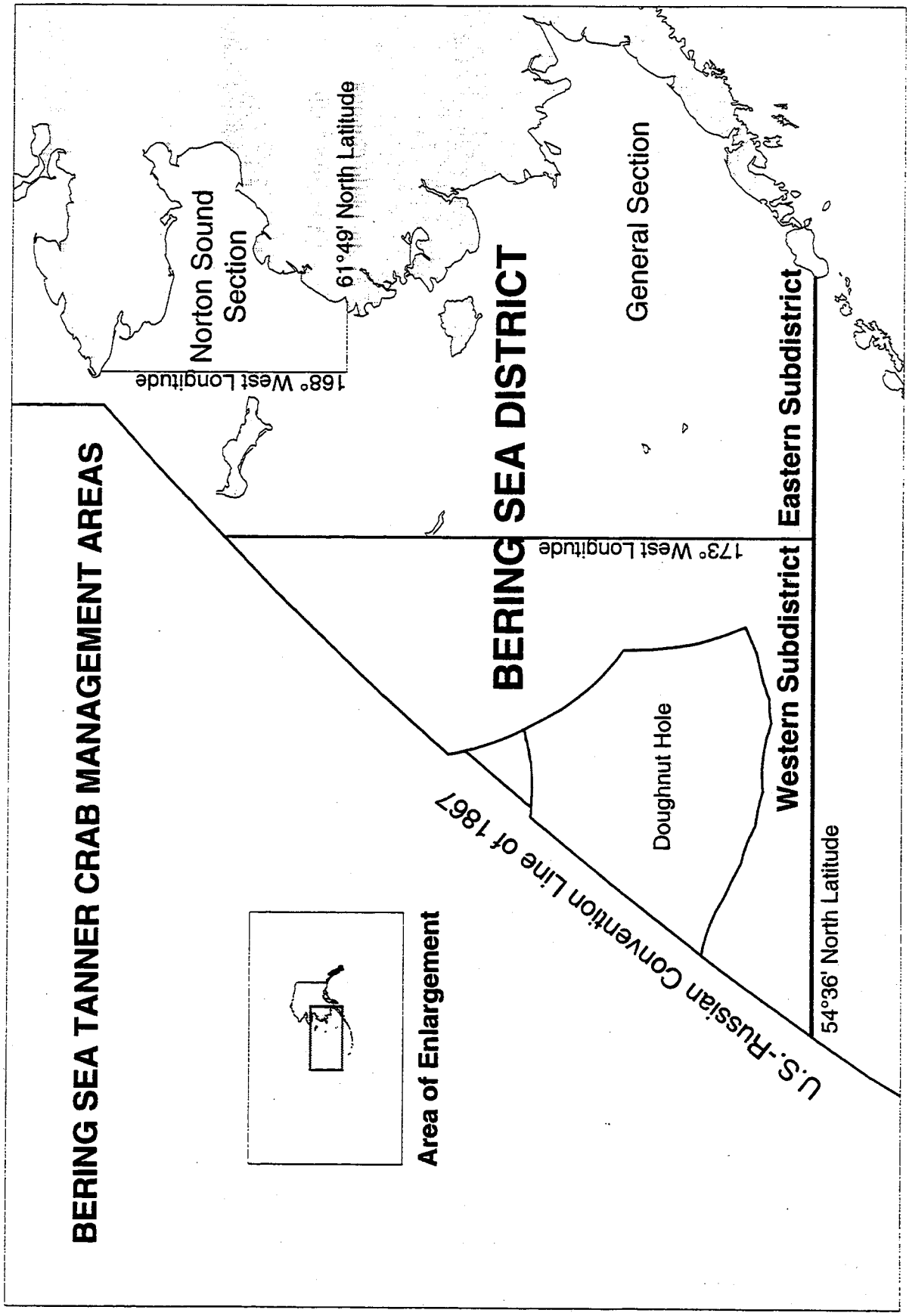

Figure 5-9. The Bering Sea Tanner crab management area, Area Q, with subdistricts and sections.

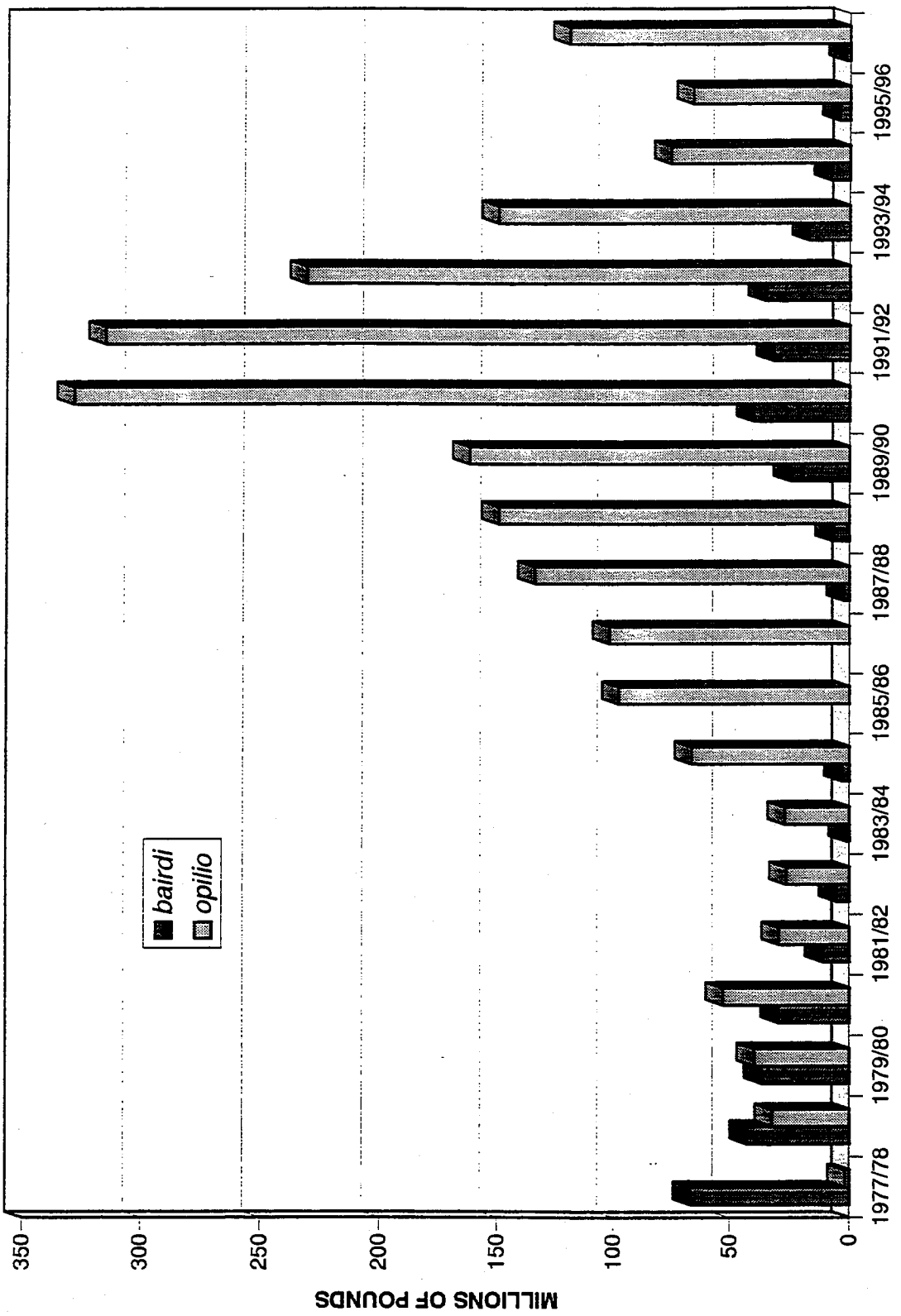

Figure 5-10. Comparison of histroic Bering Sea *Chionoecetes bairdi* and *C. opilio* harvest, 1977/78 - 1996/97.

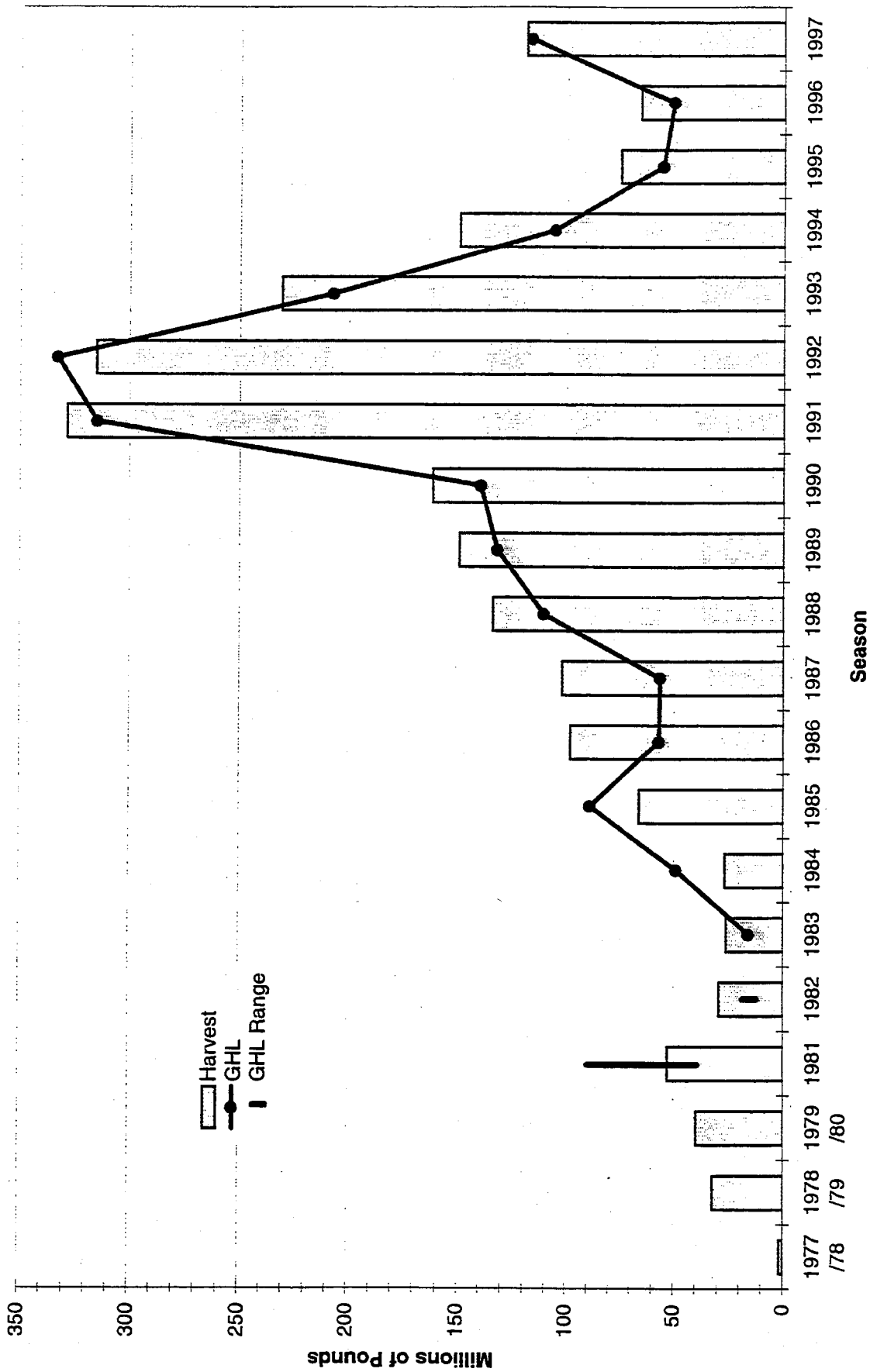

Figure 5-11. Historic Bering Sea *Chionoecetes opilio* harvest and guideline harvest level (GHL) and ranges, 1977/78 - 1997.

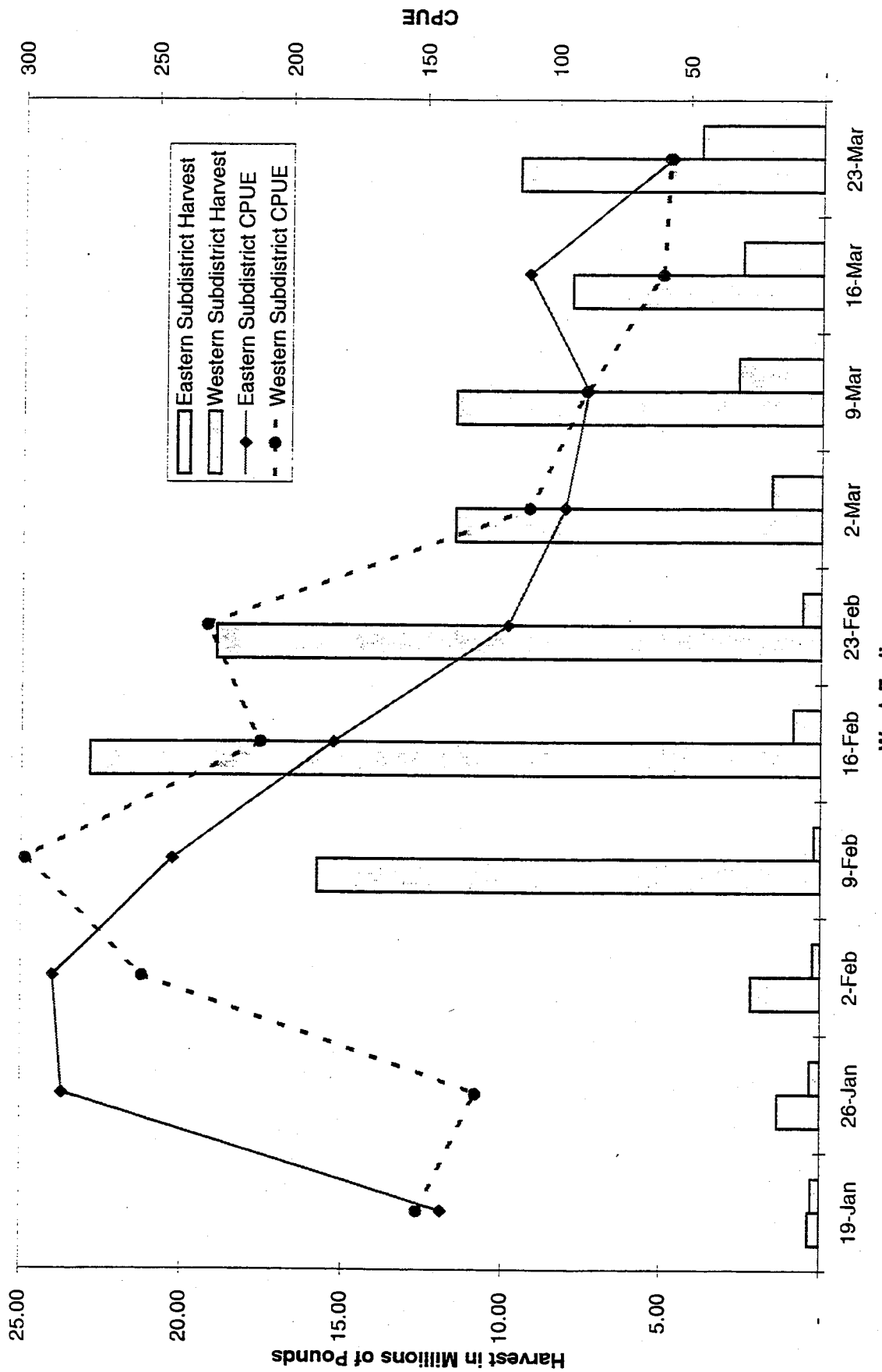

Figure 5-12. Harvest and CPUE by week in the 1997 *Chionoecetes opilio* fishery.

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES OF THE ALEUTIAN ISLANDS

By

Rance Morrison, Area Management Biologist

Robert K. Gish, Assistant Area Management Biologist

Mike Ruccio, Staff Management Biologist

Aleutian Islands Management Staff

Dutch Harbor Area Office
PO Box 920587
Dutch Harbor, Alaska 99692

May, 1998

ALEUTIAN ISLANDS KING CRAB MANAGEMENT AREA

Description of Area

The Aleutian Islands king crab registration area, Area O, has as its eastern boundary the longitude of Scotch Cap Light (164°44' West longitude), as its western boundary the U.S.-Russian Convention Line of 1867, and as its northern boundary a line the latitude of Cape Sarichef (54° 36' North latitude) from Unimak Island west to 171° West longitude, then north to 55°30' North latitude, and continuing west to the U.S.- Russian Convention Line of 1867 (Figure 4-1).

ALEUTIAN ISLANDS RED KING CRAB

Historic Background

In March of 1996, the Alaska Board of Fisheries (BOF) established the new Aleutian Islands king crab registration area by combining two existing king crab registration areas, Dutch Harbor and Adak. This action was in response to a proposal from fishermen regarding the brown (or golden) king crab fishery in those areas. Development of the new management area was not expected to impact management of red king crabs in this area.

The Dutch Harbor red king crab fishery, which occurred in the eastern portion of the Aleutian Islands Area, began in 1961 and rapidly became a major production area. Harvest fluctuated widely, reaching a peak during the 1966/67 season at 33 million pounds and then declining to 430 thousand pounds during the 1982/83 season. The fishery has remained closed since the 1982/83 season due to low stock abundance.

The Adak red king crab fishery, which occurred in the western portion of the Aleutian Island Area, also started in 1961; it peaked in the 1964/65 season at 21.2 million pounds. Harvest varied from almost 19 million pounds in 1972/73 to just over 400 thousand pounds in 1975/76. Harvest remained relatively stable at less than two million pounds from the 1980/81 to the 1992/93 seasons. The harvest declined from 700 thousand pounds in 1993/94 to 39 thousand pounds in 1995/96.

1997/98 Fishery

The Aleutian Islands red king crab fishery was not opened for the 1997/98 season due to low stock abundance. Regional Information Report No. 4K97-16: Annual Management Report for the Shellfish Fisheries of the Westward Region, 1995, contains historical information regarding catch and economic performance of the former Adak and Dutch

Harbor red king crab fisheries. Tables 4-1 and 4-2 contain information pertaining to the historic catch and economic performance of the Aleutian Islands red king crab fishery.

Stock Status

The last trawl survey conducted in the Aleutian Islands registration occurred in 1995 and encompassed only the eastern portion of what was previously the Dutch Harbor registration area. In that survey, conducted by the Alaska Department of Fish and Game, no red king crab were caught at any trawl station. Based on these results no stock recovery is expected in this area for the foreseeable future. The next scheduled survey of the eastern Aleutian areas is tentatively in scheduled for the summer of 1999.

ALEUTIAN ISLANDS GOLDEN KING CRAB

Historic Background

In March of 1996, the Alaska Board of Fisheries established the new Aleutian Islands king crab registration area by combining two existing areas, Dutch Harbor and Adak. The board action was in response to a petition by fisherman to move the existing line separating the two areas to the east. The intent of the petition was to move the Adak line east to include the Western District of the Dutch Harbor area. This would, essentially, put all of the productive golden king crab (*Lithodes aequispinus)* waters of the Aleutian Islands into the Adak registration area. (It should be noted that *L. aequispinus* is often referred to as brown king crab and appears as such in the Alaska Department of Fish and Game's Commercial Fishing Regulations.)

In response to the petition, the Alaska Department of Fish and Game favored moving the line west to 174° West longitude, noting the existing line divided the most abundant stock of golden king crab in the area between Scotch Cap Light and the U.S.- Russian Convention Line of 1867. This would allow the department to manage that population as a discrete stock. Historic catch data from Dutch Harbor and Adak indicates a majority of the harvest from these areas occurs between 169° and 174° West Longitude (Figure 4-2).

The board eliminated the existing line between the Dutch Harbor and Adak areas forming one registration area, the Aleutian Islands, Area O. The board also eliminated district designations after testimony was presented by the department that districts were not currently used as a management tool.

The board, noting distribution of crabs in the new area (Figure 4-2), directed the department to manage the population east of 174° West longitude as a discrete stock of golden king crab. A conservative approach to the management of golden king crab in this area was stipulated by the board, as was 100% observer coverage. The level of future observer coverage will be addressed at the Spring 1999 Board of Fish meeting.

1996/97 Fishery

The inaugural Aleutian Islands Area O golden (brown) king crab fishery opened at 12:00 noon on September 1. The department established a guideline harvest level of 5.9 million for this new area. The harvest level was based on a conservative approach to the recent harvest levels observed in the Dutch Harbor and Adak golden king crab fisheries (Table 4-3). A 3.2 million pound quota was set for the area east of 174° West longitude, and 2.7 million pounds was established for the western part of the registration area.

Analysis of data for the 1996/97 season showed a total of 18 vessels made 166 deliveries for a harvest of 5.8 million pounds. This compares to a combined Adak and Dutch Harbor total of 181 landings made by 28 vessels for a harvest of 6.9 million pounds during the 1995/96 season (Table 4-3 and Figure 4-3).

Most fishing effort occurred east of 174° West longitude until that area was closed by emergency order (E. O.) on December 25, 1996. Fish ticket data for that area showed a total of 14 vessels made 70 deliveries for 3.3 million pounds (Table 4-3). Fish ticket data for the area west of 174° West longitude showed a total of 13 vessels made 100 deliveries for 2.6 million pounds. The portion of Area O west of 174° West longitude was not closed by E.O. this year; fishermen did not attain the GHL of 2.7 million pounds prior to the opening of the entire registration area for the 1997/98 season.

Catch rate (CPUE) for the entire Aleutian Islands registration area was six crabs per pot pull (Table 4-3). The average weight of legal sized male crab was 4.4 pounds. Fishery data for the eastern portion of the area show a CPUE of six crabs per pot pull, while the average weight was 4.5 pounds. This compares favorably with the 1995 Dutch Harbor fishery in this area, however, it is somewhat higher than the 1995/96 Adak fishery east of 174° West longitude. In the eastern part of Adak, CPUE was five crabs per pot pull and the average weight was 4.2 pounds. CPUE for the western portion of the Aleutian Islands was six crabs per pot pull; average weight was 4.2 pounds. This compares to five crabs per pot pull and 4.2 pounds for the average weight of crab observed in the 1995/96 Adak fishery west of 174° West longitude.

Fifteen vessels obtained observers, registered and received tank inspections at the start of the fishery. Of the 18 vessels participating in this fishery, 5 fished in waters east of 174° West longitude only, 4 fished only west of that longitude and 9 operated in both areas. This level of vessel effort (18) is similar to that recently observed in the Dutch Harbor area, but is well below the effort observed in recent years in the Adak area (average of 27 vessels for the prior three seasons).

Vessel activity varied greatly throughout the fishery, from as many as 17 vessels down to 1 vessel operating at a time. Most vessels that operated in the Aleutian Islands fishery departed the grounds to participate in other fisheries. Those fisheries included the St. Matthew and Bristol Bay king crab, Pribilof hair crab and Bering Sea *C. bairdi* and *C. opilio* fisheries. Also, a low exvessel price for golden king crab ($2.20 per pound at the start of the fishery), combined with the anticipated early closure of the most productive

grounds (the area east of 174° West longitude) prompted many vessel owners to schedule shipyard time during the summer of 1997.

Two catcher-processors participated in this fishery during the 1996/97 season; both operated entirely in the western portion of the registration area. Two catcher-processors operated during the 1995/96 Adak fishery with activity occurring east and west of 174° West longitude, while one catcher-processor operated during the 1995 Dutch Harbor fishery. No floater-processors have operated in this area since the 1994 Dutch Harbor and the 1994/95 Adak fishery.

The exvessel price per pound observed for the Aleutian Island golden king crab fishery was $2.23 (Table 4-4). The estimated fishery value was $12.5 million. Approximately $6.8 million was generated from the eastern portion of the registration area during the 115 day season, while $5.7 million was produced by the 365 day season in the western portion.

Harvest in the area east of 174° West longitude occurred predominantly from the statistical areas around Yunaska Island and the Islands of the Four Mountains in what was previously the Dutch Harbor area (Table 4-5 and Figure 4-1). Also, Amukta Pass and Seguam Pass were areas of additional fishing concentration in what was the eastern part of the Adak area. Harvest in the area west of 174° West longitude was distributed from Amlia Island to Attu Island, but was primarily centered between Amchitka Pass and Buldir Island.

Preliminary - 1997/98 Fishery

The Aleutian Islands Area O golden king crab fishery opened at 12:00 noon on September 1. Fourteen vessels obtained observers, registered and received tank inspections at the start of the fishery. Participation in this fishery varied greatly, from one vessel to a maximum of fifteen, as vessels departed this fishery to participate in the St. Matthew, Pribilof and Bristol Bay king crab and Bering Sea snow crab fisheries.

Preliminary analysis of fish ticket data for the area east of 174° West longitude showed 14 vessels made 69 landings for 3.35 million pounds (Table 4-6). The catch rate (CPUE) was seven crabs per pot pull; the average weight was 4.5 pounds per crab. This area closed by E. O. on November 24. The western part of the registration area (west of 174° West longitude) remains open; harvest information is confidential.

Stock Status

Aleutian Islands golden king crab stocks are not regularly surveyed; the last survey with complete analysis occurred in 1991. A portion of the eastern Aleutian Islands area was surveyed in the summer of 1997. Information from this survey and that provided by

observers will yield information necessary to more accurately assess Aleutian Islands brown king crab and manage the fishery.

ALEUTIAN ISLANDS SCARLET KING CRAB

Historic Background

In March of 1996, the Alaska Board of Fisheries (BOF) established the new Aleutian Islands king crab registration area by combining two existing king crab management areas, Dutch Harbor and Adak. The new management area, the Aleutian Islands Area O, extends from Scotch Cap Light (164°44' West longitude) to the U.S.-Russia Convention Line of 1867. The management of scarlet king crab in this area was not effected by this action. Scarlet king crab are harvested under authority of a permit as authorized in 5 AAC 34.082. Prior to September 1, 1996, scarlet king crab have been primarily harvested in this area as incidental to the golden or brown king crab fishery in the former Dutch Harbor and Adak management areas and the deepwater Tanner crab fishery in the Eastern and Western Aleutian Districts.

1997 Fishery

In 1997, eight vessels registered to harvest *Lithodes couesi* as incidental bycatch in the Aleutian Island golden or brown king crab fishery. A total of 6,720 pounds of *L. couesi* were harvested from 12 landings made by only three of the eight vessels that registered in 1997 (Table 4-7).

Stock Status

There are no surveys conducted, nor any population estimates made for *L. couesi* in the Aleutian Islands Management area. However, 100% observer coverage has provided information on the size, sex and species composition of the retained and non-retained catch. This information will be used by the department to develop a harvest strategy for this deepwater crab species.

EASTERN ALEUTIAN TANNER CRAB MANAGEMENT DISTRICT

Description of Area

The Eastern Aleutian District for Tanner crab encompasses all waters of Statistical Area J between the longitude of Scotch Cap Light at 164°44' West longitude and 172° West

longitude, and south of the latitude of Cape Sarichef at 54°36' North latitude (Figure 4-4).

EASTERN ALEUTIAN TANNER CRAB

Introduction

The Eastern Aleutian District is marginal habitat for *Chionoecetes bairdi* Tanner crabs as evidenced by the presence of commercial quantities in only a few major bays and inlets. The fishery has been rather small, and except for the late 1970's (with a record catch of 2.5 million pounds in the 1977/78 season), harvest has remained significantly less than one million pounds (Table 4-8). The fishery began in Akutan and Unalaska Bays but has since expanded to include all areas known to contain Tanner crabs. The 1994 fishery produced a total harvest of 166, 545 pounds. The depressed status of Tanner crab stocks in this area, based on a triennial survey last conducted in 1995, resulted in the area remaining closed during the 1995 and 1996 seasons.

1996/97 Fishery

There was no fishery for *C. bairdi* in the Eastern Aleutian District in 1997 due to low stock abundance. Tables 4-8 and 4-9 contain historical information on catch and economic fishery performance.

Stock Status

Surveys conducted of the Eastern Aleutian District conducted in 1990 and 1991 indicated a population level that could support a harvest in the 100,000 pound range. A subsequent survey in 1994 conducted by the department showed a 75% decline in the *C. bairdi* population from the levels observed in 1991. This decline prompted emergency closure of the 1995 season. The 1995 survey indicated an increase in population abundance over the 1994 survey, but still well below the levels observed in 1990 and 1991. An increase of juvenile males and immature females was observed in the 1995 survey compared to the 1994 survey. However, the abundance of legal males had declined well below the 1994 estimates prompting an extension of the fishery closure. The originally planned survey for 1998 has been rescheduled for completion in 1999. Results of that survey will be used to reevaluate the status of this Tanner crab stock

EASTERN ALEUTIAN *CHIONOECETES TANNERI* TANNER CRAB

Historic Background

In the early 1980's *Chionoecetes tanneri,* or grooved Tanner crab, were occasionally landed in the Eastern Aleutians area incidental to the developing Dutch Harbor golden or brown king crab fishery. Until 1993 however, no steady market existed for *C. tanneri* and no commercial harvest was reported.

During 1993, interest in *C. tanneri* increased and commercial landings were made from the Eastern Aleutian District. Fishing effort in this district was from July through December, and only one vessel participated during the entire season. Also in 1993 based on biometric measurements collected by onboard observers, the department restricted the harvest to males five inches or greater in carapace width.

To collect biological information on *C. tanneri*, the department implemented 100% observer coverage in 1994 as allowed by the permit provisions provided in 5 AAC 35.082 (changed in October 1996 to 5 AAC 35.551). Effort in the fishery increased from one vessel in 1993 to three in 1994, seven in 1995 and decreased back to three in 1996. Vessels typically started fishing for *C. tanneri* in March after the closure of the *C. opilio* fishery and continued into December for 1994 and 1995 while ceasing in August in 1996.

In 1997, the department set guideline harvest levels (GHL's) derived from previous season's catch information from the areas where extensive fishing for *C. tanneri* had occurred. The Eastern Aleutians, along with the Bering Sea and Alaska Peninsula registration areas were among areas where historically, effort had been extensive. A GHL of 200,000 pounds was set for each of the aforementioned areas. Smaller 100,000 pound GHL's were set for the Kodiak and Western Aleutian areas to allow for further exploration to less historically fished areas. Additionally, pots were required to have at least two escape rings of 4.5 inches minimum diameter. This provision was included to address industry concerns about viability of deepwater crabs discarded at sea because of size and sex restrictions.

1997 Fishery

No vessels registered to harvest *C. tanneri* in the Eastern Aleutian District in 1997. Table 4-10 contains information on historic catch and economic fishery performance.

Stock Status

No stock assessment surveys are conducted for *C. tanneri* Tanner crab, and consequently no population estimates are available. Onboard observers have been required on all vessels targeting *C. tanneri* since 1994. This program has yielded data on size, sex and

species composition of the retained and non-retained catch which will help provide the basis for a management strategy for this deepwater species.

EASTERN ALEUTIAN *CHIONOECETES ANGULATUS* TANNER CRAB

Historic Background

Chionoecetes angulatus Tanner crab are taken under provisions of a permit authorized under 5 AAC 35.511 (5 AAC 35.082 prior to October 1996), and have previously been harvested in the Eastern Aleutian District as incidental bycatch in the *C. tanneri* fishery. Fishermen have anecdotally reported catching this crab species in small numbers, but prior to the 1995 season no harvest was reported on fish tickets. Shellfish observers, required for all deepwater Tanner crab fisheries, reported a small percentage of *C. angulatus* in 1994. Vessels targeted *C. angulatus* for the first time in 1995.

1997 fishery

No vessels registered to harvest *C. angulatus* in the Eastern Aleutian District in 1997. Table 4-11 includes information on historical catch and economic performance for the Eastern Aleutian District *C. angulatus* fishery.

Stock Status

No stock assessment surveys information is available for *C. angulatus* and, consequently stock abundance is unknown. Onboard observers have been required on all vessels targeting *C. angulatus* and *C. tanneri* and information on size, sex and species composition of the retained and non-retained catch has been collected. This information will be used in developing a management strategy for this deepwater species in future years.

WESTERN ALEUTIAN DISTRICT TANNER CRAB DISTRICT

Description of Area

The Western Aleutian District of Statistical Area J includes all waters west of 172° West longitude, East of the U.S.-Russian Convention Line of 1867, and south of 54° 36' North latitude (Figure 4-5).

WESTERN ALEUTIAN DISTRICT TANNER CRAB

Historic Background

The harvest of Tanner crabs, *Chionoecetes bairdi,* from the Western Aleutian District have generally been incidental to the directed red king crab fishery in that area. Since the late 1970's, the harvest has ranged from a high of over 800,000 pounds in 1981/82 to the catch of less than 8,000 pounds in 1991/92 (Table 4-12).

1996/97 Fishery

The Western Aleutian District Tanner crab fishery opened by regulation on November 1, 1996. No vessels had registered in the Western Aleutian District by the regulatory closure on March 31, 1997, therefore no landings were recorded for the 1996/97 season. Tables 4-12 and 4-13 contain historic fishery and economic performance for the Western Aleutian Tanner crab District.

Stock Status

No stock assessment surveys are conducted for *C. bairdi* Tanner crab in the Western Aleutian District and consequently no population estimates are available.

WESTERN ALEUTIAN *CHIONOECETES TANNERI* TANNER CRAB

Historic Background

The first reported landings of *Chionoecetes tanneri* Tanner crab from the Western Aleutian District occurred in the late 1970's as incidental catch from the developing golden or brown king crab fishery in the Adak king crab Management Area. In 1993 the department restricted the *C. tanneri* males five inches or greater in carapace width, however no effort was recorded from the Western Aleutian District.

To collect biological information on *C. tanneri* crabs the department implemented 100% observer coverage in 1994, as allowed by the permit provisions provided in 5 AAC 35.082 (now 5 AAC 35.511). During that year six vessels registered to fish, however only two made deliveries. One vessel directed fishing effort for *C. tanneri* crab for a portion of the season, the other made deliveries only incidental to the Adak golden or brown king crab fishery. In 1995 six vessels delivered 145,795 pounds, while effort decreased to only one vessel in 1996 (Table 4-14).

In 1997, based on the data collected by onboard observers, the department instituted Guideline Harvest Levels (GHL) for *C. tanneri* crabs. The GHL's were also based on historical landings for *C. tanneri* from specific registration areas. As the Western Aleutians had seen minimal harvest of *C. tanneri*, a 100,000 pound GHL was set for the District to allow for exploratory and incidental bycatch harvest.

Anecdotal information obtained from fishermen indicate some *C. angulatus* may have been retained as incidental bycatch in the *C. tanneri* and golden king crab fisheries in the area. However, there has been no documented harvest of *C. angulatus* from the Western Aleutian District.

1997 Fishery

No vessels registered to harvest *C. tanneri* from the Western Aleutian Tanner District in 1997.

Stock Status

No stock assessment surveys are conducted for *C. tanneri* Tanner crab and therefore no population estimates are available. Onboard observers have provided information on size, sex, and species composition of the retained and non-retained catch necessary to formulate a harvest strategy for this deepwater species.

ALEUTIAN DISTRICT DUNGENESS CRAB

Description of Area

The Aleutian District for Dungeness crabs *Cancer magister* includes all waters of Statistical Area J west of the longitude of Scotch Cap Light (164°44' West longitude) and south of the latitude of Cape Sarichef (54°36' North latitude). This area encompasses all of the Aleutian Islands (Figure 4-6).

Introduction

Islands in the Aleutian chain are separated by deep passes with swift currents. They are closely bordered on the north and south by the Aleutian Basin and Trench, respectively. Dungeness crabs inhabit bays, estuaries, and other shallow water habitats. Suitable habitat for Dungeness crabs in the Aleutian Islands is sparse and widely dispersed; therefore, populations are small and fishing effort is low within the district.

Historic Background

The Aleutian District Dungeness crab fishery is primarily a small vessel, summer fishery occurring in the vicinity of Unalaska Island, mainly within Unalaska Bay. Some larger vessel effort has occurred in other bays and around other islands. Effort in these areas has been sporadic throughout the history of the fishery.

Interest and activity in this fishery has been erratic form year to year, with the first reliable reports made in 1970. Since 1974, deliveries have ranged from zero in 1976, 1977, 1980, 1981, and 1994 through 1996, to over 91,000 pounds in 1984/85 (Table 15).

1997/98 Fishery

The 1997/98 Aleutian District Dungeness crab fishery opened by regulation at 12:00 noon on May 1. Five vessels registered for this fishery though only two made commercial landings. Given the number of participating vessels, catch information from the 1997/98 Aleutian District Dungeness crab fishery is confidential. Table 4-15 contains historical catch and economic performance for the fishery. The 1997/98 fishery closed by regulation at 12:00 noon on January 1, 1998.

ALEUTIAN SHRIMP MANAGEMENT DISTRICT

Description of Area

The Aleutian District of Area J for shrimp includes all Bering Sea and Pacific Ocean waters west of the longitude of Cape Sarichef at 164° 55' West longitude (Figure 4-7). The Aleutian District includes four sections: Unalaska Bay, Makushin Bay, Usof Bay and Beaver Inlet.

ALEUTIAN DISTRICT SHRIMP

Historic Background

The shrimp fishery has primarily been for pink shrimp *Pandalus borealis*. The shrimp fishery in the Aleutian District began in 1972 and has primarily been a trawl fishery. Catch and effort increased in the following years and peaked in 1977/78 at a harvest of 6.8 million pounds. Sharp declines in catches since 1978 prompted a reduction in season length. Between the years 1983 and 1992 no fishing occurred. However, in 1992 four vessels, all catcher-processors, prospected in the Aleutian District between the pollock seasons. Low concentrations of shrimp were located and all four vessels quit after

making a total of six landings for 72,133 pounds. For the years 1993-1997 no vessels registered or participated in the Aleutian District shrimp fishery (Table 4-16).

1997 Trawl Fishery

No vessels registered to trawl for shrimp in the Aleutian District during the 1997 season; therefore, no commercial harvest was reported.

1997 Pot Fishery

Two vessels registered to harvest shrimp using pots in the Aleutian District during the 1997 season; however, no commercial harvest was reported.

ALEUTIAN DISTRICT MISCELANEOUS SHELLFISH SPECIES REPORT

Description of the Area

The Eastern Aleutian District includes all waters south of the latitude of Cape Sarichef (54° 36' North latitude), west of the longitude of Scotch Cap Light (164° 44' West longitude), and east of the U.S.-Russian Convention line of 1867 (Figure 4-8).

Introduction

Shellfish species included in this section are those which are harvested in relatively small amounts compared to the commercial king and Tanner crab fisheries which occur in the Aleutian Islands. Those miscellaneous shellfish of historic or current interest include octopus, sea urchins, sea cucumbers, hair crab and snails.

Octopus

One vessel registered to target octopus in the Aleutian District in 1997. An additional five vessels registered to retain octopus as bycatch in the groundfish fisheries. One vessel registered to target octopus in both the Aleutians and Bering Sea Districts, while eleven vessels registered to retain octopus as bycatch in both of the districts. The combined harvest from all vessels participating in the Aleutian District octopus fishery during 1997 totaled 96,118 pounds from 233 landings.

Hair Crab

No vessels registered to fish Korean hair crab, *Erimacrus isembeckii,* in the Aleutian District during 1997.

Sea Urchins

Urchins are harvested by permits issued under authority granted by 5 AAC 38.412 from October 1 to January 31. No vessels or divers registered for sea urchins during the permit period for 1997; therefore, no landings were reported. In the 1996/97 season, 3,701 pounds were harvested in Unalaska Bay from a total of 15 dives (Table 4-17).

Sea Cucumbers

No vessels or divers registered to harvest sea cucumbers from the Aleutian District during 1997.

Snails

No vessels registered to harvest snails *Neptunea* spp. and *Baccinum* spp. in the Aleutian District during 1997.

Paralomis multispina

No vessels registered to harvest the crab *P. multispina* in the Aleutian District during 1997.

Table 4-1. Aleutian Islands, Area O, red king crab commercial fishery statistics, 1960/61-1997.

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1960/61	East of 172°	NA	NA	NA	NA	NA	NA	NA	NA	NA
	West of 172°	4	41	NA	2,074,000	NA	NA	NA	NA	NA
	TOTAL									
1961/62	East of 172°	4	69	NA	533	NA	NA	NA	NA	NA
	West of 172°	8	218	NA	6,114,000	NA	NA	NA	NA	NA
	TOTAL		**287**		**6,114,533**					
1962/63	East of 172°	6	102	NA	1,536	NA	NA	NA	NA	NA
	West of 172°	9	248	NA	8,006,000	NA	NA	NA	NA	NA
	TOTAL		**350**		**8,007,536**					
1963/64	East of 172°	4	242	NA	3,893	NA	NA	NA	NA	NA
	West of 172°	11	527	NA	17,904,000	NA	NA	NA	NA	NA
	TOTAL		**769**		**17,907,893**					
1964/65	East of 172°	12	336	NA	13,761	NA	NA	NA	NA	NA
	West of 172°	18	442	NA	21,193,000	NA	NA	NA	NA	NA
	TOTAL		**778**		**21,206,761**					
1965/66	East of 172°	21	555	NA	19,196	NA	NA	NA	NA	NA
	West of 172°	10	431	NA	12,915,000	NA	NA	NA	NA	NA
	TOTAL		**986**		**12,934,196**					
1966/67	East of 172°	27	893	NA	32,852	NA	NA	NA	NA	NA
	West of 172°	10	90	NA	5,883,000	NA	NA	NA	NA	NA
	TOTAL		**983**		**5,915,852**					
1967/68	East of 172°	34	747	NA	22,709	NA	NA	NA	NA	NA
	West of 172°	22	505	NA	14,131,000	NA	NA	NA	NA	NA
	TOTAL		**1,252**		**14,153,709**					

-Continued-

Table 4-1. (Page 2 of 6)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1968/69	East of 172°	NA	NA	NA	11,300,000[f]	NA	NA	NA	NA	NA
	West of 172°	30	NA	NA	16,100,000	NA	NA	NA	NA	NA
	TOTAL				**27,400,000**					
1969/70	East of 172°	41	375	NA	8,950,000	72,683	NA	NA	NA	NA
	West of 172°	33	435	NA	18,016,000	115,929	NA	6.5	NA	NA
	TOTAL		**810**		**26,966,000**	**188,612**				
19670/71	East of 172°	32	268	NA	9,652,000	56,198	NA	NA	NA	NA
	West of 172°	35	378	NA	16,057,000	124,235	NA	NA	NA	NA
	TOTAL		**646**		**25,709,000**	**180,433**				
1971/72	East of 172°	32	210	1,447,692	9,391,615	31,531	46	7	NA	NA
	West of 172°	40	166	NA	15,475,940	46,011	NA	NA	NA	NA
	TOTAL		**376**		**24,867,555**	**77,542**				
1972/73	East of 172°	51	291	1,500,904	10,450,380	34,037	44	7		
	West of 172°	43	313	3,461,025	18,724,140	81,133	43	5.4	NA	NA
	TOTAL		**604**	**4,961,929**	**29,174,520**	**115,170**	**43**	**5.9**		
1973/74	East of 172°	56	290	1,780,673	12,722,660	41,840	43	7.1	NA	NA
	West of 172°	41	239	1,844,974	9,741,464	70,059	26	5.3	148.6	NA
	TOTAL		**529**	**3,625,647**	**22,464,124**	**111,899**	**32**	**6.2**		
1974/75	East of 172°	87	372	1,812,647	13,991,190	71,821	25	7.7		
	West of 172°	36	97	532,298	2,774,963	32,620	16	5.2	148.6	NA
	TOTAL		**469**	**2,344,945**	**16,766,153**	**104,441**	**22**	**7.1**		
1975/76	East of 172°	79	369	2,147,350	15,906,660	86,874	25	7.4		
	West of 172°	20	25	79,977	411,583	8,331	10	5.2	147.2	NA
	TOTAL		**394**	**2,227,327**	**16,318,243**	**95,205**	**23**	**7.3**		

-Continued-

Table 4-1. (Page 3 of 6)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1976/77	East of 172°	72	226	1,273,298	9,367,965[g]	65,796	19	7.4		
	East of 172°	38	61	86,619	830,458[h]	17,298	5	9.6	NA	NA
	West of 172°				FISHERY CLOSED					
	TOTAL		**287**	**1,359,917**	**10,198,423**	**83,094**	**16**	**7.5**		
1977/78	East of 172°	33	227	539,656	3,658,860[g]	46,617	12	6.8		
	East of 172°	6	7	3,096	25,557[i]	812	4	8.3	NA	NA
	West of 172°	12	18	160,343	905,527	7,269	22	5.7	152.2	NA
	TOTAL		**252**	**703,095**	**905,527**	**54,698**	**13**	**6.5**		
1978/79	East of 172°	60	300	1,233,758	6,824,793	51,783	24	5.5	NA	NA
	West of 172°	13	27	149,491	807,195	13,948	11	5.4	NA	1,170
	TOTAL		**327**	**1,383,249**	**7,631,988**	**65,731**	**21**	**5.5**		
1979/80	East of 172°	104	542	2,551,116	15,010,840	120,554	21	5.9	NA	NA
	West of 172°	18	23	82,250	467,229	9,757	8	5.7	152	24,850
	TOTAL		**565**	**2,633,366**	**15,478,069**	**130,311**	**20**	**5.9**		
1980/81	East of 172°	114	830	2,772,287	17,660,620[g]	231,607	12	6.4	NA	NA
	East of 172°	54	120	182,349	1,392,923[i]	30,000	6	7.6		
	West of 172°	17	52	254,390	1,419,513	20,914	12	5.6	149	54,360
	TOTAL		**1,002**	**3,209,026**	**20,473,056**	**282,521**	**11**	**6.4**		
1981/82	East of 172°	92	683	741,966	5,155,345	220,087	3	6.9	NA	NA
	West of 172°	46	106	291,311	1,648,926	40,697	7	5.7	148.3	8,759
	TOTAL		**789**	**1,033,277**	**6,804,271**	**260,784**	**4**	**6.6**		
1982/83	East of 172°	81	278	64,380	431,179	72,924	1	6.7		
	West of 172°	72	191	284,787	1,701,818	66,893	4	6.0	150.8	7,855
	TOTAL		**469**	**349,167**	**2,132,997**	**139,817**	**3**	**6.1**		

-Continued-

Table 4-1. (Page 4 of 6)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Pots CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1983/84	East of 172°				FISHERY CLOSED					
	West of 172°	106	248	298,948	1,981,579	60,840	5	6.6	157.3	3,833
	TOTAL	**106**	**248**	**298,948**	**1,981,579**	**60,840**	**5**	**6.6**	**157.3**	**3,833**
1984/85	East of 171°				FISHERY CLOSED					
	West of 171°	64	113	206,751	1,367,672	50,685	4	6.6	155.1	0
	TOTAL	**64**	**113**	**206,751**	**1,367,672**	**50,685**	**4**	**6.6**	**155.1**	**0**
1985/86	East of 171°				FISHERY CLOSED					
	West of 171°	35	89	162,271	906,293	32,478	5	5.6	152.2	6,120
	TOTAL	**35**	**89**	**162,271**	**906,293**	**32,478**	**5**	**5.6**	**152.2**	**6,120**
1986/87	East of 171°				FISHERY CLOSED					
	West of 171°	33	69	126,146	712,243	29,189	4	5.6	NA	500
	TOTAL	**33**	**69**	**126,146**	**712,243**	**29,189**	**4**	**5.6**	**NA**	**501**
1987/88	East of 171°				FISHERY CLOSED					
	West of 171°	71	109	211,712	1,213,933	43,433	5	5.7	148.5	6,900
	TOTAL	**71**	**109**	**211,712**	**1,213,933**	**43,433**	**5**	**5.7**	**148.5**	**6,900**
1988/89	East of 171°				FISHERY CLOSED					
	West of 171°	73	156	266,053	1,567,314	64,374	4	5.9	153.1	557
	TOTAL	**73**	**156**	**266,053**	**1,567,314**	**64,374**	**4**	**5.9**	**153.1**	**557**
1989/90	East of 171°				FISHERY CLOSED					
	West of 171°	56	123	196,070	1,118,566	54,513	4	5.7	151.5	759
	TOTAL	**56**	**123**	**196,070**	**1,118,566**	**54,513**	**4**	**5.7**	**151.5**	**759**
1990/91	East of 171°				FISHERY CLOSED					
	West of 171°	7	34	146,903	828,105	10,674	14	5.6	148.1	0
	TOTAL	**7**	**34**	**146,903**	**828,105**	**10,674**	**14**	**5.6**	**148.1**	**0**

-Continued-

Table 4-1. (Page 5 of 6)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Pots CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1991/92	East of 171°				FISHERY CLOSED					
	West of 171°	10	35	165,356	951,278	16,636	10	5.7	149.8	0
	TOTAL	**10**	**35**	**165,356**	**951,278**	**16,636**	**10**	**5.7**	**149.8**	**0**
1992/93	East of 171°				FISHERY CLOSED					
	West of 171°	12	30	218,049	1,286,424	16,129	13	6.0	151.5	5,000
	TOTAL	**12**	**30**	**218,049**	**1,286,424**	**16,129**	**13**	**6.0**	**151.5**	**5,000**
1993/94	East of 171°				FISHERY CLOSED					
	West of 171°	12	21	119,330	698,077	13,575	9	5.8	154.6	7,402
	TOTAL	**12**	**21**	**119,330**	**698,077**	**13,575**	**9**	**5.8**	**154.6**	**7,402**
1994/95	East of 171°				FISHERY CLOSED					
	West of 171°	20	31	30,337	196,967	18,146	2	6.5	157.5	1,430
	TOTAL	**20**	**31**	**30,337**	**196,967**	**18,146**	**2**	**6.5**	**157.5**	**1,430**
1995/96	East of 171°				FISHERY CLOSED					
	West of 171°	4	12	6,880	38,941	2,205	3	5.7	153.6	235
	TOTAL	**4**	**12**	**6,880**	**38,941**	**2,205**	**3**	**5.7**	**153.6**	**235**
1996/97	East of 174°				FISHERY CLOSED					
	West of 174°				FISHERY CLOSED					
	TOTAL									

-Continued-

Table 4-1. (Page 6 of 6)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Pots CPUE[d]	Average Weight[b]	Average Length[e]	Deadloss
1997/98	East of 174°				FISHERY CLOSED					
	West of 174°				FISHERY CLOSED					
	TOTAL									

[a]Some vessels fished both sides; total counts dual registrations only one time.

[b]In pounds.

[c]Deadloss included.

[d]Defined as catch per pot pull.

[e]In millimeters.

[f]Prior to 1968/69 fishery was open 12 months a year. 1968/69 season ran 1/1/68 to 3/15/69.

[g]Split season based on 6.5 inch minimum legal size.

[h]Split season based on 8 inch minimum legal size.

[i]Split season based on 7.5 inch minimum legal size.

Table 4-2. Aleutian Islands, Area O, red king crab economic performance, 1960/61-1997.

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1960/61	East of 172°	NA	NA	NA	NA	NA	NA	NA
	West of 172°	4	41	NA	2,074,000	NA	NA	NA
	TOTAL							
1961/62	East of 172°	4	69	NA	533	NA	NA	NA
	West of 172°	8	218	NA	6,114,000	NA	NA	NA
	TOTAL		**287**		**6,114,533**			
1962/63	East of 172°	6	102	NA	1,536	NA	NA	NA
	West of 172°	9	248	NA	8,006,000	NA	NA	NA
	TOTAL		**350**		**8,007,536**			
1963/64	East of 172°	4	242	NA	3,893	NA	NA	NA
	West of 172°	11	527	NA	17,904,000	NA	NA	NA
	TOTAL		**769**		**17,907,893**			
1964/65	East of 172°	12	336	NA	13,761	NA	NA	NA
	West of 172°	18	442	NA	21,193,000	NA	NA	NA
	TOTAL		**778**		**21,206,761**			
1965/66	East of 172°	21	555	NA	19,196	NA	NA	NA
	West of 172°	10	431	NA	12,915,000	NA	NA	NA
	TOTAL		**986**		**12,934,196**			
1966/67	East of 172°	27	893	NA	32,852	NA	NA	NA
	West of 172°	10	90	NA	5,883,000	NA	NA	NA
	TOTAL		**983**		**5,915,852**			
1967/68	East of 172°	34	747	NA	22,709	NA	NA	NA
	West of 172°	22	505	NA	14,131,000	NA	NA	NA
	TOTAL		**1,252**		**14,153,709**			

-Continued-

Table 4-2. (Page 2 of 6)

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1968/69	East of 172°	NA[e]	NA	NA	11,300,000	NA	NA	NA
	West of 172°	30	NA	NA	16,100,000	NA	NA	NA
	TOTAL				**27,400,000**			
1969/70	East of 172°	41	375	72,683	8,950,000	NA	NA	NA
	West of 172°	33	435	115,929	18,016,000	NA	NA	NA
	TOTAL		**810**	**188,612**	**26,966,000**			
19670/71	East of 172°	32	268	56,198	9,652,000	NA	NA	NA
	West of 172°	35	378	124,235	16,057,000	NA	NA	NA
	TOTAL		**646**	**180,433**	**25,709,000**			
1971/72	East of 172°	32	210	31,531	9,391,615	NA	NA	NA
	West of 172°	40	166	46,011	15,475,940	NA	NA	NA
	TOTAL		**376**	**77,542**	**24,867,555**			
1972/73	East of 172°	51	291	34,037	10,450,380	NA	NA	NA
	West of 172°	43	313	81,133	18,724,140	NA	NA	NA
	TOTAL		**604**	**115,170**	**29,174,520**			
1973/74	East of 172°	56	290	41,840	12,722,660	NA	$0.65	$8,269,729
	West of 172°	41	239	70,059	9,741,464	NA	NA	NA
	TOTAL		**529**	**111,899**	**22,464,124**			
1974/75	East of 172°	87	372	71,821	13,991,190		$0.37	$5,176,740
	West of 172°	36	97	32,620	2,774,963	NA	NA	NA
	TOTAL		**469**	**104,441**	**16,766,153**			
1975/76	East of 172°	79	369	86,874	15,906,660	NA	$0.42	$6,680,797
	West of 172°	20	25	8,331	411,583	NA	NA	NA
	TOTAL		**394**	**95,205**	**16,318,243**			

-Continued-

Table 4-2. (Page 3 of 6)

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1976/77	East of 172°	72	226	65,796	9,367,965[f]	NA	$0.64	$5,995,497
	East of 172°	38	61	17,298	830,458[g]	NA	$0.79	$656,061
	West of 172°				FISHERY CLOSED			
	TOTAL		**287**	**83,094**	**10,198,423**			
1977/78	East of 172°	33	227	46,617	3,658,860[f]	NA	$0.99	$3,622,271
	East of 172°	6	7	812	25,557[h]	NA	$1.35	$34,502
	West of 172°	12	18	7,269	905,527	NA	NA	NA
	TOTAL		**252**	**54,698**	**905,527**			
1978/79	East of 172°	60	300	51,783	6,824,793	NA	$1.35	$9,213,471
	West of 172°	13	27	13,948	807,195	1,170	NA	NA
	TOTAL		**327**	**65,731**	**7,631,988**			
1979/80	East of 172°	104	542	120,554	15,010,840	NA	$0.90	$13,509,756
	West of 172°	18	23	9,757	467,229	24,850	NA	NA
	TOTAL		**565**	**130,311**	**15,478,069**			
1980/81	East of 172°	114	830	231,607	17,660,620[f]	NA	$1.02	$18,013,832
	East of 172°	54	120	30,000	1,392,923[h]	NA	$1.03	$1,434,711
	West of 172°	17	52	20,914	1,419,513	54,360	NA	NA
	TOTAL		**1,002**	**282,521**	**20,473,056**			
1981/82	East of 172°	92	683	220,087	5,155,345	NA	$2.30	$11,617,293
	West of 172°	46	106	40,697	1,648,926	8,759	NA	NA
	TOTAL		**789**	**260,784**	**6,804,271**			
1982/83	East of 172°	81	278	72,924	431,179	NA	$3.43	$1,478,944
	West of 172°	72	191	66,893	1,701,818	7,855	NA	NA
	TOTAL		**469**	**139,817**	**2,132,997**			

-Continued-

Table 4-2. (Page 4 of 6)

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1983/84	East of 172°				FISHERY CLOSED			
	West of 172°	106	248	60,840	1,981,579	3,833	NA	NA
	TOTAL		**248**	**60,840**	**1,981,579**	**3,833**	NA	NA
1984/85	East of 171°				FISHERY CLOSED			
	West of 171°	64	113	50,685	1,367,672	0	NA	NA
	TOTAL	**64**	**113**	**50,685**	**1,367,672**	**0**	NA	NA
1985/86	East of 171°				FISHERY CLOSED			
	West of 171°	35	89	32,478	906,293	6,120	NA	NA
	TOTAL	**35**	**89**	**32,478**	**906,293**	**6,120**		
1986/87	East of 171°				FISHERY CLOSED			
	West of 171°	33	69	29,189	712,243	500	NA	NA
	TOTAL	**33**	**69**	**29,189**	**712,243**	**500**		
1987/88	East of 171°				FISHERY CLOSED			
	West of 171°	71	109	43,433	1,213,933	6,900	NA	NA
	TOTAL	**71**	**109**	**43,433**	**1,213,933**	**6,900**		
1988/89	East of 171°				FISHERY CLOSED			
	West of 171°	73	156	64,374	1,567,314	557	NA	NA
	TOTAL	**73**	**156**	**64,374**	**1,567,314**	**557**		
1989/90	East of 171°				FISHERY CLOSED			
	West of 171°	56	123	54,513	1,118,566	759	NA	NA
	TOTAL	**56**	**123**	**54,513**	**1,118,566**	**759**		
1990/91	East of 171°				FISHERY CLOSED			
	West of 171°	7	34	10,674	828,105	0	NA	NA
	TOTAL	**7**	**34**	**10,674**	**828,105**	**0**		

-Continued-

Table 4-2. (Page 5 of 6)

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1991/92	East of 171°				FISHERY CLOSED			
	West of 171°	10	35	16,636	951,278	0	NA	NA
	TOTAL	**10**	**35**	**16,636**	**951,278**	**0**		
1992/93	East of 171°				FISHERY CLOSED			
	West of 171°	12	30	16,129	1,286,424	5,000	NA	NA
	TOTAL	**12**	**30**	**16,129**	**1,286,424**	**5,000**		
1993/94	East of 171°				FISHERY CLOSED			
	West of 171°	12	21	13,575	698,077	7,402	NA	NA
	TOTAL	**12**	**21**	**13,575**	**698,077**	**7,402**		
1994/95	East of 171°				FISHERY CLOSED			
	West of 171°	20	31	18,146	196,967	1,430	NA	NA
	TOTAL	**20**	**31**	**18,146**	**196,967**	**1,430**		
1995/96	East of 171°				FISHERY CLOSED			
	West of 171°	4	12	2,205	38,941	235	NA	NA
	TOTAL	**4**	**12**	**2,205**	**38,941**	**235**		
1996/97	East of 174°			FISHERY CLOSED				
	West of 174°			FISHERY CLOSED				
	TOTAL							

-Continued-

Table 4-2. (Page 6 of 6)

Season		Number of Vessels[a]	Number of Landings	Pots Pulled	Harvest[b,c]	Deadloss	Value Exvessel	Value Season[d]
1997/98	East of 174°			FISHERY CLOSED				
	West of 174°			FISHERY CLOSED				
	TOTAL							

[a]Some vessels fished both sides; total counts dual registrations only one time.

[b]Deadloss included.

[c]In pounds.

[d]Based on total harvest where deadloss figures are not available.

[e]Prior to 1968/69 fishery was open 12 months a year. 1968/69 season ran 1/1/68to 3/15/69.

[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.

Table 4-3. Aleutian Islands, Area O, golden king crab commercial fishery statistics, 1981/82-1997.

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Percent Oldshell	Average Weight[b]	Average Length[e]	Deadloss
1981/82	East of 172°	6	16	22,666	115,715	2,906	8	3.8	5.1	158.1	8,752
	West of 172°	14	76	217,700	1,194,046	24,627	9	9.5	5.5	159.6	22,064
	TOTAL		**92**	**240,458**	**1,319,761**	**27,533**	**9**		**5.4**		**30,816**
1982/83	East of 172°	49	136	227,471	1,184,971	29,369	8	3.9	5.2	158.1	47,479
	West of 172°	99	501	1,509,001	8,006,274	150,103	10	7.6	5.3	158.2	220,743
	TOTAL		**637**	**1,737,109**	**9,191,245**	**179,472**	**10**		**5.3**		**268,222**
1983/84	East of 172°	47	132	238,353	1,810,973	29,595	8	NA	7.6	NA	45,268
	West of 172°	157	1,002	1,534,909	8,128,029	226,798	7	12.2	5.3	NA	171,021
	TOTAL		**1,134**	**1,773,262**	**9,939,002**	**256,393**	**7**		**5.6**		**186,289**
1984/85	East of 171°	13	67	327,440	1,521,142[f]	24,044	14	NA	4.6	161.2	70,362
	West of 171°	38	85	643,597	3,180,095	64,777	10	12.5	4.9	156.7	125,073
	TOTAL		**152**	**971,274**	**4,701,237**	**88,821**	**11**		**4.8**		**195,435**
1985/86	East of 171°	13	67	410,977	1,968,213	34,287	12	16	4.7	155.7	38,663
	West of 171°	49	386	2,052,048	11,124,759	202,401	10	13.7	5.4	151.3	5,304
	TOTAL		**453**	**2,463,025**	**13,092,972**	**236,688**	**10**		**5.3**		**43,967**
1986/87	East of 171°	17	71	400,389	1,869,180	37,585	11	NA	4.7	NA	9,510
	West of 171°	62	525	2,923,947	12,798,004	392,185	7	30.9	4.4	149.5	276,736
	TOTAL		**596**	**3,324,336**	**14,667,184**	**429,770**	**8**		**4.4**		**286,246**
1987/88	East of 171°	22	77	299,734	1,383,198	43,017	7	25	4.6	149.6	24,210
	West of 171°	46	386	1,908,989	8,001,177	267,705	7	8.3	4.2	146.9	165,415
	TOTAL		**463**	**2,208,723**	**9,324,375**	**310,722**	**7**		**4.2**		**189,625**

-Continued-

Table 4-3. (Page 2 of 3)

Season		Number of Vessels[a]	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Percent Oldshell	Average Weight[b]	Average Length[e]	Deadloss
1988/89	East of 171°	21	57	323,695	1,545,113	40,869	8	23	4.8	154.3	22,960
	West of 171°	74	455	2,165,508	9,080,196	280,732	8	8.8	4.2	149.1	122,251
	TOTAL		**512**	**2,489,203**	**10,625,309**	**321,604**	**8**		**4.3**		**145,211**
1989/90	East of 171°	13	70	424,067	1,852,249	43,345	10	30	4.4	150.9	17,421
	West of 171°	64	505	2,520,786	10,162,400	324,153	8	4.7	4.0	148.5	100,724
	TOTAL			**2,944,853**	**12,014,649**	**367,498**	**8**		**4.1**		**118,145**
1990/91	East of 171°	16	58	384,885	1,718,848	54,618	7	3	4.3	147.5	42,800
	West of 171°	13	167	1,312,116	5,250,687[g]	160,960	8	8.5	4.0	144.5	176,583
	TOTAL	**24**	**235**	**1,697,001**	**6,969,535**	**214,578**	**8**		**4.1**		**219,383**
1991/92	East of 171°	11	50	335,647	1,447,732	40,604	8	4	4.3	147.9	45,100
	West of 171°	16	206	1,511,751	6,254,409	192,949	8	5.6	4.1	144.7	96,848
	TOTAL	**20**	**256**	**1,847,398**	**7,702,141**	**233,553**	**8**		**4.2**		**141,948**
1992/93	East of 171°	10	44	330,159	1,375,048	37,718	9	4.17	4.1	147.8	37,200
	West of 171°	18	130	1,198,169	4,916,149	165,503	7	6.5	4.1	147.0	104,215
	TOTAL	**22**	**174**	**1,528,328**	**6,291,197**	**203,221**	**8**		**4.1**		**141,415**
1993/94	East of 171°	4	14	217,788	915,460	22,490	10	1.11	4.2	149.1	7,324
	West of 171°	21	147	1,102,541	4,635,683	212,164	5	4.6	4.2	147.8	165,358
	TOTAL	**21**	**161**	**1,320,329**	**5,551,143**	**234,654**	**6**		**4.2**		**172,682**
1994/95	East of 171°	14	45	384,353	1,750,267	67,537	6	1	4.6	147.6	29,908
	West of 171°	34	247	1,539,866	6,378,030	319,006	5	7.1	4.1	149.5	242,065
	TOTAL	**35**	**292**	**1,924,219**	**8,128,297**	**386,543**	**5**		**4.2**		**271,973**
1995/96	East of 171°	17	42	431,867	1,993,980	65,030	7	5.3	4.6	149.6	14,676
	West of 171°	25	139	1,134,274	4,896,926	226,463	5	7.1	4.2	147.3	338,223
	TOTAL	**28**	**181**	**1,566,141**	**6,890,906**	**291,493**	**5**		**4.4**		**352,899**

-Continued-

Table 4-3. (Page 3 of 3)

Season		Number of Vessels[a]	Landings	Crabs[b]	Harvest[b,c]	Pots Pulled	CPUE[d]	Percent Oldshell	Average Weight[b]	Length[e]	Deadloss
1996/97	East of 174°	14	70	725,452	3,262,516	113,460	6		4.5		156,857
	West of 174°	13	100	618,498	2,591,720	100,340	6		4.2		78,973
	TOTAL	**18**	**166**	**1,343,950**	**5,854,236**	**213,800**	**6**	**3.3**	**4.4**	**147.0**	**235,830**

[a]Some vessels fished both sides; total counts dual registrations only one time.

[b]Deadloss included.

[c]In pounds.

[d]Defined as catch per pot pull.

[e]In millimeters.

[f]Six inch permit season opened July 1.

[g]Partial closure August 7.

Table 4-4. Aleutian Islands brown king crab fishery economic performance, 1981/82-1996/97.

Year		Season Total	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total	Season Length Days	Season Length Dates
1981/82	East of 172°	0.1	6	16	0	2,906	$2.05	$0.22	75	11/01-01/15
	West of 172°	1.2	14	76	2,647	24,627	$2.06	$2.41	227	11/01-06/15
	Total	**1.3**	**19**	**92**	**2,647**	**27,533**	**$2.06**	**$2.63**	**302**	
1982/83	East of 172°	1.1	49	136	-	29,369	$3.00	$3.41	105	11/01-02/15
	West of 172°	7.8	99	501	13,111	150,103	$3.01	$23.43	166	11/01-04/15
	Total	**8.9**		**637**	**13,111**	**179,472**	**$3.01**	**$26.85**	**271**	
1983/84	East of 172°	1.8	47	132	4,514	29,595	$3.05	$5.38	105	11/01-02/15
	West of 172°	8.0	157	1,002	17,406	226,798	$2.92	$23.23	157	11/10-04/15
	Total	**9.7**		**1,134**	**21,920**	**256,393**	**$2.94**	**$28.62**	**262**	
1984/85	East of 171°	1.4	13	67	1,394	24,044	$1.35	$1.96	229	07/01-02/15
	West of 171°	3.1	38	85	5,270	64,777	$2.00	$6.11	240	11/10-07/08
	Total	**4.5**		**152**	**6,664**	**88,821**	**$1.79**	**$8.07**	**469**	
1985/86	East of 171°	1.9	13	67	1,479	34,287	$2.00	$3.86	121	07/01-10/31
	West of 171°	11.1	49	386	7,057	202,401	$2.50	$27.80	288	11/01-08/15
	Total	**13.0**		**453**	**8,536**	**236,688**	**$2.43**	**$31.66**	**409**	
1986/87	East of 171°	1.9	17	71	1,575	37,585	$2.85	$5.30	182	07/01-12/31
	West of 171°	12.5	62	325	12,958	392,185	$3.00	$37.56	288	11/01-08/15
	Total	**14.4**	**64**	**396**	**14,533**	**429,770**	**$2.98**	**$42.86**	**470**	
1987/88	East of 171°	1.4	22	77	3,591	43,017	$2.85	$3.87	62	07/01-09/02
	West of 171°	7.8	46	386	10,687	267,705	$3.00	$23.51	289	11/01-08/15
	Total	**9.2**		**463**	**14,278**	**310,722**	**$2.98**	**$27.38**	**351**	
1988/89	East of 171°	1.5	21	57	4,215	40,869	$3.00	$4.57	93	09/01-12/04
	West of 171°	9.0	74	455	23,627	280,732	$3.20	$28.66	288	11/01-08/15
	Total	**10.5**		**512**	**27,842**	**321,601**	**$3.17**	**$33.23**	**381**	

-Continued-

Table 4-4. (Page 2 of 2)

Year		Season Total	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Value Exvessel	Value Total	Season Length Days	Season Length Dates
1989/90	East of 171°	1.8	13	70	5,635	43,345	$3.50	$6.42	104	09/01-12/15
	West of 171°	10.1	64	505	14,724	324,153	$3.00	$30.18	288	11/01-08/15
	Total	**11.9**		**575**	**20,359**	**367,498**	**$3.08**	**$36.61**	**392**	
1990/91	East of 171°	1.7	16	68	5,225	54,618	$3.00	$5.03	68	09/01-11/09
	West of 171°	5.1	13	167	7,380	160,960	$3.00	$15.22	288	11/01-08/15
	Total	**6.7**	**23**	**235**	**12,605**	**215,578**	**$3.00**	**$20.25**	**356**	
1991/92	East of 171°	1.4	11	50	3,760	40,604	$2.00	$2.81	74	09/01-11/15
	West of 171°	6.2	16	206	7,635e	192,949	$2.50	$15.39	289	11/01-08/15
	Total	**7.6**	**19**	**256**	**3,760**	**233,553**	**$2.41**	**$18.20**	**363**	
1992/93	East of 171°	1.3	10	44	4,222	37,718	$2.50	$3.30	76	09/01-11/17
	West of 171°	4.8	18	130	8,236e	165,503	$2.05	$9.86	288	11/01-08/15
	Total	**6.1**	**22**	**174**	**4,222**	**203,221**	**$2.15**	**$13.16**	**364**	
1993/94	East of 171°	0.9	4	14	2,334	22,490	$2.15	$1.95	212	09/01-03/31
	West of 171°	4.5	21	147	11,970	212,164	$2.50	$11.18	288	11/01-08/15
	Total	**5.4**	**21**	**161**	**14,304**	**234,654**	**$2.44**	**$13.13**	**500**	
1994/95	East of 171°	1.7	14	45	7,378	67,537	$4.00	$6.88	57	09/01-10/28
	West of 171°	6.1	34	247	15,604	319,006	$3.33	$20.43	288	11/01-08/15
	Total	**7.9**	**35**	**292**	**22,982**	**386,543**	**$3.48**	**$27.31**	**345**	
1995/96	East of 171°	2.0	17	42	10,325	65,030	$2.60	$5.15	38	09/01-10/09
	West of 171°	4.6	25	139	14,213	226,463	$2.10	$9.57	289	11/01-08/15
	Total	**6.5**	**28**	**181**	**24,538**	**291,493**	**$2.25**	**$14.72**	**327**	
1996/97	East of 174°	3.1	15	67	NA	107,397	$2.23	$6.93	115	09/01-12/25
	West of 174°	2.5	13	92	NA	102,627	$2.23	$5.60	365	09/01-09/01
	Total	**5.6**	**18**	**159**		**210,024**	**$2.23**	**$12.53**	**480**	

Table 4-5. Aleutian golden king crab catch by statistical area, 1997.

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
685231	4	3,921	20,539	618	6	5.2	1,466
685303	4	4,191	20,992	1,070	4	5.0	206
685304	7	19,316	96,131	7,561	3	4.9	1,968
695200	9	47,042	224,250	8,290	6	4.8	4,402
695232	21	45,333	223,220	10,674	4	4.9	9,424
695301	24	57,483	258,463	8,583	7	4.5	11,046
695302	9	20,587	88,682	1,874	11	4.3	7,904
705200	27	121,267	551,086	16,741	7	4.5	24,206
705231	5	1,151	4,723	233	5	4.1	231
705232	34	198,401	882,220	26,380	8	4.5	44,633
705233	5	2,516	10,735	374	7	4.3	1,830
705300	20	51,390	224,248	5,727	9	4.4	14,134
715130	3	948	4,113	200	5	4.3	242
715201	5	4,137	17,062	390	11	4.1	503
715202	16	43,602	188,305	7,199	6	4.3	14,259
715231	15	37,588	160,570	4,998	8	4.3	10,889
715232	6	17,509	69,499	1,410	12	4.1	4,405
725201	11	25,303	110,817	5,544	5	4.4	3,140
725203	7	11,783	49,503	1,907	6	4.2	610
725230	5	738	3,362	237	3	4.6	245
775131	3	2,796	11,465	532	5	4.1	343
775133	4	1,950	8,134	584	3	4.2	152
775134	4	3,505	14,398	621	6	4.1	516
775135	3	1,521	6,233	208	7	4.1	122
775136	4	9,665	39,819	1,792	5	4.1	1,021

-Continued-

Table 4-5. (Page 2 of 3)

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
785101	3	517	2,194	48	11	4.2	221
785102	18	30,585	123,901	4,906	6	4.0	4,955
785103	3	1,194	4,733	152	8	4.0	183
785131	18	41,828	173,852	5,918	7	4.2	11,172
785132	5	3,666	15,125	566	7	4.1	881
785134	9	6,748	27,186	784	9	4.0	897
785135	12	14,112	56,672	2,293	6	4.0	2,234
795102	5	9,390	37,927	913	10	4.0	1,635
795131	10	4,296	17,548	783	6	4.1	981
795132	16	47,380	191,697	4,463	11	4.1	7,141
795200	36	23,302	98,009	3,180	7	4.2	1,046
795230	8	13,180	60,024	2,612	5	4.5	1,597
805101	3	675	2,746	95	7	4.1	42
805103	31	31,194	127,684	2,843	11	4.1	175
805131	14	7,832	31,273	1,043	8	4.0	0
805132	34	114,558	475,673	10,850	11	4.2	1,780
805201	36	32,547	132,027	4,019	8	4.1	448
815100	24	12,190	50,132	1,320	9	4.1	183
815131	24	13,841	58,643	1,576	9	4.2	336
815132	11	7,467	31,024	901	8	4.2	0
815201	3	572	2,345	148	4	4.1	20
825132	3	1,865	9,161	751	3	4.9	225
825201	4	7,597	33,493	1,775	4	4.4	1,231
825202	4	2,174	10,159	738	3	4.7	251
835130	5	3,700	17,156	1,013	4	4.6	536

-Continued-

Table 4-5. (Page 3 of 3)

Area	Number of Landings	Number of Crab[a]	Harvest[a,b]	Pots Pulled	Average CPUE[c]	Average Weight[b]	Deadloss
835200	10	19,525	85,896	5,938	3	4.4	3,797
845130	8	6,205	27,732	2,160	3	4.5	1,656
845202	10	26,783	120,606	6,697	4	4.5	6,139
855200	5	2,621	11,266	952	3	4.3	935
Other	36	19,665	85,627	5,609			2,553
Total	143[d]	1,240,402	5.410,080	188,793	7	4.4	211,147

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Actual total landings for the fishery (one vessel may make landings in more than one statistical area).

Table 4-6. Aleutian Islands, Area O, preliminary commercial golden king crab fishery statistics, 1997/98.

Area	Numer of Vessels	Numer of Landings	Numer of Crabs[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Deadloss[b]
East of 174°	14	69	744,573	3,347,870	108,177	4.5	7	125,001
West of 174°				FISHERY IN PROGRESS				

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

Table 4-7. Aleutian Islands scarlet king crab *Lithodes couesi* fishery statistics, 1992 to 1997.

Year		Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a]	Pots Pulled	Exvessel Value	Fishery Value[b]	Average Weight[c]	Average CPUE	Deadloss
1992	Dutch Harbor				No Commercial Fishery						
	Adak				CONFIDENTIAL						
1993	Dutch Harbor				No Commercial Fishery						
	Adak				No Commercial Fishery						
1994	Dutch Harbor				CONFIDENTIAL						
	Adak	6	10	6,624	21,308	7,520	$1.76	$0.02	3.2	<1	10,829
	Total	7	10	6,624	21,308	7,520	$1.88	$0.02	3.1	<1	10,829
1995	Dutch Harbor	3	3	6,270	13,871	5,706	$2.18	$0.03	2.2	1	1,755
	Adak	6	18	19,544	49,126	15,046	$1.82	$0.09	2.5	1	2,066
	Total	8	21	25,814	62,997	20,752	$1.89	$0.11	2.4	1	3,821
1996	Dutch Harbor	3	10	10,190	20,924	10,247	$1.78	$0.03	2.0	1	3,990
	Adak	4	13	10,133	24,076	19,170	$1.80	$0.04	2.4	<1	1,861
	Total	7	23	20,323	45,000	29,417	$1.79	$0.07	2.2	<1	5,851
1997	Aleutian Islands	3	12	2,698	6,720	21,217	$1.40	$0.01	2.5	<1	408

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

Table 4-8. Eastern Aleutian District *Chionoecetes bairdi* fishery statistics[a], 1973/74-1997.

Season	Number of Vessels	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Average Weight[c]	Average CPUE[d]	Deadloss
1973/74	6	14	210,539	498,836	NR[e]	2.4	60	0
1974/75				CONFIDENTIAL				
1975/76	8	13	219,166	534,295	4,646	2.4	47	0
1976/77	12	35	544,755	1,239,569	9,640	2.3	57	0
1977/78	15	198	1,104,631	2,494,631	29,855	2.3	37	0
1978/79	20	174	542,081	1,280,115	18,618	2.4	20	0
1979/80	18	107	352,819	886,487	18,040	2.4	20	NA
1981	29	119	264,238	654,514	21,771	2.4	12	NA
1982	31	138	332,260	739,694	30,109	2.2	11	NA
1983	23	107	250,774	547,830	22,168	2.1	11	NA
1984	16	91	104,761	239,585	11,069	2.3	9	NA
1985	6	56	71,918	165,529	5,620	2.3	13	NA
1986	9	37	73,187	167,339	10,244	2.3	7	NA
1987	7	63	71,338	160,292	5,294	2.2	13	NA
1988	19	130	129,468	309,918	11,011	2.4	12	NA
1989	12	109	144,746	326,396	14,685	2.2	10	NA
1990	10	75	73,269	171,785	6,858	2.3	11	0
1991	5	27	21,511	50,038	1,849	2.3	12	0
1992	4	29	42,096	98,703	2,963	2.3	14	0
1993	7	34	51,441	118,609	3,530	2.3	15	0
1994	8	120	71,962	166,545	6,323	2.3	11	40

-Continued-

Table 4-8. (Page 2 of 2)

Season	Number of Vessels	Number of Landings	Number of Crabs[b]	Harvest[b,c]	Pots Pulled	Average Weight[c]	Average CPUE[d]
1995	NO COMMERCIAL FISHERY						
1996	NO COMMERCIAL FISHERY						
1997	NO COMMERCIAL FISHERY						

[a]5½ inch minimum carapace width.

[b]Deadloss included beginning 1980.

[c]In pounds.

[d]Defined as catch per pot pull.

[e]No Record.

Table 4-9. Eastern Aleutian District *Chionoecetes bairdi* economic performance, 1973/74-1997.

Season	Date		Number of		Harvest[a,b]	Pots Pulled	Value	
	Opened	Closed	Vessels	Landings			Exvessel	Fishery[d]
1973/74	1-Oct	31-Jul	6	14	498,836	NR[c]	NR[c]	
1974/75	18-Jan	15-Oct			CONFIDENTIAL			
1975/76	20-Jan	15-Oct	8	13	534,295	4,646	$0.20	$0.11
1976/77	7-Nov	15-Jun	12	35	1,239,569	9,640	$0.30	$0.38
1977/78	1-Nov	15-Jun	15	198	2,494,631	29,855	$0.38	$0.95
1978/79	1-Nov	15-Jun	20	174	1,280,115	18,618	$0.52	$0.67
1979/80	1-Nov	15-Jun	18	107	886,487	18,040	$0.52	NA
1981	15-Jan	15-Jun	29	119	654,514	21,771	$0.58	NA
1982	15-Feb	15-Jun	31	138	739,694	30,109	$1.25	NA
1983	15-Feb	15-Jun	23	107	547,830	22,168	$1.20	NA
1984	15-Feb	15-Jun	16	91	239,585	11,069	$0.98	NA
1985	15-Jan	15-Jun	6	56	165,529	5,620	$1.30	NA
1986	15-Jan	15-Jun	9	37	167,339	10,244	$1.50	NA
1987	15-Jan	15-Jun	7	63	160,292	5,294	$2.00	NA
1988	15-Jan	10-Apr	19	130	309,918	11,011	$2.10	NA
1989	15-Jan	7-May	12	109	326,396	14,685	$2.90	NA
1990	15-Jan	9-Apr	10	75	171,785	6,858	$1.85	$0.32
1991	15-Jan	31-Mar	5	27	50,038	1,849	$1.25	$0.06
1992	15-Jan	31-Mar	6	29	98,703	2,963	$1.75	$0.18
1993	15-Jan	31-Mar	7	34	118,609	3,530	$1.70	$0.20
1994	15-Jan	31-Mar	8	120	166,505	6,323	$2.35	$0.39

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Table 4-9. (Page 2 of 2)

Season	Date Opened	Date Closed	Number of Vessels	Number of Landings	Harvest[a,b]	Pots Pulled	Value Exvessel	Value Fishery[d]
1995	NO COMMERCIAL FISHERY							
1996	NO COMMERCIAL FISHERY							
1997	NO COMMERCIAL FISHERY							

[a]Deadloss not included.

[b]In pounds.

[c]No Record.

[d]Millions of dollars.

Table 4-10. Eastern Aleutian District *Chionoecetes tanneri* Tanner crab harvest, 1993-1997.

Year	Number of			Harvest[a,b]	Pots Lifted	Average		Deadloss[b]	Value	
	Vessels	Landings	Crabs[a]			Weight[b]	CPUE[c]		Exvessel	Total[d]
1993	CONFIDENTIAL									
1994	3	27	426,230	759,239	38,106	1.8	11	19,474	$1.73	$1.3
1995	7	51	494,522	850,427	75,259	1.7	6	28,338	$1.57	$1.3
1996	3	24	55,593	106,071	24,199	1.91	2.13	7,659	$1.00	$0.98
1997	NO COMMERCIAL FISHERY									

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Millions of dollars.

Table 4-11. Eastern Aleutian District *Chionoecetes angulatus* Tanner crab fishery statistics, 1993-1997.

Year	Harvest[a]	Vessels	Pots Pulled	Exvessel Value	Fishery Value[b]	Average Weight[c]	Average CPUE[d]	Deadloss
1993	NO REPORTED HARVEST							
1994	NO REPORTED HARVEST							
1995	CONFIDENTIAL							
1996	CONFIDENTIAL							
1997	NO VESSELS REGISTERED							

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

[d]Defined as catch per pot pull.

Table 4-12. Western Aleutians District *Chionoecetes bairdi* Tanner crab fishery statistics, 1973/74-1996/97.

Year	Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a,b]	Pots Pulled	Average Weight[b]	Average CPUE[c]	Average Size[d]	Deadloss
1973/74	7	12	31,079	71,887	2,390	2.3	13	-	NA
1974/75	CONFIDENTIAL								
1975/76	CONFIDENTIAL								
1976/77	NO REPORTED HARVEST								
1977/78	6	7	103,190	237,512	2,700	2.3	38	5.5	NA
1978/79	6	9	84,129	197,244	4,730	2.3	18	5.5	0
1979/80	10	12	147,843	337,297	5,952	2.3	25	5.5	NA
1980/81	9	23	95,102	220,716	7,327	2.3	13	5.5	0
1981/82	17	43	364,164	838,697	21,910	2.3	17	5.5	6,470
1982/83	61	125	225,491	488,399	40,450	2.2	6	5.5	7,662
1983/84	31	86	171,576	384,146	20,739	2.2	8	5.5	200
1984/85	31	41	75,009	163,460	13,416	2.2	6	5.5	1,000
1985/86	15	30	98,089	206,814	7,999	2.1	12	5.5	0
1986/87	8	24	19,874	42,761	10,878	2.1	2	5.5	200
1987/88	15	37	63,545	141,390	7,453	2.2	9	5.5	200
1988/89	36	77	69,280	148,997	18,906	2.1	4	5.5	233
1989/90	12	30	22,937	48,746	6,204	2.1	4	5.5	3,810
1990/91	5	21	6,901	14,779	1,309	2.1	5	5.5	125
1991/92	8	8	3,483	7,825	986	2.2	4	5.5	NA
1992/93	CONFIDENTIAL								
1993/94	NO REPORTED HARVEST								
1994/95	NO REPORTED HARVEST								
1995/96	CONFIDENTIAL								
1996/97	NO REPORTED HARVEST								

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Minimum size in inches.

Table 4-13. Western Aleutians District *Chionoecetes bairdi* Tanner crab fishery economic performance, 1973/74-1996/97.

Year	Vessels	Harvest[a,b]	Pots Pulled	Value		Average		Deadloss
				Exvessel	Fishery	Weight[b]	CPUE[c]	
1973/74	7	71,887	2,390	NA		2.3	13	NA
1974/75				CONFIDENTIAL				
1975/76				CONFIDENTIAL				
1976/77				NO REPORTED HARVEST				
1977/78	6	237,512	2,700	.38	$90,255[d]	2.3	38	NA
1978/79	6	197,244	4,730	.53	$104,539	2.3	18	0
1979/80	10	337,297	5,952	.52	$175,394[d]	2.3	25	NA
1980/81	9	220,716	7,327	.54	$119,187	2.3	13	0
1981/82	17	838,697	21,910	1.30	$1,081,895	2.3	17	6,470
1982/83	61	488,399	40,450	1.27	$610,536	2.2	6	7,662
1983/84	31	384,146	20,739	.95	$364,749	2.2	8	200
1984/85	31	163,460	13,416	1.30	$211,198	2.2	6	1,000
1985/86	15	206,814	7,999	1.40	$289,540	2.1	12	0
1986/87	8	42,761	10,878	1.50	$63,842	2.1	2	200
1987/88	15	141,390	7,453	2.10	$296,499	2.2	9	200
1988/89	36	148,997	18,906	1.00	$148,764	2.1	4	233
1989/90	12	48,746	6,204	1.00	$44,936	2.1	4	3,810
1990/91	5	14,779	1,309	1.25	$18,318	2.1	5	125
1991/92	8	7,825	986	1.00	$7,825[d]	2.2	4	NA
1992/93				CONFIDENTIAL				
1993/94				NO REPORTED HARVEST				
1994/95				NO REPORTED HARVEST				

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Table 4-13. (Page 2 of 2)

Year	Vessels	Harvest[a,b]	Pots Pulled	Value		Average		Deadloss
				Exvessel	Fishery	Weight[b]	CPUE[c]	
1995/96			CONFIDENTIAL					
1996/97			NO REPORTED HARVEST					

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Calculated on total harvest; deadloss figures not available.

Table 4-14. Western Aleutian District *Chionoecetes tanneri* Tanner crab fishery statistics, 1992-1997.

Year	Harvest[a]	Vessels	Pots Pulled	Value		Average		Deadloss
				Exvessel	Fishery[b]	Weight[c]	CPUE[d]	
1992				CONFIDENTIAL				
1993				NO COMMERCIAL FISHERY				
1994				CONFIDENTIAL				
1995	145,795	6	17,749	$1.52	$195	1.9	4	17,190
1996				CONFIDENTIAL				
1997				NO COMMERCIAL FISHERY				

[a]Deadloss included.

[b]Millions of dollars.

[c]In pounds.

[d]Defined as catch per pot pull.

Table 4-15. Aleutian District Dungeness crab fishery statistics, 1974-1997.

Year	Season Dates	Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a,b]	Pots Pulled	Average Weight	Average CPUE[c]	Price per Pound
1974	01/01-12/31	3	13	24,459	60,517	3,399	2.4	8	NA
1975	01/01-12/31				CONFIDENTIAL				
1976	05/01-12/31				NO REPORTED HARVEST				
1977	05/01-12/31				NO REPORTED HARVEST				
1978	05/01-12/31				CONFIDENTIAL				
1979	05/01-12/31				CONFIDENTIAL				
1980	05/01-12/31				NO REPORTED HARVEST				
1981	05/01-12/31				NO REPORTED HARVEST				
1982/83	05/01-02/01				CONFIDENTIAL				
1983/84	05/01-02/01				CONFIDENTIAL				
1984/85	05/01-02/01	4	50	40,128	91,739	13,555	2.3	3	$1.35
1985/86	05/01-02/01	4	19	8,590	17,830	1,706	2.1	5	NA
1986	05/01-12/31				CONFIDENTIAL				
1987	05/01-12/31	5	43	13,247	26,627	2,987	2	4	$0.95
1988	05/01-12/31	6	45	10,814	22,634	2,581	2.1	4	$0.90
1989	05/01-12/31	4	31	5,165	11,124	2,078	2.1	2	$0.90
1990	05/01-12/31	3	11	8,379	17,365	1,345	2.1	6	$0.90
1991	05/01-12/31	4	14	3,654	7,412	732	2	5	$1.25
1992	05/01-12/31	4	13	2,854	5,649	555	2	5	$0.83
1993	05/01-12/31	5	12	3,448	7,531	797	2.2	4	$0.78

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Table 4-15. (Page 2 of 2)

Year	Season Dates	Number of Vessels	Number of Landings	Number of Crabs[a]	Harvest[a,b]	Pots Pulled	Average Weight	Average CPUE[c]	Price per Pound
1994/95	05/01-01/01	NO REPORTED HARVEST							
1995/96	05/01-01/01	NO REPORTED HARVEST							
1996/97	05/01-01/01	NO REPORTED HARVEST							
1997/98	05/01-01/01	CONFIDENTIAL							

[a]Deadloss included.

[b]In pounds.

[c]Defined as catch per pot pull.

[d]Millions of dollars.

Table 4-16. Aleutian District historical trawl shrimp fishery statistics, 1972-1997.

Season	Date Opened	Date Closed	Number of Vessels	Number of Landings	Tows	Harvest[a]	Price per Pound
1972	Jan-72	Dec-72	CONFIDENTIAL				
1973	Jan-73	Dec-73	CONFIDENTIAL				
1974	Jan-74	Dec-74	7	88	721	5,749,407	NA
1975	Jan-75	Dec-75	4	14	54	467,196	NA
1976	Jan-76	Dec-76	8	66	689	3,670,609	$0.07
1977/78	Feb-77	Mar-78	7	93	1,372	6,800,393	$0.12
1978/79	Apr-78	Mar-79	7	74	1,007	4,946,350	$0.15
1979/80	Apr-79	Feb-80	7	68	799	3,292,049	$0.20
1980	Mar-80	Dec-80	4	60	711	2,454,829	$0.23
1981	Mar-81	Dec-81	6	45	551	2,185,326	$0.22
1982/83[b]	May-82	Jun-83	CONFIDENTIAL				
1983	NO REPORTED CATCH						
1984	NO REPORTED CATCH						
1985	NO REPORTED CATCH						
1986	NO REPORTED CATCH						
1987	NO REPORTED CATCH						
1988	NO REPORTED CATCH						
1989	NO REPORTED CATCH						
1990	NO REPORTED CATCH						
1991	NO REPORTED CATCH						
1992	Jan-92	Dec-92	4	6	94	72,133	NA
1993	NO REPORTED CATCH						
1994	NO REPORTED CATCH						
1995	NO REPORTED CATCH						
1996	NO REPORTED CATCH						
1997	NO REPORTED CATCH						

[a]In pounds.

[b]Catch occurred May and June 1982.

Table 4-17. Aleutian Islands Miscellaneous catch statistics by season, 1996-1997.

Year	Fishery	Number of Vessels	Number of Landings	Number of Pots Registered	Number of Pots Pulled	Harvest[a]	CPUE[b]	Deadloss
1996	Octopus	8	NA		17,800	66,152		0
	Sea Urchins	6	15[c]		3,701	3,701		0
	Sea Cucumbers			NO COMMERCIAL HARVEST				
	Hair Crab			NO COMMERCIAL HARVEST				
	Snails			NO COMMERCIAL HARVEST				
	Paralomis multispina			NO COMMERCIAL HARVEST				
1997	Octopus	18	233			96,118		0
	Sea Urchins			NO COMMERCIAL HARVEST				
	Sea Cucumbers			NO COMMERCIAL HARVEST				
	Hair Crab			NO COMMERCIAL HARVEST				
	Snails			NO COMMERCIAL HARVEST				
	Paralomis multispina			NO COMMERCIAL HARVEST				

[a]Deadloss Included

[b]Defined as catch per pot pull.

[c]Dives

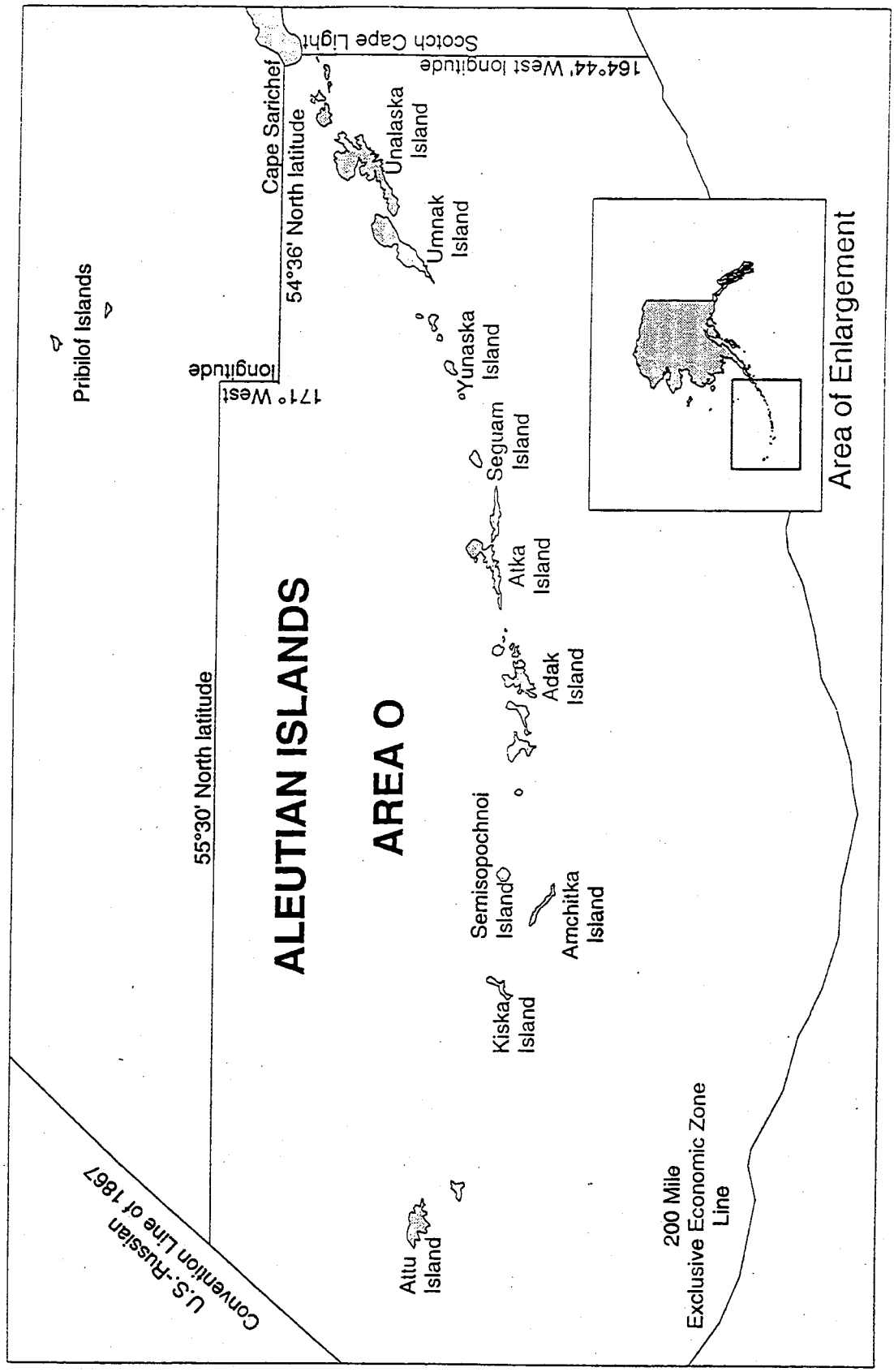
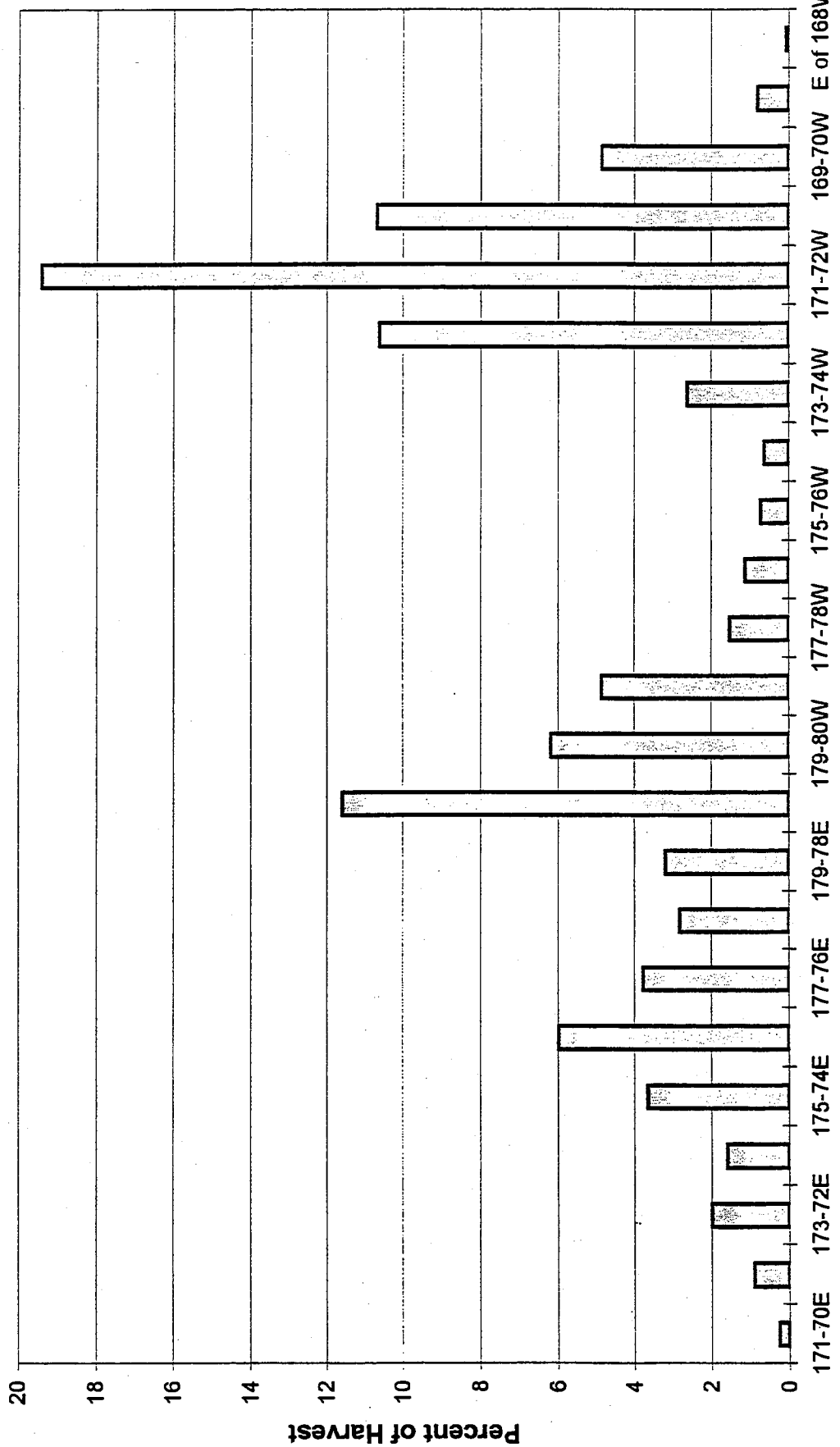


Figure 4-1. The Aleutian Islands king crab management area, Area O.



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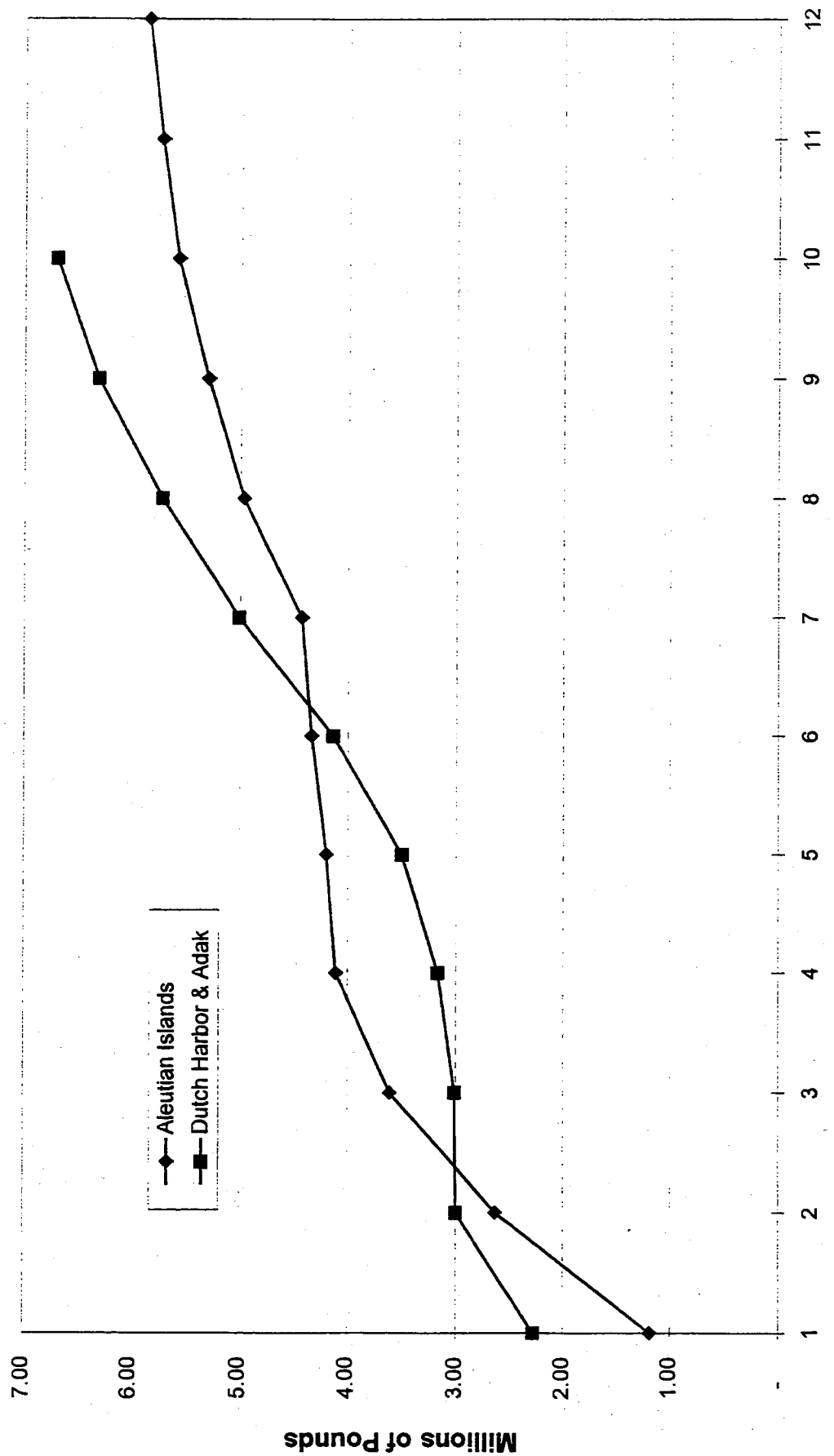

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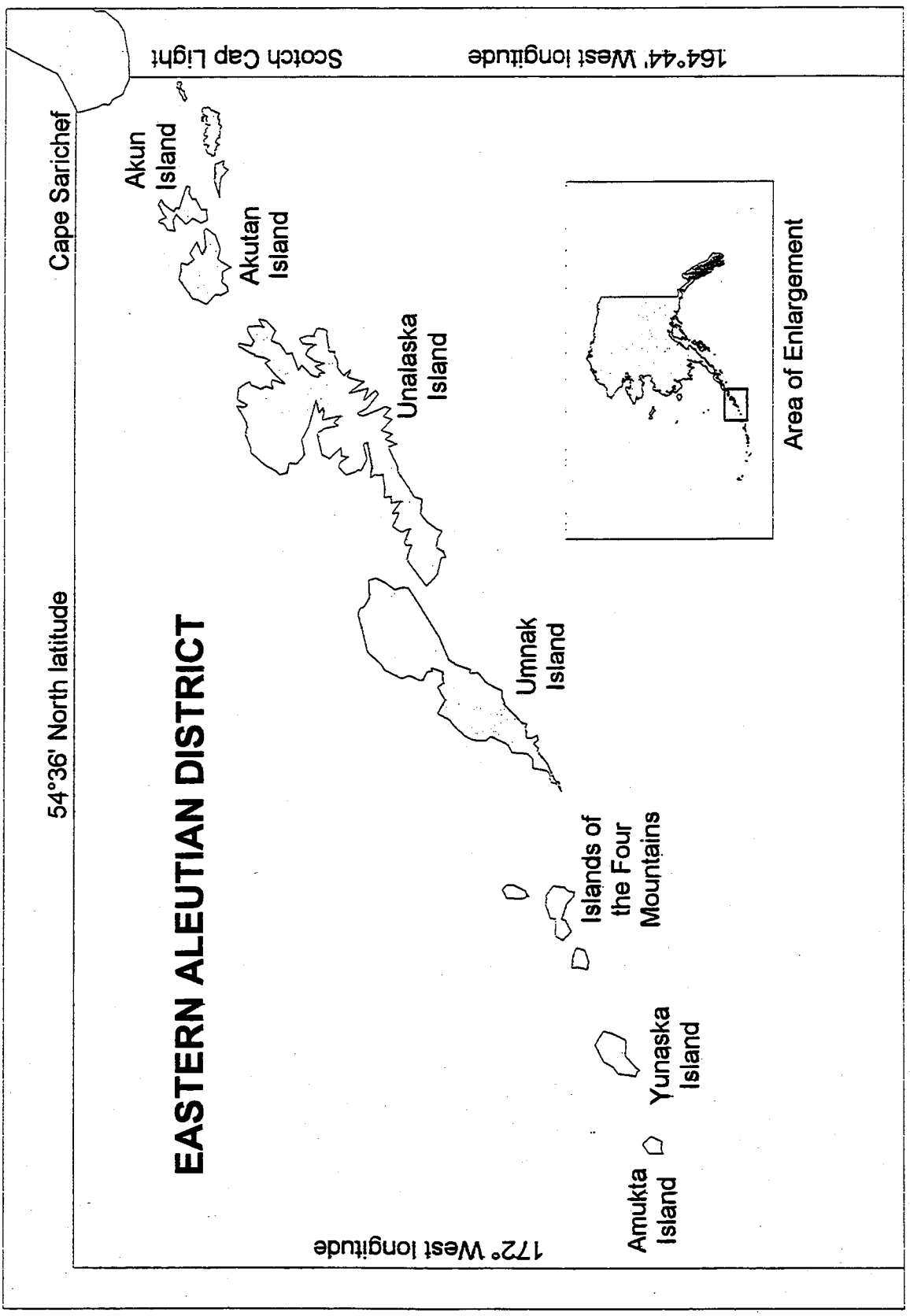
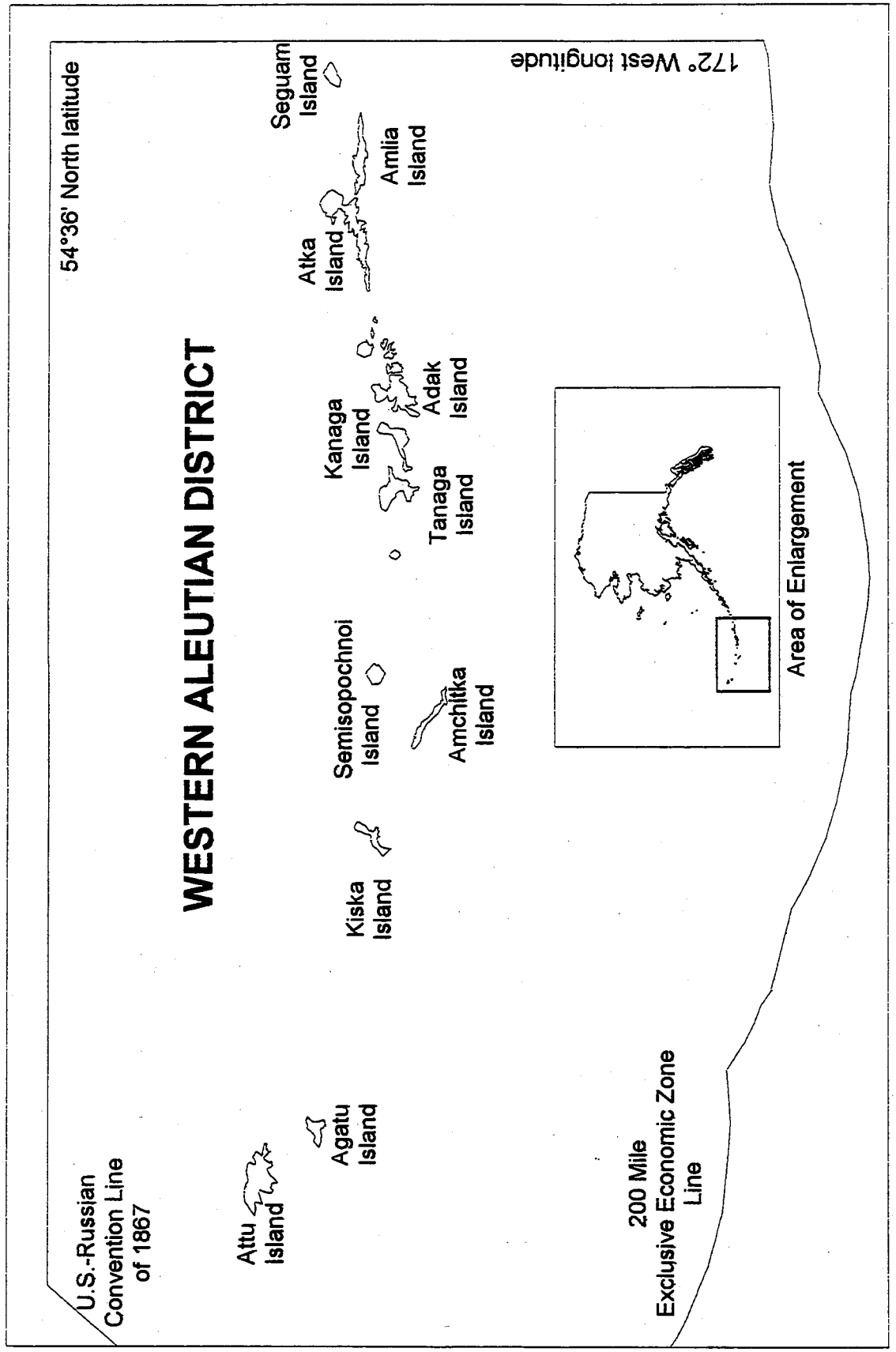


Figure 4-4. The Eastern Aleutian District for Tanner crab management.



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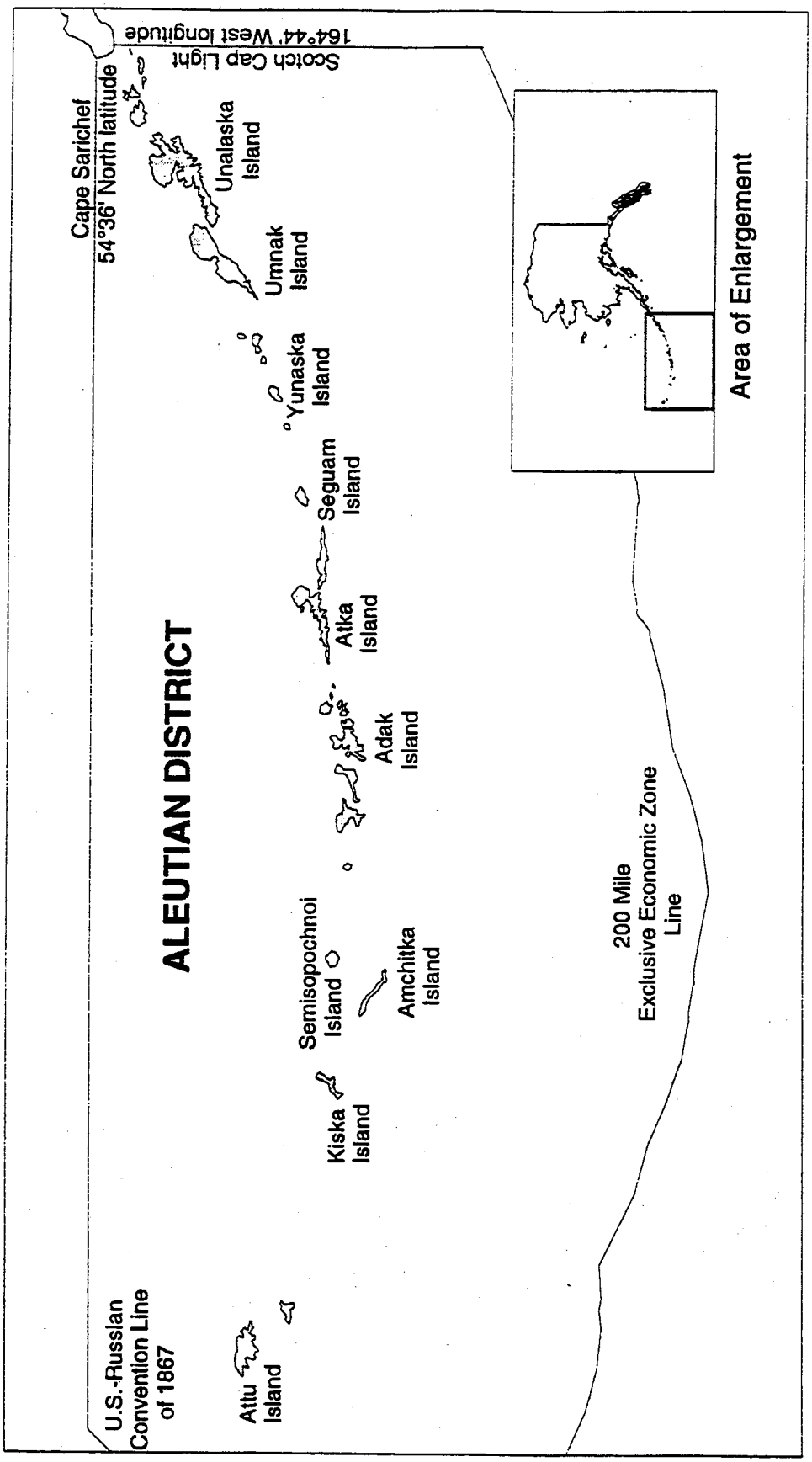

Figure 4-6. The Aleutian Distrist for Dungeness crab management.

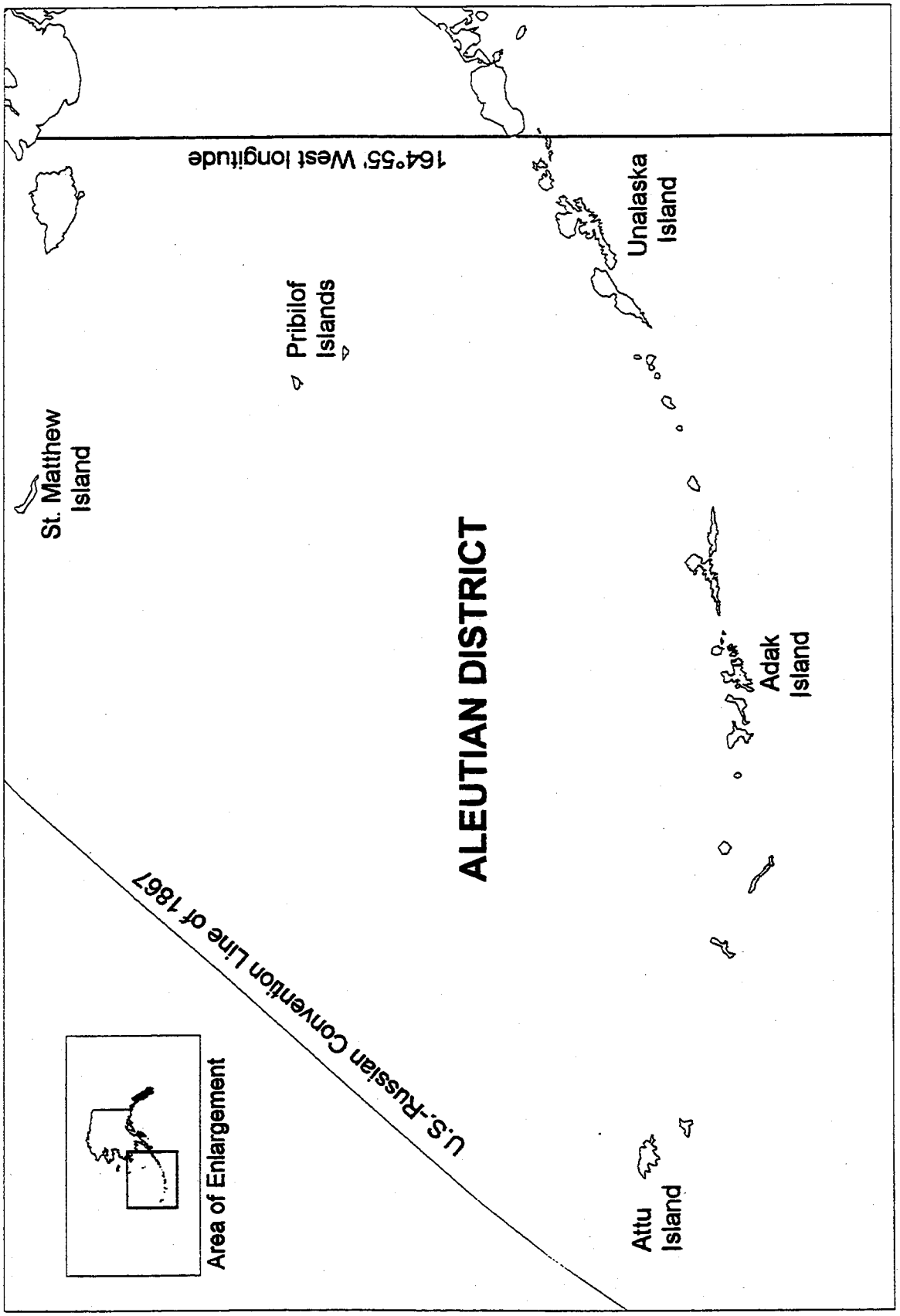

Figure 4-7. The Aleutian District for shrimp management.

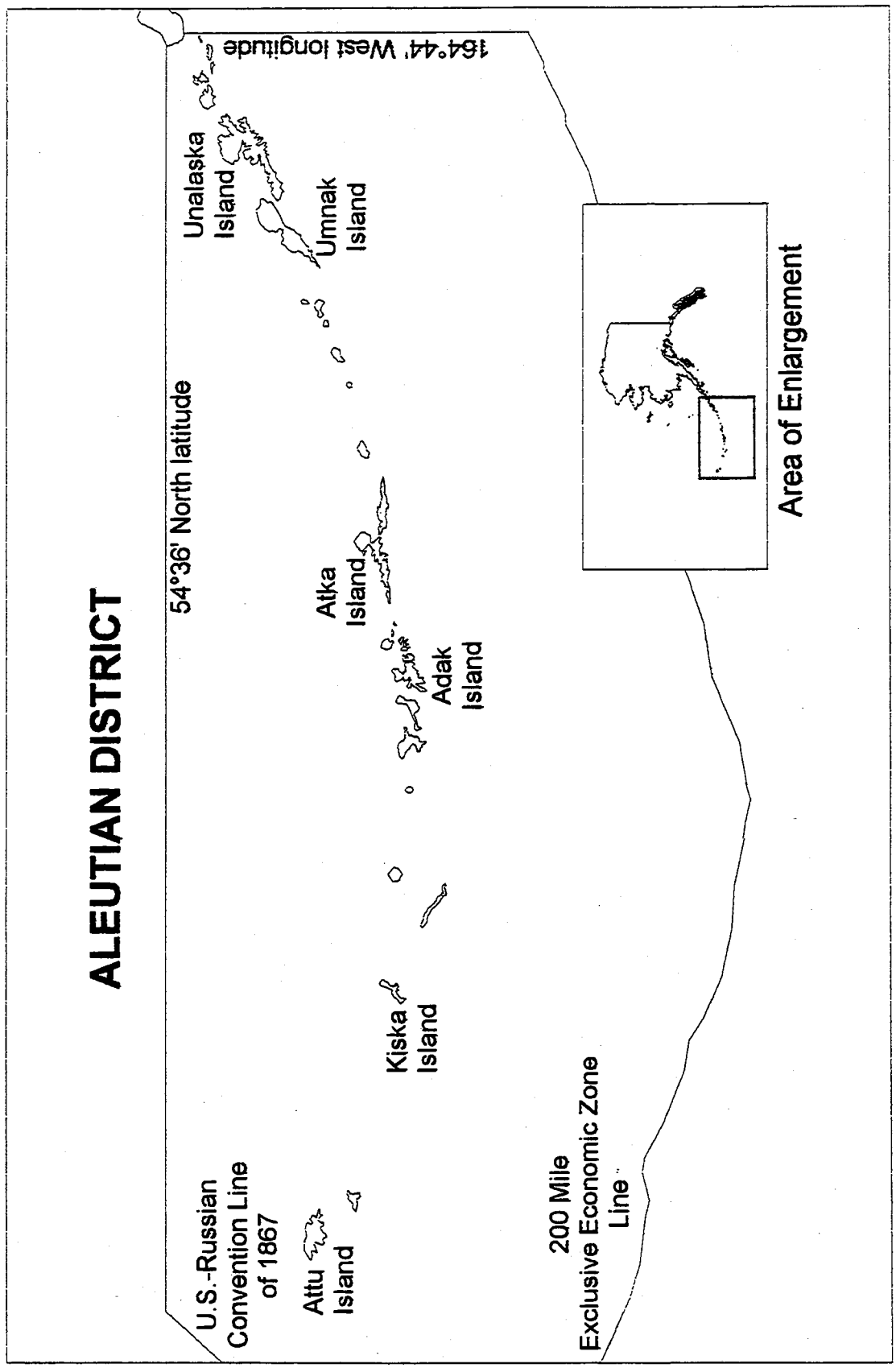

Figure 4-8. The Aleutian District for miscellaneous shellfish species.

1997
NORTON SOUND DISTRICT
SHELLFISH REPORT
to the
Alaska Board of Fisheries

By
Charles Lean
and
Betsy Brennan

Regional Information Report* No. 3A97-34

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Division of Commercial Fisheries
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INTRODUCTION

Norton Sound

The Norton Sound Section of the Northern Bering Sea District consists of all waters in Registration Area Q that are north of the latitude of Cape Romanzof, east of 168 west longitude, and south of the latitude of Cape Prince of Wales (Figures 1 and 2). A large vessel summer commercial red king crab (Paralithodes camtschatica) fishery has existed in the Norton Sound Section from 1977 through 1992 (Appendix Table 2). No summer commercial fishery occurred in 1991 due to a lack of staff necessary to manage the fishery. The budget had been cut the previous winter. In 1992, the large vessel summer commercial fishery resumed. Regulation changes adopted during the March 1993 Board of Fisheries meeting changed the character of the fishing fleet to that of a small boat fleet. A superexclusive designation went into effect for the Norton Sound commercial crab fishery June 27, 1994. 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.

The National Marine Fisheries Service conducted their most recent trawl survey to examine the abundance of Norton Sound red king crab in late August 1991 (Appendix Table 5). The results of that survey as compared to the 6 previous trawl surveys show a gradual trend of increasing abundance since the low recorded in 1982. The 1991 survey found 3.4 million pounds of legal king crab in the commercial fishing district. NMFS has not made a survey of Norton Sound since 1991. The quota for the Norton Sound Section for the 1996 season had been set at 340,000 pounds, to approximate an exploitation rate of 10%.

The Alaska Department of Fish and Game conducted a trawl survey to examine the abundance of Norton Sound red king crab from August 7 through August 18, 1996. A population estimate was generated which indicated the legal biomass had declined to 40 percent of the biomass estimated in 1991. The results from the 1996 trawl survey prompted the fishery managers to reduce the harvest rate in the 1997 commercial fishery to five percent of the legal biomass and set the guideline harvest at 80,000 pounds. This is a significant reduction from the previous exploitation rate and guideline harvest.

St. Lawrence Island

The St. Lawrence Island Section lies immediately west and north of the Norton Sound Section. Because the Bering Sea crab fleet bases in Dutch Harbor, the St. Lawrence Island Section has been managed by ADF&G's Westward Region's Dutch Harbor office, until recently, since they have been the primary commercial management group responsible for that area. The only reported commercial catches to date in the St. Lawrence Island Section were made in 1983 when 52,557 pounds of blue king crab were delivered from 13 landings, in 1989, when 3,603 pounds of red king crab and 984 pounds of blue king crab were

delivered from 8 landings, in 1992 when 53 pounds of blue crab were landed and in 1995 when 7,913 pounds were delivered from three landings.

In 1983, the commercial crab fleet concentrated near the southeast shore of St. Lawrence Island. The following year a regulation proposal to close the waters within 10 miles of all inhabited islands within the section was adopted in an attempt to protect stocks targeted by local fishermen and reduce impacts on marine mammal subsistence harvests during the winter. During the 1989 season, three fishing vessels prospecting in that section found relatively few blue king crab near rocks and shoals still open to commercial fishing, but red king crab were discovered in low densities near Kivalina, the northern boundary of the section. The villagers of Little Diomede Island have also traded and sold winter caught blue king crab with residents of Nome and other villages for years. The Department has not been able to obtain an accurate estimate of the magnitude of this trade. The remoteness of this village is also a factor contributing to the lack of catch records. Current regulation allows the commercial harvest and sale of king crab near shore during the winter. The Board provided the same provisions in the regulation as are in effect for Norton Sound to allow a commercial winter fishery. However, local residents of St. Lawrence Island have decided not to export any of their winter catch for commercial sale.

COMMERCIAL FISHERY

Norton Sound Summer Commercial Fishery

The 1997 summer commercial red king crab fishery opened at 12 noon, July 1 in the Norton Sound Section. The first fishing vessel registered July 3. It was after the Fourth of July weekend before any other vessels registered. Fishers did not deliver any crab until July 10. A total of 19 fishing vessels registered for the summer commercial crab season. Beginning in 1996, a moratorium on new vessels, greater than 32 feet, entering the fishery was put in place. No vessels over 32 feet registered in 1997. Thirteen vessels actually made deliveries and 15 permits were fished. There were two land based processors that registered, but only one actually took part in the fishery. No floating crab processors or catcher/processors operated in Norton Sound during the 1997 summer fishery. Therefore, no independent observer was placed on board a commercial vessel. One ADF&G fishery biologist was stationed in Nome to monitor the fishery and sample legal crab delivered to buyers in Nome. This was the only person dedicated to collecting essential biological and management data, which is necessary in determining the magnitude and location of the commercial harvest and tracking the status of the stock. The observer also provides the means to enforce size and sex restriction regulations that protect the resource.

Public concern for declining nearshore catches and the apparent shift in crab distribution caused managers to announce their intent not to relax the nearshore closure line as their practice had been in recent years. As a result of crab distribution and the proximity to the closure line, most vessels traveled to the entrance of Golovin Bay to fish, but only three

vessels chose to operate from the port of Golovin. No samples were collected from those vessels.

Catch reporting logs were kept by buyers and by skippers of catcher vessels for each statistical area fished. Buyers verbal reports were relayed daily by 9:00 a.m. to the ADF&G office in Nome. Fish tickets were due in to the ADF&G office on Friday of each week throughout the duration of the fishery. Vessel reports from fishermen and Catcher/Seller fish tickets were required every Monday for the duration of the fishery. Compliance with reporting requirements was good. Daily catch statistics can be found in Table 1 and Figure 3

Twelve percent of the total harvest was caught by Norton Sound fishers and the remaining 88% of the harvest was caught by Yukon Delta fishers. There were no fishers from other parts of the state or outside of Alaska participating in the fishery this year.

Eleven permit holders were registered as catcher/sellers, but only seventeen landings were made by five fishers registered as catcher sellers. One land based processing company operated out of Nome and one tender was used to transport live crab from Eastern Norton Sound.

Board of Fisheries regulations specific to Norton Sound Section are:

1) 5AAC 34.915, which directs the Department to manage the Norton Sound summer king crab fishery for a harvest of one half the exploitation rate determined under 5AAC 34.080.

2) 5AAC 34.935, which established a closed area with a defined boundary approximating 15 miles from the beach in the Norton Sound section, to protect a long established winter subsistence fishery.

3) 5AAC 34.925 (i) and (j), requiring pot tags and limiting vessels of 125 feet in length or less to 40 pots each and larger vessels are limited to 50 pots.

4) 5AAC 34.906, designates the Norton Sound Section to be a superexclusive registration area.

Statistical Summary

A total of 15 permit holders on 13 catcher vessels made 100 landings in the 1997 Norton Sound summer commercial red king crab fishery. The total number of crab caught was 32,606 and the total number of pots pulled was 2,982 (Table 1). The CPUE was 10.9 crab/pot. Total harvest was 92,988 pounds of king crab. The harvest goal was 80,000 pounds. The exvessel price for crab was $1.98 per pound. The value of the 1997 fishery is estimated at $184,116. This is the smallest summer commercial harvest since the

Norton Sound crab fishery transition to a small vessel fishery in 1993 (Appendix Tables 2 & 3, Figure 7).

Fish ticket records show that the 1997 season's largest fishing effort (67%) and harvest (83%) occurred in statistical areas 636401 and 626401(Table 2) just south of Golovin Bay. Prior to 1995, the fishery had typically concentrated in statistical areas south of Nome. In 1995, fishing started in the usual areas, but catches were low and fishermen spread their effort. Late in the season the best catch rates were found in the statistical areas south of Golovin Bay. Comparisons of the annual summer commercial harvest of crab by statistical area can be found in Appendix Table 1.

Based on fish ticket data, statistical area 626401 had the greatest CPUE of 14.2 crab/pot (Table 2). Overall CPUE for the 1997 season was 10.9 crab/pot. Appendix Tables 2 and 3 equate previous commercial crab harvest, effort, CPUE and value to the 1997 season. During the 1997 fishery, there were approximately 520 pots on the fishing grounds. The mean CPUE of the previous three years with a similar number of pots deployed on the grounds is 28.7 (Appendix Tables 2 and 3).

Statistical areas 656330 and 636330 had the greatest average weights of 3.05 pounds per crab according to fish ticket data (Table 2). Overall average weight per crab for the 1997 season was 2.85 pounds. This compares to the combined average weight of 2.98 pounds of the previous four years.

Commercial Catch Sampling

Carapace length measurement and shell age were collected from 1,198 legal male red king crab throughout the duration of the 1997 summer fishery. Carapace age was classified as new (11 months old) or old (at least 23 months old) (Table 3, Figure 4). Overall mean carapace length of the legal male red king crab sampled was 115.7mm (Table 3). The 1997 season's legal male new shell/old shell ratio was 86% new shell to 14% old shell (Table 3). This compares to the previous year average of 64% new shell to 36% old shell. Generally, the 1997 proportion of new shelled crab is high.

Recruit king crab made up 49% of the harvested stock sampled during the 1997 commercial season (Table 3). Total post recruits made up 51% of the harvested stock sampled. This high level of recruitment has not been observed since the mid-1980s when the population was recovering from a period of intense harvest (Appendix Table 4).

No sublegal male or female king crab information was collected from commercial vessels during the 1997 summer commercial king crab fishery. The small size of the vessels and the opportunistic excursion schedule made onboard sampling unfeasible.

Tagged Crab

Eight tagged crab were recovered during the 1997 summer fishery. Two of those crab were not documented properly at the time of release and that data was not usable. Of the remaining six crab recaptured during 1997, mean growth per molt was 12.9mm.

Enforcement

The Fish and Wildlife Protection officer was unable to patrol the fishery. No cases were filed during 1997.

Norton Sound Winter Commercial Fishery

Regulation allows a winter commercial fishery in the Norton Sound Section from November 15 through May 15, the fishery typically takes place near Nome. The winter commercial fishery is required to take place from the ice, not from vessels. During the winter of 1996-1997, two commercial fishermen reported selling a total of 83 red king crab (Appendix Table 7). The villages east of Nome reported only limited harvests of crab. Ice conditions were generally unfavorable throughout Norton Sound, although the sea ice near Elim was fairly stable. Poor catch rates at Nome and unstable ice to the east kept king crab fishing to some of the lowest levels in recent years.

The harvest is divided between local residents who buy crab directly from the fishermen and other non-local markets such as Anchorage. Crab are sold in Nome for six dollars per crab, roughly $2.85 per pound. Because of the poor harvest rate, there were no crab sold out of town. The 1996-1997 winter catch of 210 pounds was estimated to be worth about 598 dollars.

The winter crab fishermen generally use crab pots but some use handlines to "prospect". Deploying pots through sea ice is laborious, but hand lines can be dropped through a large ice auger hole in a short period of time. The other advantage of hand lines is that during periods of favorable weather hand lines may be deployed from new, less stable ice without the risk of loosing more expensive crab pots. Most fishermen consider commercial crabbing a sideline and hold other jobs. Usually, two or three of the winter crab fishermen sell the majority of the crab. Because the volume of crab involved is low, no processor has found it profitable to operate locally. The crab sold locally are all sold fresh as are those shipped to Anchorage or other non local markets. During the mid-winter months, fishermen find it difficult keeping the crab from freezing. Many Nome residents prefer to buy frozen crab since they are able to extract the meat prior to cooking. Fresh frozen crab are easily marketed in Nome, but are not accepted in Anchorage markets.

SUBSISTENCE FISHERY

Red king crab are utilized by Norton Sound residents 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 the subsistence harvest, the Board of Fisheries enacted a regulation in 1977 requiring subsistence fishermen in Norton Sound to obtain a permit prior to fishing and to record daily effort and catches on these permits (Appendix Table 6).

The first year subsistence permits were required had the highest number of permits issued to date and a relatively high harvest rate were recorded. The fishery declined sharply the following year and remained at very depressed levels throughout the 1981-82 season. The lack of success in the winter crab fishery during some past years has been attributed to a declining crab population caused by the removal of crab in the summer commercial fishery together with low recruitment, low effort due to poor ice conditions, and changes in the nearshore winter distribution of crab. All these factors probably had some effect on the success of the winter fishery in varying degrees. During the 1978-79 winter fishery, the king crab population was still in relatively high abundance. Despite this relatively large population, winter catches were the poorest on record indicating that the major factors limiting winter catches were probably poor ice conditions and the distribution of crab. During the winter of 1981-82, poor winter catches could more reasonably be attributed to a declining crab population since the crab population was at a much lower level. Subsistence fishing success during the winters of 1982-83 through 1986-87 had improved due to a rebuilding of the population and increased use of more efficient gear (pots instead of handlines). Unstable ice conditions and record snowfalls adversely effected the 1987-88, 1988-89, and 1992-93 catches. During years of stable ice conditions, approximately 100 fishermen have averaged 100 crab each.

The 1996-1997 season was beset with poor ice conditions. Frequent storms limited the extent of the shorefast ice and fishers had difficulty keeping their pots and finding suitable locations to fish. Of the 18 permits returned, 10 reported fishing. Seven fishers reported using pots, 1 reported using handlines, and 2 reported using a combination of the two gears. Permit data indicates the subsistence harvest consisted of 697 male crab and nine female crab. Those fishers reported harvesting 58% of the male crab they caught and 2% of the females caught.

STOCK STATUS / RESEARCH

There has been a change in the character of the summer commercial fishery since 1993 due to regulation changes affecting pot limits, opening dates and a regulation making Norton Sound a superexclusive registration area. The quality and quantity of data collected since the 1993 summer crab fishery has differed greatly from previous years due to the nature of the small vessel fishery. No floating processor or catcher processor took part in the 1997 fishery, therefore no independent observers were onboard commercial vessels.

The ADF&G fishery monitor did not have the opportunity to make observations on small catcher vessels during the 1997 fishery. No information was collected on observed pot lifts, sublegal male and female length frequencies, and catch rates of legal and sublegal crab during the commercial fishery. However, sampling of the commercial catch did occur on some deliveries made in Nome. This is important to ensure size limits are being enforced, and to assist management biologists in determining recruitment and health of the crab population.

In 1976, when monitoring of the Norton Sound king crab population first began, the population was mainly composed of prerecruit and recruit crab. The initial population assessment survey by the NMFS estimated the legal male king crab population at 8.1 million pounds (Appendix Table 5). The legal male crab population peaked in 1978 at an estimated 11 million pounds. During the 4 years following 1978, recruitment into the legal male crab population was very low. Subsequent NMFS surveys in 1979 and 1982 documented a population of predominantly postrecruit crab, and estimated the population had declined to 2.6 million pounds by 1982. Beginning in 1981, sublegal crab abundance began to increase, and by 1983 recruitment into the legal male population also began to increase. No assessment work was conducted in 1983 or 1984. However, samples of the commercial catches indicated a significant increase of recruit crab into the legal male population; from a historic low of 10% in 1981 to 59% in 1984.

In 1985, both NMFS and ADF&G conducted population assessment surveys in Norton Sound (Appendix Table 5). After the commercial fishery in 1985, NMFS conducted a population assessment survey using trawl gear over a slightly larger area than that surveyed by the Department. Male king crab sampled in NMFS trawls were in the process of or had just molted with the result being that their estimate of 3.4 million pounds of legal male king crab included some recruitment. Adjusting this estimate for molting, and including the summer commercial harvest, an estimated three million pounds were present prior to the 1985 August fishery. Both surveys documented relatively substantial numbers of recruit crab and a healthy percentage of prerecruit crab.

During September of 1988 NMFS conducted a fifth population assessment with trawl gear. They sampled an area roughly the same size as in 1985, but increased sampling frequency in the proposed mineral lease area near Nome. The timing of the study, which occurred during the male molt, was almost a month earlier than similar surveys in the past. Nearly all the 1988 catch was in pre-molt condition. NMFS estimated 3.0 million pounds of legal male and 1.0 million pounds of prerecruit-one male red king crab; totaling 4.0 million pounds. Annual mortality was estimated at approximately 20% or 0.8 million pounds. Ignoring growth and the winter harvests, the population prior to the 1989 summer fishery would have been 3.2 million pounds, very close to the 1985 trawl estimate of 3.4 million pounds.

NMFS conducted a sixth trawl survey of Norton Sound during late August 1991 with a reduced number of tows. Each station had only a single sampling tow, as compared to each station having both a day and night tows during previous surveys. This reduction in

sampling had the effect of introducing more variability into the estimate. The legal crab biomass in the summer fishing area was estimated to be 3,400,000 pounds and the total Norton Sound legal biomass was estimated to be 4,009,000 pounds. Since the survey occurred prior to the molt, a mortality of 10% was assumed for the year following the estimate. With no summer or winter fishery data to compare with the survey results, a conservative biomass of 3,400,000 pounds was used as the basis for the 1992-96 harvest guideline. The Norton Sound red king crab population was thought to be stable with harvest set near 10%.

NMFS has discontinued their trawl surveys of Norton Sound. The Department was able to utilize recently appropriated money for a trawl survey of their own during August of 1996. The methodology used was very similar to that used by NMFS in previous surveys. The legal biomass was estimate to be 1,600,000 pounds. This is a significant decline from the previous survey. Department staff met and decided that the population was far below its carrying capacity and was closely approaching the threshold below which a commercial harvest should not occur. There are indications that the sublegal portion of the population is relatively strong in comparison to the legal portion. It was decided that the exploitation rate would be reduced to five percent of the legal biomass. This reduced harvest rate and the expected strong recruitment will allow for a rapid recovery if the legal biomass.

FUTURE INVESTIGATIONS

The trawl survey which occurred during the summer of 1996 in Norton Sound was made possible by a budget increment passed by the legislature. This is to be a regularly scheduled survey rotating between districts. Both funding for a sustained winter research program and a triennial trawl survey to evaluate Norton Sound crab populations were provided for in that legislation. A winter pot survey is planned during February, March, and April 1998 and the next trawl survey to generate a population estimate is planned for 1999.

OUTLOOK FOR 1998

The outlook for 1998 is not yet complete. The guideline harvest is likely be to the same as the 1997 season; however, the winter pot survey will be used to check the projections generated from the trawl survey.

Table 1. Daily catch (using fish ticket data) for the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1 - August 13, 1997.

Date	Permits	Landings	Number of Crab	Lbs of Crab Harvested	Cumulative Total (lbs)	No. of Pots Pulled	Average Weight	CPUE
10-Jul [a]	2	2	255	673	673	71	2.64	3.6
11-Jul	1	1	154	397	1,070	19	2.58	8.1
12-Jul	3	3	659	1,832	2,902	121	2.78	5.4
13-Jul	4	4	1,046	2,898	5,800	160	2.77	6.5
14-Jul	0	0	0	0	5,800	0	0.00	0.0
15-Jul	1	1	260	765	6,565	40	2.94	6.5
16-Jul	5	5	1,357	3,681	10,246	195	2.71	7.0
17-Jul	2	2	518	1,477	11,723	80	2.85	6.5
18-Jul	3	8	384	1,160	12,883	123	3.02	3.1
19-Jul	1	1	9	27	12,910	2	3.00	4.5
20-Jul	2	3	371	1,053	13,963	82	2.84	4.5
21-Jul	4	4	418	1,157	15,120	84	2.77	5.0
22-Jul	4	4	1,281	3,886	19,006	132	3.03	9.7
23-Jul	3	3	1,368	3,703	22,709	73	2.71	18.7
24-Jul	0	0	0	0	22,709	0	0.00	0.0
25-Jul	1	1	15	45	22,754	2	0.00	7.5
26-Jul	0	0	0	0	22,754	0	0.00	0.0
27-Jul	1	1	51	155	22,909	6	0.00	8.5
28-Jul	7	7	2,629	7,632	30,541	273	2.90	9.6
29-Jul	2	2	1,107	2,941	33,482	63	2.66	17.6
30-Jul	4	4	1,656	4,663	38,145	128	2.82	12.9
31-Jul	3	3	991	2,809	40,954	144	2.83	6.9
1-Aug	3	3	1,110	3,244	44,198	160	2.92	6.9
2-Aug	3	4	635	1,884	46,082	96	2.97	6.6
3-Aug	weather	0	0	0	46,082	0	0.00	0.0
4-Aug	weather	0	0	0	46,082	0	0.00	0.0
5-Aug	2	3	17	51	46,133	6	3.00	2.8
6-Aug	4	5	844	2,395	48,528	139	2.84	6.1
7-Aug	8	8	4,072	11,783	60,311	247	2.89	16.5
8-Aug	1	1	10	30	60,341	2	3.00	5.0
9-Aug	4	4	3,658	10,166	70,507	160	2.78	22.9
10-Aug	3	3	1,211	3,360	73,867	72	2.77	16.8
11-Aug	0	0	0	0	73,867	0	0.00	0.0
12-Aug	1	1	558	1,572	75,439	20	2.82	27.9
13-Aug [b]	9	9	5,962	17,549	92,988	282	2.94	21.1
Totals:	15	100	32,606	92,988		2,982	2.85	10.9

[a] Fishery opened by regulation 12 noon July 1. No deliveries made until 7/10.

[b] Fishery closed by emergency order August 13, 12 noon.

Table 2. Red king crab summer commercial catch total (from fish ticket reports) by statistical area for Norton Sound Section, Eastern Bering Sea, July 1 - August 13, 1997.

Statistical Area	Number	Pounds	Pots Pulled	CPUE	Average Weight (Lbs.)	Percent of Pots Pulled in Stat. Area (%)	Percent Harvest in Stat. Area (%)
626401	6,242	18,066	440	14.2	2.89	14.8	19.4
636330	1,260	3,838	120	10.5	3.05	4.0	4.1
636401	21,027	59,206	1,515	13.9	2.82	50.8	63.7
646330	120	314	80	1.5	2.62	2.7	0.3
646401	389	1,052	81	4.8	2.70	2.7	1.1
656330	1,528	4,661	313	4.9	3.05	10.5	5.0
656401	1,368	4,035	301	4.5	2.95	10.1	4.3
666401	672	1,816	132	5.1	2.70	4.4	2.0
Total:	32,606	92,988	2,982	10.9	2.85		

Table 3. Carapace length measurement summary of sampled legal male red king crab captured during the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1 - August 13, 1997.

Carapace Length (mm)	New shell No.	New shell Ave Length Calc.	New shell %	Old shell No.	Old shell Ave Length Calc.	Old shell %	Total No.	Total Ave Length Calc.	Total %
95	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
96	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
97	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
98	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
99	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
100	3	0.29	0.3%	0	0.00	0.0%	3	0.25	0.3%
101	7	0.69	0.6%	1	0.60	0.1%	8	0.67	0.7%
102	12	1.19	1.0%	1	0.61	0.1%	13	1.11	1.1%
103	13	1.30	1.1%	2	1.23	0.2%	15	1.29	1.3%
104	19	1.92	1.6%	4	2.49	0.3%	23	2.00	1.9%
105	34	3.46	2.8%	3	1.89	0.3%	37	3.24	3.1%
106	42	4.32	3.5%	10	6.35	0.8%	52	4.60	4.3%
107	26	2.70	2.2%	5	3.20	0.4%	31	2.77	2.6%
108	34	3.56	2.8%	10	6.47	0.8%	44	3.97	3.7%
109	48	5.07	4.0%	7	4.57	0.6%	55	5.00	4.6%
110	61	6.51	5.1%	3	1.98	0.3%	64	5.88	5.3%
111	55	5.92	4.6%	8	5.32	0.7%	63	5.84	5.3%
112	73	7.93	6.1%	8	5.37	0.7%	81	7.57	6.8%
113	46	5.04	3.8%	9	6.09	0.8%	55	5.19	4.6%
114	47	5.20	3.9%	3	2.05	0.3%	50	4.76	4.2%
115	67	7.47	5.6%	5	3.44	0.4%	72	6.91	6.0%
116	50	5.63	4.2%	5	3.47	0.4%	55	5.33	4.6%
117	53	6.01	4.4%	3	2.10	0.3%	56	5.47	4.7%
118	42	4.81	3.5%	7	4.95	0.6%	49	4.83	4.1%
119	34	3.92	2.8%	4	2.85	0.3%	38	3.77	3.2%
120	32	3.72	2.7%	16	11.50	1.3%	48	4.81	4.0%
121	34	3.99	2.8%	2	1.45	0.2%	36	3.64	3.0%
122	24	2.84	2.0%	5	3.65	0.4%	29	2.95	2.4%
123	26	3.10	2.2%	0	0.00	0.0%	26	2.67	2.2%
124	17	2.04	1.4%	5	3.71	0.4%	22	2.28	1.8%
125	19	2.30	1.6%	4	2.99	0.3%	23	2.40	1.9%
126	15	1.83	1.3%	2	1.51	0.2%	17	1.79	1.4%
127	12	1.48	1.0%	5	3.80	0.4%	17	1.80	1.4%
128	17	2.11	1.4%	2	1.53	0.2%	19	2.03	1.6%
129	10	1.25	0.8%	4	3.09	0.3%	14	1.51	1.2%
130	11	1.39	0.9%	3	2.34	0.3%	14	1.52	1.2%
131	5	0.64	0.4%	2	1.57	0.2%	7	0.77	0.6%
132	8	1.02	0.7%	2	1.58	0.2%	10	1.10	0.8%
133	5	0.65	0.4%	3	2.39	0.3%	8	0.89	0.7%
134	3	0.39	0.3%	0	0.00	0.0%	3	0.34	0.3%
135	4	0.52	0.3%	3	2.43	0.3%	7	0.79	0.6%
136	4	0.53	0.3%	1	0.81	0.1%	5	0.57	0.4%
137	2	0.27	0.2%	1	0.82	0.1%	3	0.34	0.3%
138	4	0.54	0.3%	0	0.00	0.0%	4	0.46	0.3%
139	3	0.40	0.3%	3	2.50	0.3%	6	0.70	0.5%
140	2	0.27	0.2%	0	0.00	0.0%	2	0.23	0.2%
141	1	0.14	0.1%	3	2.53	0.3%	4	0.47	0.3%
142	2	0.28	0.2%	0	0.00	0.0%	2	0.24	0.2%
143	2	0.28	0.2%	2	1.71	0.2%	4	0.48	0.3%
144	2	0.28	0.2%	0	0.00	0.0%	2	0.24	0.2%
145	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	0	0.00	0.0%	1	0.88	0.1%	1	0.12	0.1%
148	1	0.14	0.1%	0	0.00	0.0%	1	0.12	0.1%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	1,031		86.1%	167		13.9%	1,198		100.0%
Mean		115.3			117.8			115.7	

Total legals	1,198
Total Recruits	587
Percent	49.0%
Total Post Recruits	611
Percent	51.0%

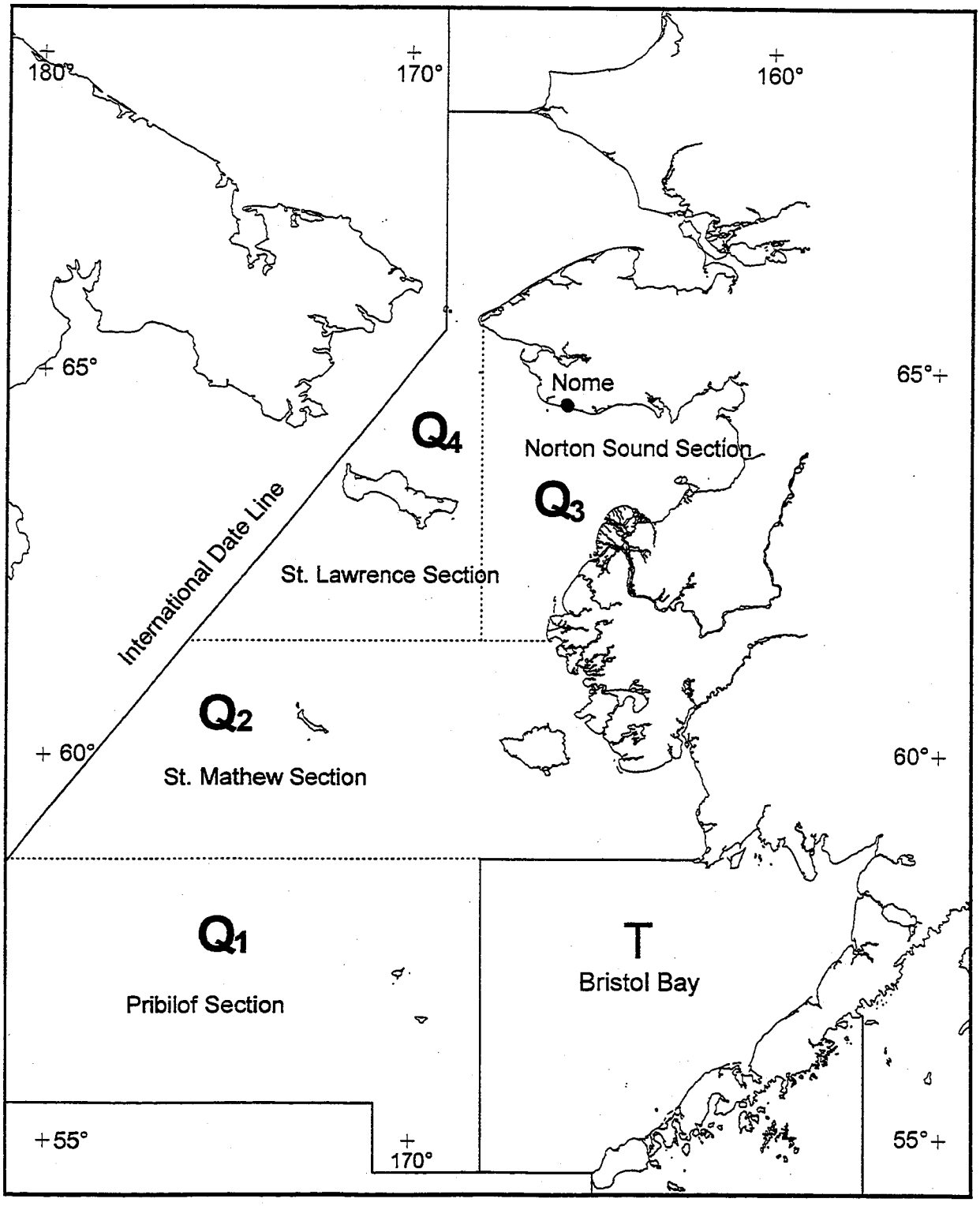
Table 4. Red king crab tag information recovered during the Norton Sound commercial king crab harvest, July 1 - August 13, 1997.

Tag Number	Capture Date	Stat. Area of Capture	Carapace Length (mm)	Shell Age	Tagging Date	Tagging Location[b]	Carapace Length (mm)	Growth (mm)	No. of Molts[a]	Skip Molts	Average Growth per Molt (mm)
NX03863	7/21/97	656401	103	New	4/3/96	B4	89	14	1	0	14.0
NZ02503	7/28/97	636401	109	New	3/7/95	E3	80	29	2	0	14.5
NX03317	7/30/97	656330	121	New	4/4/95	E4	97	24	2	0	12.0
NX03529	7/31/97	626401	112	New	No Information						
NX03353	8/7/97	636401	122	Old	2/13/96	N3	127	-5			
NX03105	8/7/97	636401	125	New	3/16/95	W4	118	7	1	1	7.0
NX03990	8/13/97	636401	108	New	3/29/96	B1	90	18	1	0	18.0
NX02900	8/14/97	636401	112	New	3/7/95	E4	88	24	2	0	12.0
											12.9

[a] Crab growth of 12 mm (+/- 5mm) per year is thought to be the average growth in one molting period.

[b] B1= Bluff area, 45 miles east of Nome.
B4=Bluff area, 50 miles east of Nome.
E3=7.9 miles east of Nome.
E4=9.5 miles east of Nome.
N3=1.34 miles south of Nome.
W4=2.8 miles west of Nome.

Figure 1. King crab fishing districts and sections of Statistical Area Q.



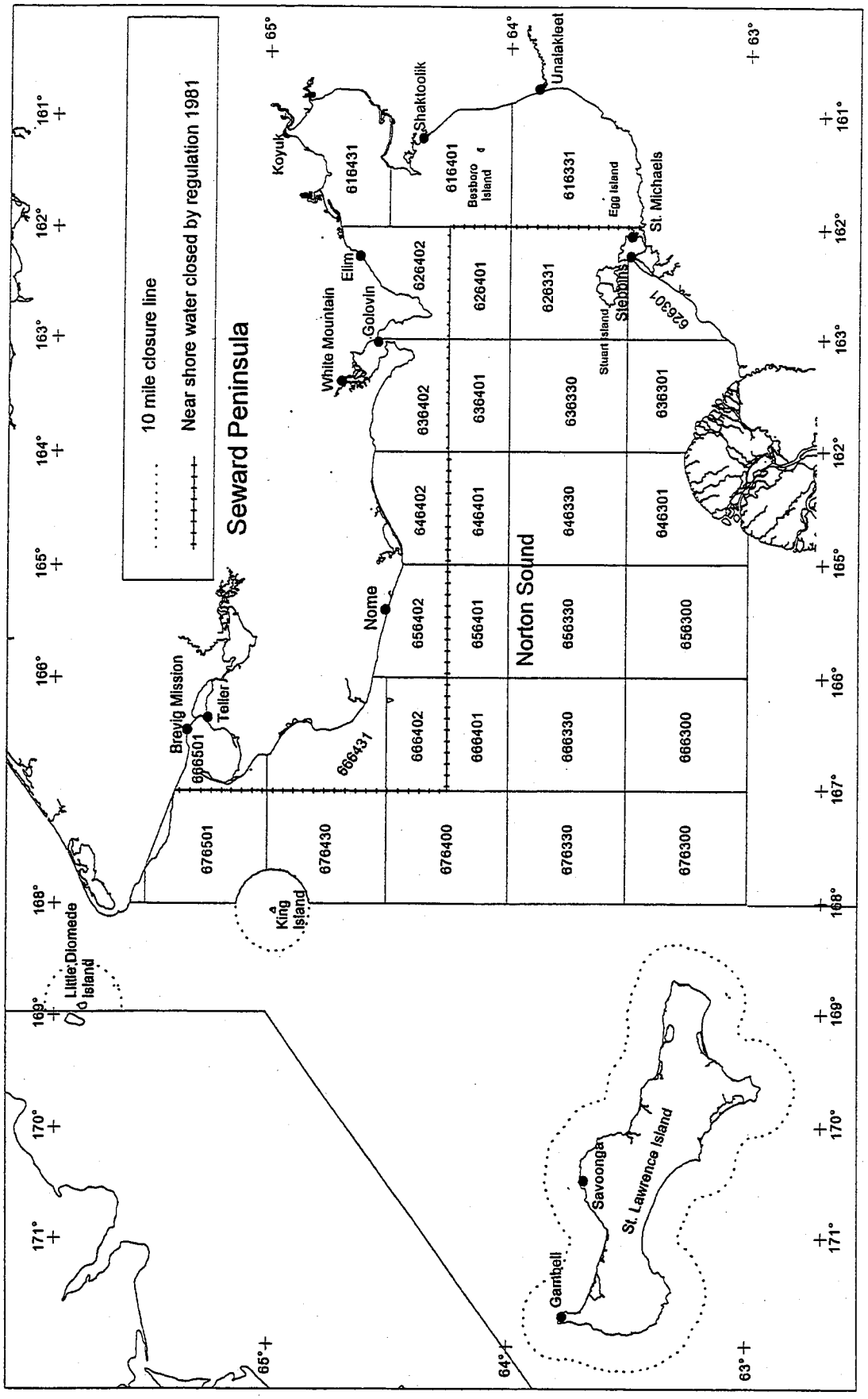


Figure 2 . Norton Sound red king crab statistical areas.

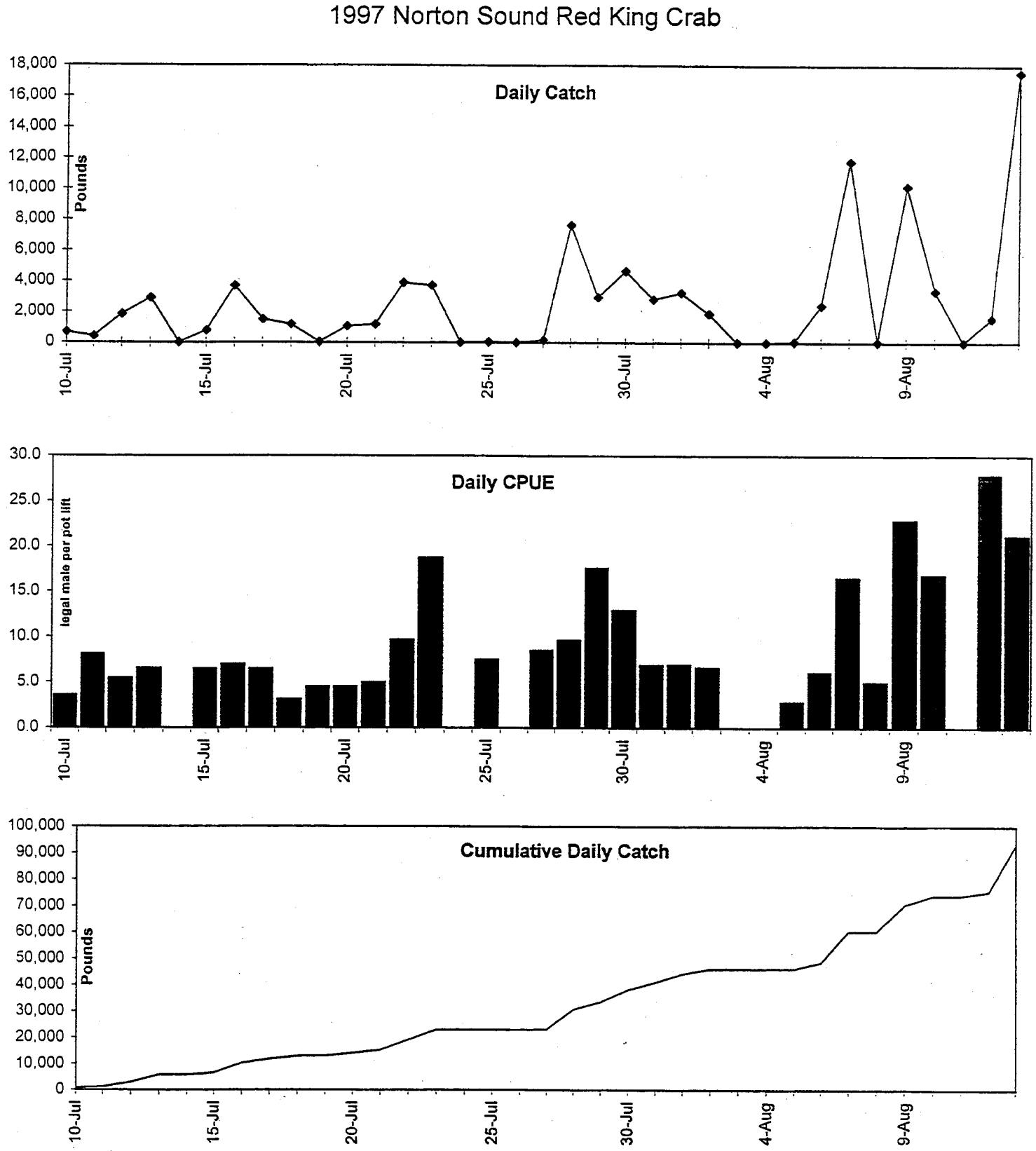


Figure 3. Daily catch, daily CPUE, and cumulative daily catch, Norton Sound summer commercial king crab fishery, July 10 - August 13, 1997 (no harvest reported prior to July 10).

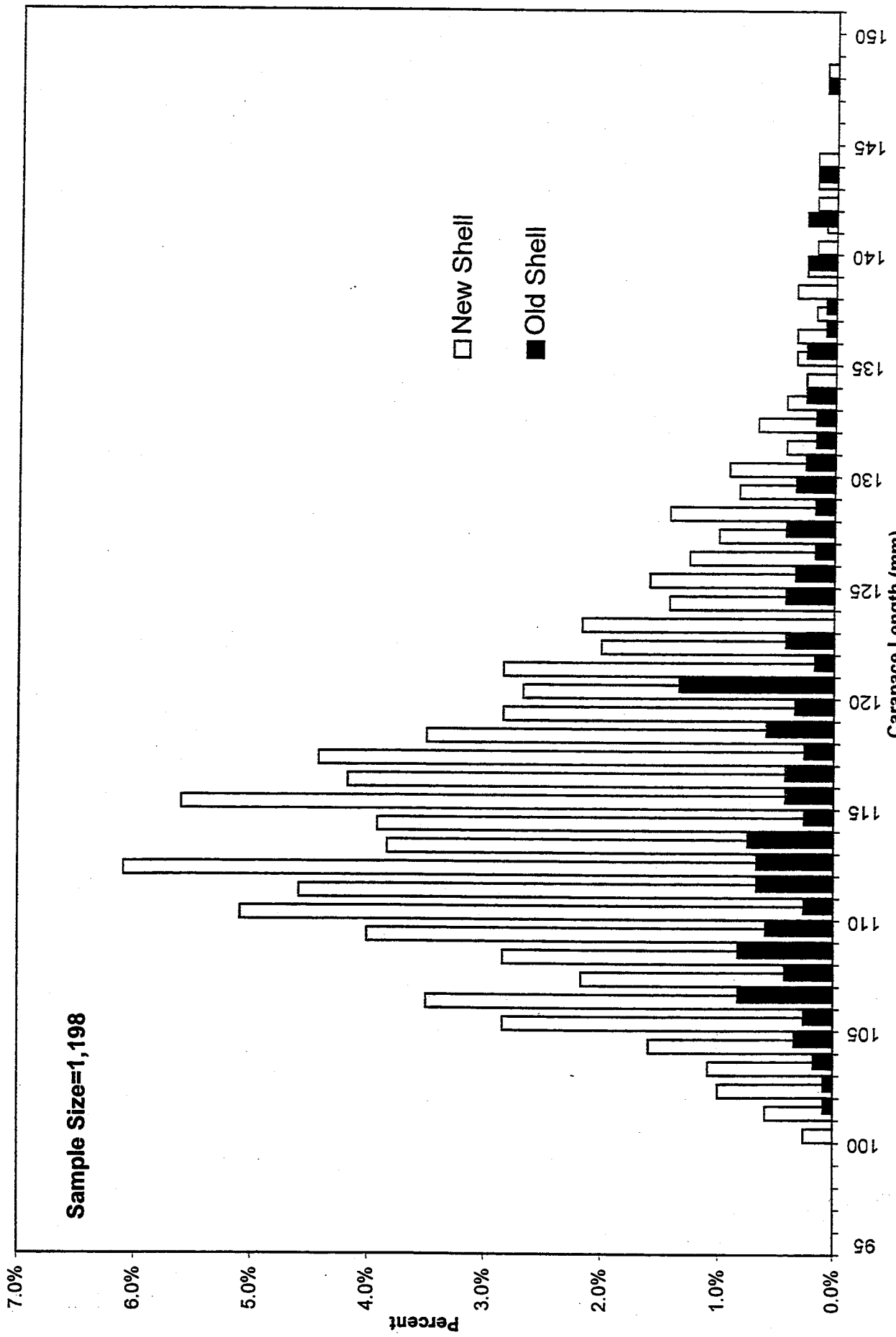


Figure 4. Length frequency distribution of new and old carapace age condition of legal male red king crab, Norton Sound summer king crab fishery, July 1 - August 13, 1997.

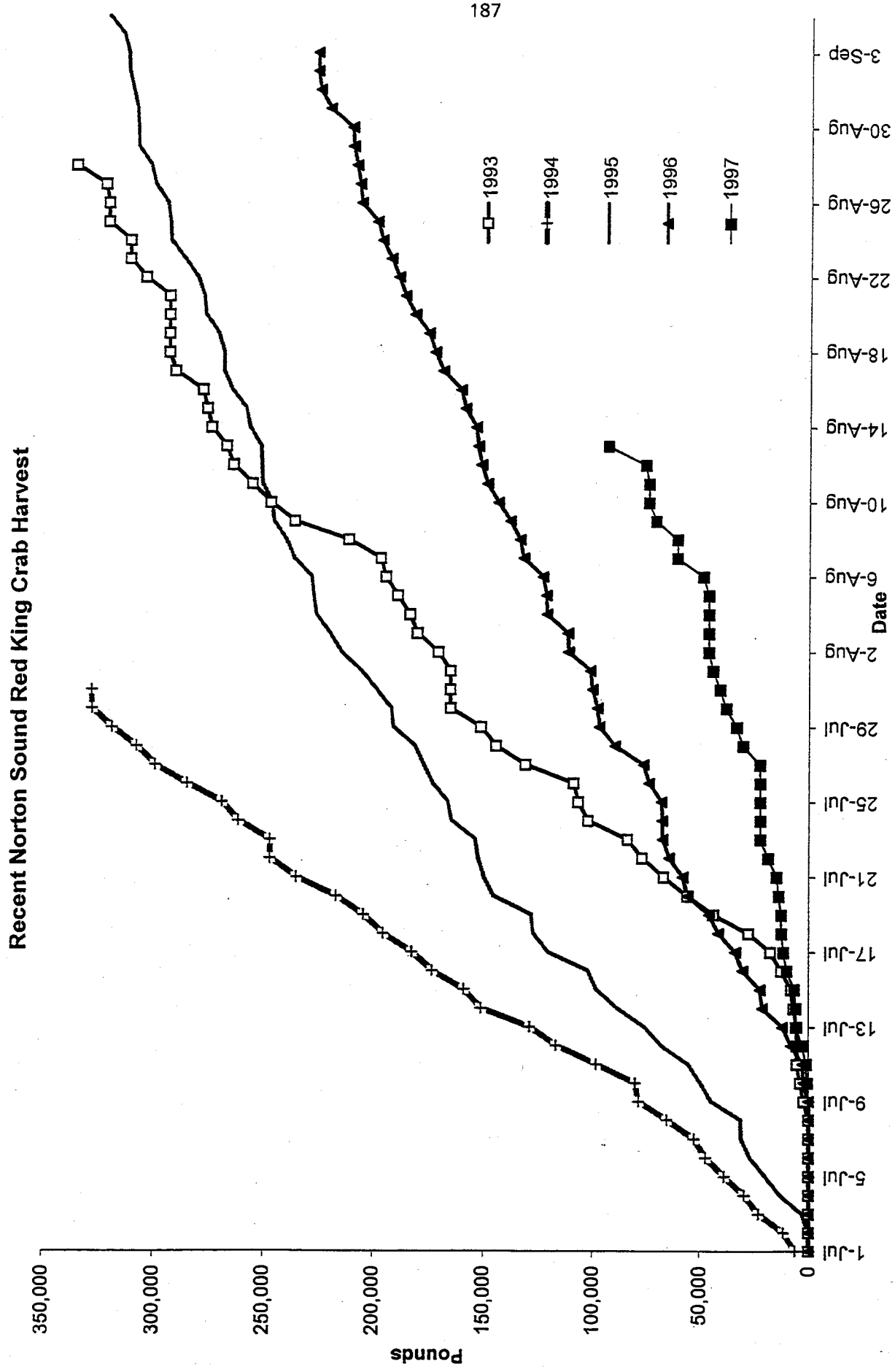


Figure 5. Recent Norton Sound summer commercial red king crab harvest, 1993 - 1997. The 1993 - 1996 harvest guideline was 340,000 lbs. The 1997 harvest guideline was 80,000 lbs.

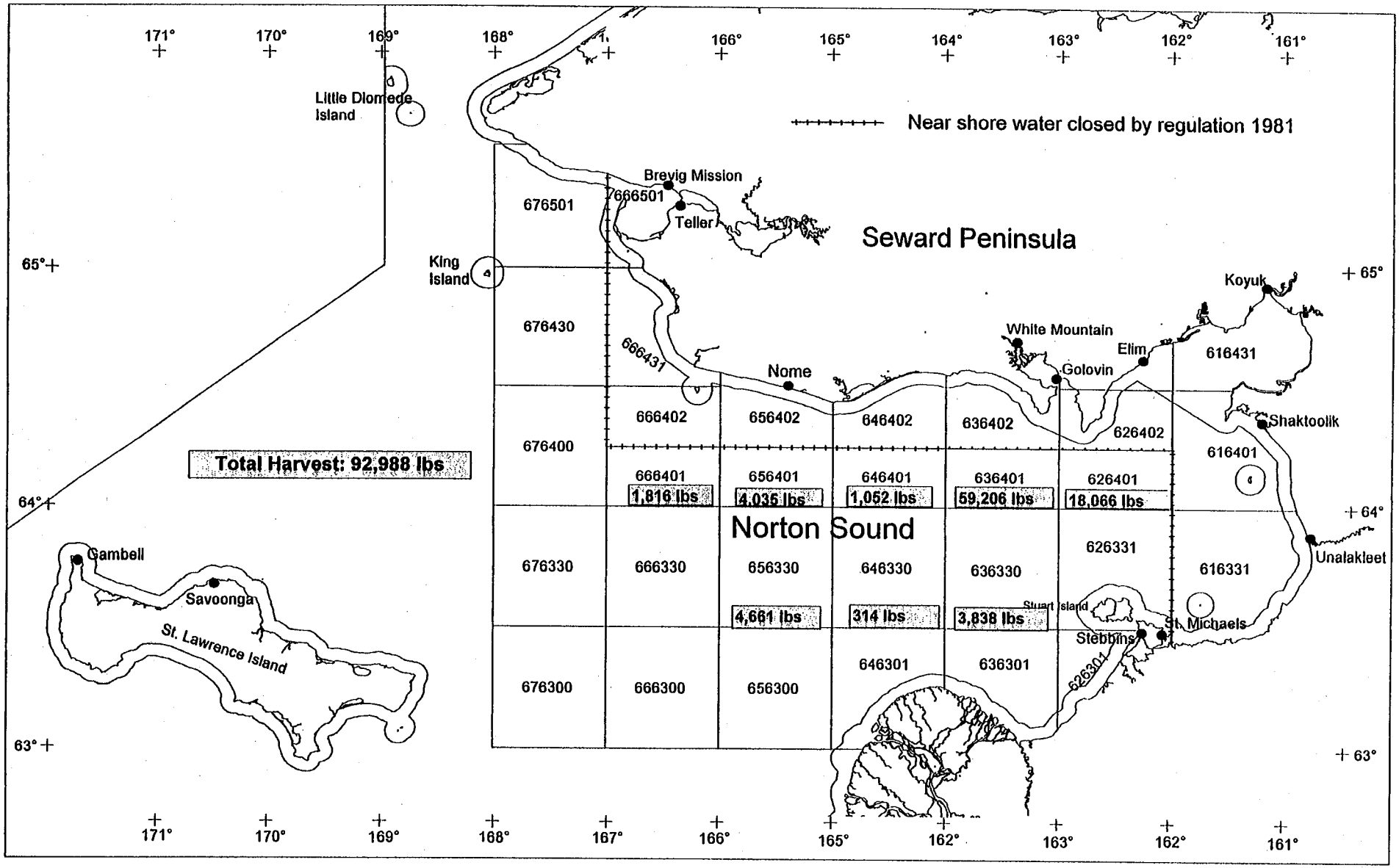


Figure 6. 1997 Norton Sound summer commercial red king crab harvest by statistical areas.

Appendix Table 1. Comparison of annual summer commercial harvest of red king crab from Norton Sound Section, Eastern Bering Sea, by statistical areas, 1977-1997 (catch in pounds).[a]

Statistical Area	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1992	1993	1994	1995	1996[b]	1997	Totals
616331	7,893																48				7,941
616401																		35			35
626331	40,020					22													61		40,103
626401	31,572			4,830	399													18,971	45,045	18,066	100,817
626402	38,995																				38,995
636330																			4,560	3,838	4,560
636401				12,398	61,823	32,246	5,880	41	891				22,030		1,159	1,373	8,087	24,329	70,677	59,206	240,934
636402																	1,754	3,466			5,220
646301																		4,628	13,888		18,516
646330					4,716								5,212					1,493	2,894	314	14,315
646401			155,972		1,319	17,532										1,963	37,222	105,045	22,834	1,052	341,887
646402	80,969					748										730	143,511	66,821			292,779
656300			161,699		15,174																176,873
656330			323,518	72,735	395,662	3,983	24,246	83,479	7,632		79,006	36,129	1,757		4,814	265		19,745	15,446	4,661	1,068,417
656401			138,011	121,147	253,387	60,480	11,422	183,119	246,200		194,408	165,644	100,956	171	53,119	105,341	29,566	32,289	9,985	4,035	1,705,245
656402	306,302	90,187	288,869	918	3,098	2,832			132,363							193,079	106,053	44,000			1,167,701
666230		55,490			77																55,567
666300		162,795	60,816	84,874	9,167	95		4,534											25,519		347,800
666330		353,016	505,050	367,446	141,513	8,990	1,192		389	70,615	2,963	13,020	1,275	27,185	4,305	31,758		730			1,529,447
666401		179,212	486,947	205,400	381,510	79,580	325,045	116,254	5,341	408,848	50,744	21,895	115,257	162,263	10,632	746	396		3,001	1,816	2,553,071
666402	12,036	515,778	534,938	183,581		17,585			32,992							535	1,221				1,298,666
666431			146,029															1,124			147,153
676300		13,238		126,231															546		140,015
676330		51,304	81,798	6,762	18,734																158,598
676400		667,130	33,856	274	92,026	1,315	247		32					3,212					9,775		807,867
676430		3,811	12,309		373	3,513			1,171												21,177
676501					36																36
686330			1,860																		1,860
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	192,831	74,029	335,790	327,858	322,676	224,231	92,988	12,378,583

[a] No commercial fishery occured in 1991.

[b] Does not include approximately 2,490 lbs not reported on fish tickets.

Appendix Table 2. Historic summer commercial red king crab harvest, Norton Sound Section, Eastern Bering Sea, 1977 - 1997.

Year	Number of Vessels	Number of Permits	Number of Landings	Number of Crab	Harvest (lbs) [a,b]	Number of Pot Lifts	CPUE	Percent Old Shell	Average Weight (lbs)	Avg. Legal Mean Length (mm)
1977	7	7	13	195,877	0.52	5,457	36	[d]	2.7	113.4
1978	8	8	54	660,829	2.09	10,817	64	[d]	3.0	118.9
1979	34	34	76	970,962	2.93	34,773	28	[d]	3.0	119.8
1980	9	9	50	329,778	1.19	11,199	29	[d]	3.6	125.8
1981	36	36	108	376,313	1.38	33,745	11	[d]	3.7	128.5
1982	11	11	33	63,949	0.23	11,230	6	[d]	3.6	125.4
1983	23	23	26	132,205	0.37	11,195	12	[d]	2.8	115.2
1984	8	8	21	139,759	0.39	9,706	14	[d]	2.8	112.5
1985	6	6	72	146,669	0.43	13,209	11	[d]	2.9	115.8
1986	3	3	[d]	162,438	0.48	4,284	38	[d]	2.9	115.9
1987	9	9	[d]	103,338	0.33	10,258	10	13	3.2	121.7
1988	2	2	[d]	76,148	0.24	2,350	32	26	3.1	119.0
1989	10	10	[d]	79,116	0.25	5,149	15	29	3.1	119.8
1990	4	4	[d]	59,132	0.19	3,172	19	17	3.1	121.1
1991 [c]										
1992	27	27	[d]	24,902	0.07	5,746	4	29	3.0	119.7
1993	14	20	208	115,913	0.33	7,063	16	10	2.9	119.1
1994	34	52	407	108,824	0.32	11,729	9	71	3.0	118.8
1995	48	81	665	105,967	0.32	18,782	5.6	21	3.0	118.2
1996	41	50	264	74,752	0.22	10,453	7.1	36	3.0	117.1
1997	13	15	100	32,606	0.09	2,982	10.9	14	2.8	115.7

[a] Deadloss included in total.
[b] Millions of pounds.
[c] No summer commercial fishery.
[d] Information not available.

Appendix Table 3. Historic summer commercial red king economic performance, Norton Sound Section, Bering Sea, 1977 - 1997.

Year	Guidline Harvest Level (lbs) [b]	Legal Male Pop. Est.(lbs) [b]	Commercial Harvest (lbs) [a,b]	Number of Vessels	Number of Permits	Number of Landings	Number of Pots Registered	Number of Pots Pulls	Exvessel Price/lb	Fishery Value (millions $)	Season Length Days	Season Length Dates
1977	[d]	10.0	0.52	7	7	13	[d]	5,457	0.75	0.229	60	[d]
1978	3.00	11.0	2.09	8	8	54	[d]	10,817	0.95	1.897	60	6/7-8/15
1979	3.00	5.4	2.93	34	34	76	[d]	34,773	0.75	1.878	16	7/15-7/31
1980	1.00	6.6	1.19	9	9	50	[d]	11,199	0.75	0.890	16	7/15-7/31
1981	2.50	4.7	1.38	36	36	108	[d]	33,745	0.85	1.172	38	7/15-8/22
1982	0.50	1.3	0.23	11	11	33	[d]	11,230	2.00	0.405	23	8/9-9/1
1983	0.30	2.1	0.37	23	23	26	3,583	11,195	1.50	0.537	3.8	8/1-8/5
1984	0.40	2.7	0.39	8	8	21	1,245	9,706	1.02	0.395	13.6	8/1-8/15
1985	0.45	2.4	0.43	6	6	72	1,116	13,209	1.00	0.427	21.7	8/1-8/23
1986	0.42	2.8	0.48	3	3	[d]	578	4,284	1.25	0.600	13	8/1-8/25 [e]
1987	0.40	2.2	0.33	9	9	[d]	1,430	10,258	1.50	0.491	11	8/1-8/12
1988	0.20	3.2	0.24	2	2	[d]	360	2,350	[d]	[d]	9.9	8/1-8/11
1989	0.20	3.2	0.25	10	10	[d]	2,555	5,149	3.00	0.739	3	8/1-8/4
1990	0.20	3.2	0.19	4	4	[d]	1,388	3,172	[d]	[d]	4	8/1-8/5
1991 [c]	0.34	3.4										
1992	0.34	3.4	0.07	27	27	[d]	2,635	5,746	1.75	0.130	2	8/1-8/3
1993	0.34	3.4	0.33	14	20	208	560	7,063	1.28	0.430	52	7/1-8/28 [f]
1994	0.34	3.4	0.32	34	52	407	1,360	11,729	2.02	0.646	31	7/1-7/31
1995	0.34	3.4	0.32	48	81	665	1,900	18,782	2.87	0.926	67	7/1-9/5
1996	0.34	3.4	0.22	41	50	264	1,640	10,453	2.29	0.519	57	7/1-9/3 [g]
1997	0.08	1.6	0.09	13	15	100	520	2,982	1.98	0.184	44	7/1-8/13 [h]

[a] Deadloss included in total.
[b] Millions of pounds.
[c] No summer commercial fishery.
[d] Information not available.
[e] Fishing actually began 8/12.
[f] Fishing actually began 7/8.
[g] Fishing began 7/9 due to fishermen's strike.
[h] First delivery was made 7/10.

Appendix Table 4. Comparison of percent recruit and postrecruit red king crab sampled from summer commercial harvest, Norton Sound Section, Eastern Bering Sea, 1983 - 1997.

	Summer Commercial	
	Recruits	Postrecruits
Year	(%)	(%)
1983	55	45
1984	59	41
1985	45	55
1986	48	52
1987	22	78
1988	25	75
1989	23	77
1990	21	79
1991 [a]		
1992	28	72
1993	31	69
1994	14	86
1995	36	64
1996	30	70
1997	49	51

[a] No data collected in summer 1991 due to closed fishery.

MEMORANDUM

State of Alaska Department of Fish and Game
Commercial Fisheries Management and Development

To: Fred Bue
FB II
Nome CFMD

Date: June 26, 1998

Phone: 443-5167

From: Betsy Brennan
FB I
Nome CFMD

Subject: 1997-98 Norton Sound Commercial/Subsistence Winter Crab Harvest

The 1997-98 Norton Sound winter commercial crab fishery began 12:00 noon November 15, 1997 and closed 12:00 noon May 15, 1998. According to fish ticket totals, the harvest in Norton Sound was 984 red king crab or 2,349 lbs. (Table 1). Average weight was 2.39 lb./crab. A total of 5 fishers made 31 landings and 749 pots were pulled. The first delivery was made January 7, 1998, and the last delivery was April 28, 1998. Overall CPUE was 1.3 crab/pot. The average price per pound was $3.57. The total value of the fishery was estimated at $8,385.93.

Commercial fishers harvested the entire crab catch from statistical area 656403, Quartz Creek - Cape Nome (Table 1, Figure 1). There was no buyer operating in Norton Sound during the 1998 winter commercial crab season. All registered fishers chose to act as catcher sellers. Fishers found markets outside of Nome or sold to local individuals and restaurants. Winter commercial crab fishers were required to register with the ADF&G Nome office prior to fishing, to report their catch weekly, and bring any fish tickets in weekly. Compliance with these requirements was good. The 1998 winter commercial harvest was greater than the 1997 harvest, but below the average harvest between 1978 and 1997 (Table 3). The average weight was low compared to the historical values.

Ninety-four subsistence crab fishing permits were issued in the Norton Sound area during the 1997-98 fishing season (Table 2). Of these, 57 permits were returned and 49 permits were fished. Information from the 49 returned permits show 15,332 male king crab were captured and 7,590 male crab were kept. Fishers caught 877 female crab and kept 10. The total crab captured during the 1998 winter subsistence fishery was 16,209, and the total kept was 7,600 crab. These numbers may increase if more permits are returned. Average harvest per fisher was 155 crab. This was the highest average catch since data has been recorded. It is also the smallest proportion of the catch ever harvested. Fishing effort was concentrated within 10 miles of Nome. The 1998 subsistence winter crab harvest was significantly greater than 1997, and the largest since 1993 (Table 3). Subsistence and commercial fishers both indicated a large abundance of small juvenile male crab. These smaller crab are one to three years away from legal size and are likely to provide an abundance of larger crab in future seasons.

cc: Bromaghin, Cannon, Fair, Kron, Krygier, Kruse, Lean, Murphy, Savikko

Table 1. 1998 Norton Sound winter commercial king crab harvest.

Stat. Area	Nearest Community	No. of Fishermen	Pot Lifts	No. of Landings	No. of Crab	Lbs of Crab	Average Weight	CPUE
656403	Quartz Cr.- Cape Nome	5	749	31	984	2,349	2.39	1.3

Table 2. Winter 1997-98 subsistence red king crab catches and effort by gear type, Norton Sound area.

Gear Type	# Permits Fished[a]	# Males Caught	# Males Kept	# Females Caught	# Females Kept	Total Crab Captured	Total Crab Kept	Average Harvest per Fisherman
Pots	44	15,089	7,546	858	10	15,947	7,556	172
Handlines	7	37	28	0	0	37	28	4
Both	1	206	16	19	0	225	16	16
Unknown	0	0	0	0	0	0	0	0
Totals	49	15,332	7,590	877	10	16,209	7,600	155

Number of Permits given out= 94
Number of Permits returned= 57

[a] Some fishers use both handlines and pots to harvest crab.

Table 3. Winter commercial and subsistence red king crab harvests, Norton Sound 1978 - 1998. (AS OF 6/25/98)

Commercial			Subsistence						
Year[a]	Fishers	# Crab Harvested	Winter[b]	Permits Issued	Permits Returned	Permits Fished	Total Crab Caught[c]	Total Crab Harvested[d]	Average Harvest/fm
1978	37	9,625	1977-78	290	206	149	[e]	12,506	84
1979	1	221	1978-79	48	43	38	[e]	224	6
1980	1	22	1979-80	22	14	9	[e]	213	24
1981	0	0	1980-81	51	39	23	[e]	360	16
1982	1	17	1981-82	101	76	54	[e]	1,288	24
1983	5	549	1982-83	172	106	85	[e]	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
1986	5	2,168	1985-86	136	133	107	10,751	7,052	66
1987	7	1,040	1986-87	138	134	98	7,406	5,772	59
1988	10	425	1987-88	71	58	40	3,573	2,724	68
1989	5	403	1988-89	139	115	94	7,945	6,126	65
1990	13	3,626	1989-90	136	118	107	16,635	12,152	114
1991	11	3,800	1990-91	119	104	79	9,295	7,366	93
1992	13	7,478	1991-92	158	105	105	15,051	11,736	112
1993	8	1,788	1992-93	88	79	37	1,193	1,097	30
1994	25	5,753	1993-94	118	95	71	4,894	4,113	58
1995	42	7,538	1994-95	167	71	57	5,918	4,059	71
1996	9	1,778	1995-96	84	44	35	2,936	1,679	48
1997	2	83	1996-97	38	18	10	1,198	706	71
1998	5	984	1997-98	94	57	49	16,209	7,600	155
Avg 1978-1997	10	2,349	Avg 1984-1997	127	99	78	8,646	6,119	77

[a] Prior to 1985 the winter commercial fishery occured from January 1 - April 30; As of March 1985, the winter commercial harvest may occur from November 15 - May 15.

[b] The winter subsistence fishery occurs during months of two calander years (as early as December, through May).

[c] The Number of crab actually caught; some may have been returned.

[d] The number of crab harvested is the number of crab caught and kept.

[e] Data unavailable.

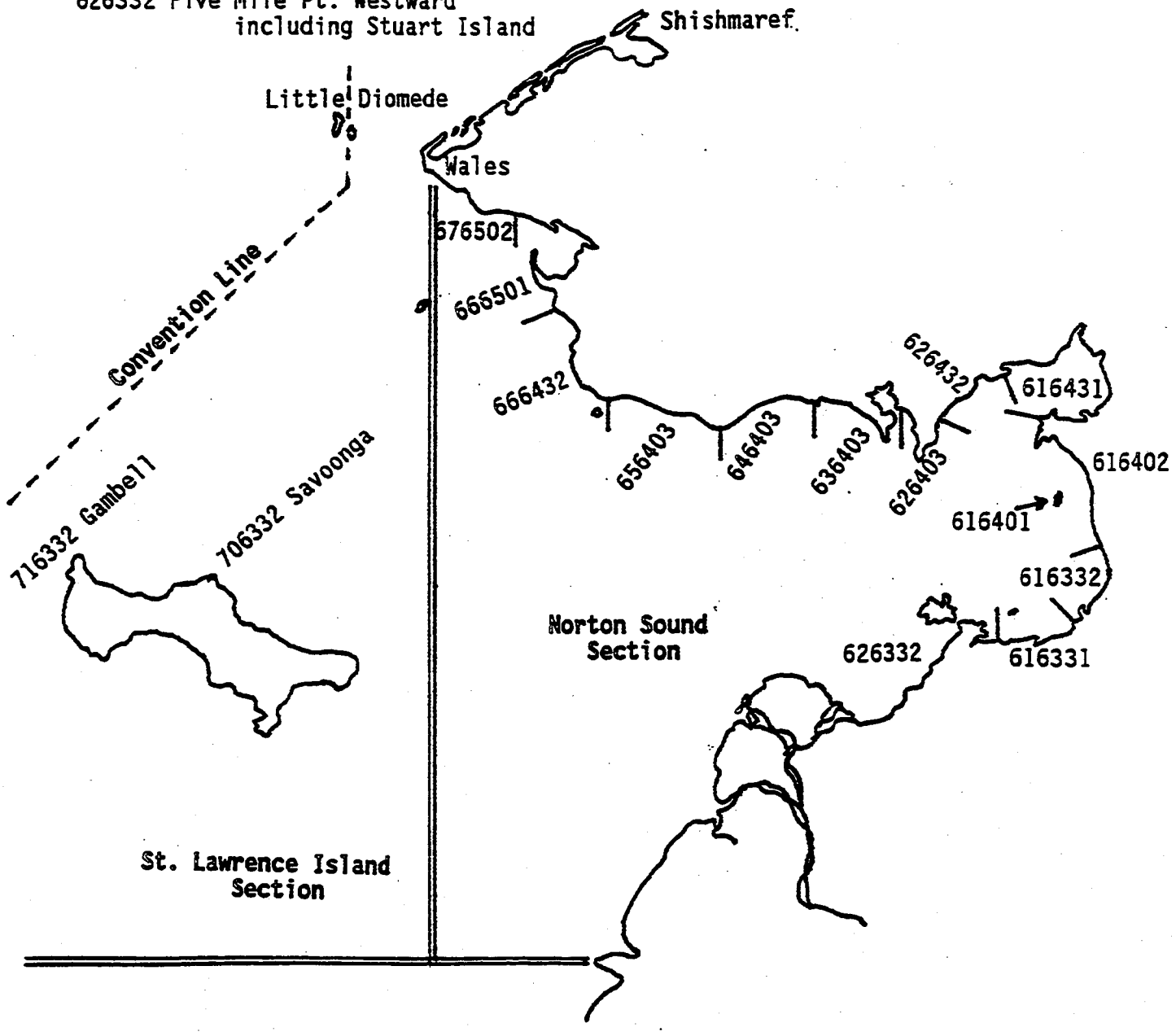
Figure 1. Winter King Crab Statistical Fishing Areas

Norton Sound Section

676502 Tin City to Lost River
666501 Lost R. to Cape Douglas
666432 Cape Douglas to Quartz Cr. at Rodney Hills
656403 Quartz Cr. to Cape Nome
646403 Cape Nome to Topkok
636403 Topkok to Golovin
626403 Golovin to Portage Cr.
626432 Portage Cr. to Kwiniuk R.
616431 Kwiniuk R. to West Cape of Denbigh
616402 West Cape to Blueberry Point
616401 Besboro Island
616332 Blueberry Pt. to Black Point
616331 Black Pt. to Five Mile Point including Egg Island
626332 Five Mile Pt. Westward including Stuart Island

St. Lawrence Island Section

Shishmaref
Wales
Little Diomede
716332 Gambell
706332 Savoonga



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By

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[1]The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional 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 Commercial Fisheries Management and Development Division.

EXECUTIVE SUMMARY

We applied population estimation models to Eastern Bering Sea trawl survey, catch sampling, and commercial catch data for red king crabs in Bristol Bay during 1972-1998, blue king crabs off St. Matthew Island during 1978-1998, and blue king crabs off Pribilof Islands during 1975-1998. A length-based analysis (LBA) was applied to male and female red king crabs and a catch-survey analysis (CSA) was applied to male blue king crabs.

For Bristol Bay red king crabs, an above average year class, likely from spawning in 1989-1991 (hereafter termed the 1990 year class), continued to grow to the larger sizes. The majority of female crabs in this year class reached size at maturity in 1997. More than half of the males in this year class reached size at maturity in 1998, but few have grown to legal size. Compared to 1997, abundance of mature males increased from 11.4 to 17.3 million and legal male abundance increased from 6.9 to 7.5 million. Mature female abundance increased slightly from 28.4 to 28.9 million and effective spawning biomass increased significantly for the second year in a row from 37.2 to 56.3 million pounds. The effective spawning biomass has surpassed the rebuilding level of 55 million pounds thereby triggering an increase in the mature male harvest rate from 10% to 15%. By multiplying the 15% harvest rate times mature male abundance times an average weight of 6.3 pounds per legal crab, an overall preseason guideline harvest level (GHL) of 16.4 million pounds was set for the November 1, 1998 opening.

For St. Matthew blue king crabs, CSA estimates the prerecruit (sublegal mature males) and legal-sized male crabs. Compared to 1997, legal male abundance showed no change at 3.5 million crabs. Prerecruit abundance declined slightly from 2.0 to 1.8 million and accordingly the total mature male abundance declined from 5.4 to 5.3 million. As in the past the estimates of abundance are tempered by wide confidence intervals. Multiplying the mature male abundance by the 20% harvest rate and a mean weight of 3.9 pounds, a GHL of 4.1 million pounds was set for the September 15, 1998 opening.

For Pribilof Islands blue king crabs, legal male abundance declined from 1.1 to 0.9 million, while prerecruit abundance remained the same at 0.2 million. Taken together, mature male abundance declined from 1.3 to 1.1 million crabs. For red king crabs, 700,000 mature males were estimated by the National Marine Fisheries Service (NMFS) using area-swept methods. In recent years, trends in survey and fishery performance data and imprecision in abundance estimates for blue and red king crabs off Pribilof Islands have justified a 10% harvest rate. Applying a 10% harvest rate to the mature male abundance and multiplying by an average weight of 6.35 pounds for blue king crabs and 8.7 pounds for red king crabs yields 700,000 and 600,000 pound GHLs respectively for 1998. An aggregate GHL was set at 1.3 million pounds for a combined fishery to avoid bycatch that would occur if each were held separately. The Pribilof Islands fishery was scheduled to open on September 15, 1998.

INTRODUCTION

The NMFS conducts annual trawl surveys of crab abundance in the eastern Bering Sea. For each crab stock, the Alaska Department of Fish and Game (ADF&G), in consultation with NMFS, sets preseason GHLs with an exploitation rate management strategy applied to estimates of mature male crab abundance. For most commercially exploited stocks in the Bering Sea, abundance is estimated by area-swept methods and reported annually by NMFS (e.g., Stevens et al. 1998).

For a few stocks, ADF&G developed population models to minimize the effects of annual survey measurement errors on current-year abundance estimates by incorporating survey and fishery data from prior years into the estimation process. Abundance estimates from these models are used to manage the crab fisheries and to set annual crab bycatch limits in the groundfish fisheries. Because of the high level of interest in these population estimates by the fishing industry, ADF&G began an annual report series on stock status in 1996 as a public information service (Zheng et al. 1996a).

The goal of this report is to provide concise and timely information on stock status in advance of upcoming Bering Sea king crab fisheries. This provides the industry and public access to the same information used by the agencies to evaluate status of stocks as estimated by population models. In this report we briefly review estimation methods, current stock status, implications for crab fishery management and regulation of crab bycatch in groundfish fisheries, and a brief outlook for the future. Trawl survey data used in this year's analyses were provided by Dr. Brad Stevens and Dr. Bob Otto of NMFS, Kodiak, Alaska.

METHODS

Survey Methods

NMFS has performed annual trawl surveys of the eastern Bering Sea since 1968. Two vessels conduct this multispecies, crab-groundfish survey during summer each equipped with an eastern otter trawl with 83 ft headrope and 112 ft footrope. Stations are sampled in the center of a systematic 20 X 20 nm grid overlaid in an area of $\approx$140,000 nm^2. The towed area is estimated, and fish and invertebrate catches from each station are sampled, enumerated, measured and weighed. An update of Stevens et al. (1998) will be published to provide details on the 1998 survey results for: Bristol Bay and Pribilof Islands red king crabs, St. Matthew and Pribilof Islands blue king crabs, and eastern Bering Sea Tanner, snow, and hair crabs. Status of Bering Sea groundfish stocks also assessed by this survey will be reported in an update to NPFMC (1997).

Analytical Methods

Overview. The annual trawl survey is an essential data-gathering tool on the status of crab stocks in the eastern Bering Sea. Yet, year-to-year variation in oceanographic conditions lead to changes in species distributions and availability to survey gear. These changes and other measurement errors can lead to unexpected shifts in area-swept abundance estimates unrelated to true changes in population size. Estimates from previous years' surveys and commercial catches provide valuable auxiliary information to help decipher real population changes from survey measurement errors. Population estimation models were developed to incorporate crab size, sex, and shell condition data from annual surveys, commercial catches and catch samples. Model estimates based on multiple years of data and multiple data sources are generally more accurate than area-swept estimates from current-year survey data alone. ADF&G uses these estimates for fishery management of the modeled stocks.

Because the quantity and quality of data vary among crab stocks, no single analytical model is ideally suited for all situations. Therefore, the following approaches were developed for use with eastern Bering Sea king crabs that are tailored to differing levels of information: *length-based analysis (LBA)* for stocks with high-quality size composition data; and *catch-survey analysis (CSA)* for stocks lacking detailed size composition data or where the survey catchability coefficient is unknown (Zheng et al. 1997a; Collie and DeLong 1998). We apply LBA to Bristol Bay red king crabs and CSA to St. Matthew and Pribilof Islands blue king crabs. A brief description of these two methods and their application to king crab stocks in the Eastern Bering Sea follows.

Length-based Analysis. The LBA is an analytical procedure to estimate annual abundance of crab stocks for which extensive high-quality data are available, such as Bristol Bay red king crabs. The LBA makes use of detailed annual data on size, sex, and shell condition from trawl surveys, onboard and dockside catch samples, and annual commercial harvests. Males and females are modeled separately by 5 mm carapace length (CL) intervals as newshell (i.e., those that molted within the past year) and oldshell crabs (i.e., those that have not molted within the past year). The annual abundance of crabs at each length group is a combined result of recruitment, growth, natural mortality, and harvest. Collie and Kruse (1998) estimated the trawl survey catchability coefficient *(q)* to be near unity for red king crabs in Bristol Bay, and $q = 1$ is assumed for area-swept and LBA methods. An overview of the approach is provided in Zheng et al. (1996b).

Catch-survey Analysis. Collie and DeLong (1998) updated the two-stage CSA model (Collie and Kruse 1998) to a three-stage (i.e., three age-size groups) approach. As with the LBA, the CSA estimates survey measurement errors and "true" stock abundance. The CSA model is less complex, is only applied to male crabs, and it requires less detailed size

composition data than the LBA. Instead of tracking multiple 5 mm size groups as the LBA does, CSA considers only three age-size groups of crabs: prerecruits, mature crabs that are one molt away from attaining legal size; recruits, mature newshell crabs that molted to legal size within the past year; and post-recruits, crabs that have been legal for more than one year. The previous two-stage CSA only considered recruit and post-recruit crabs. In the three-stage version mature and legal abundance and associated 95% confidence intervals can be estimated each year. These improvements are important because GHLs for eastern Bering Sea king crabs are based on estimates of both mature and legal crabs. The updated model provides a new series of abundance estimates over the years that the St. Matthew and Pribilof Islands stocks have been surveyed.

CURRENT STOCK STATUS

Bristol Bay Red King Crabs

LBA estimates of Bristol Bay red king crab abundance and 95% bootstrap confidence limits for 1998 are shown in Table 1. Historical changes in legal male and mature female abundance are graphed in Figure 1. Growth of the above average 1990 year class increased abundance of the larger size groups of the surveyed stock. This growth of the recruitment pulse resulted in a substantial increase in the prerecruit male abundance from 10.6 million to 18.1 million crabs in 1998 while legal males realized only a small increase from 6.9 to 7.5 million crabs. As a result, the abundance of mature male crabs increased from 11.4 to 17.3 million. Abundance of mature female crabs in 1998 (28.9 million) was similar to 1997 (28.4 million). Effective spawning biomass[1] (ESB) increased significantly from 37.2 to 56.3 million pounds. ESB is just over the target rebuilding level of 55 million pounds. Later in this report, we discuss associated changes in fishery management with attainment of the rebuilt level and speculate on the future prospects for this stock.

Abundance by size of male and female crabs as estimated by area-swept methods and the LBA are compared annually to cross check the survey data and model estimation procedures. We carefully scrutinized the mature female abundance estimated from the standard survey tow data by both methods. In 1998, additional survey tows were made as part of an auxiliary NMFS study on 15- and 30- minute tow duration. Analysis of data from these tows corroborated the results from standard survey stations and indicated that the significant increase in all size classes of mature female abundance was not an artifact of sampling errors. We concluded that mortality has declined since 1994 and that catchability of large females in the trawl survey gear may possibly have increased this year. Trends in previous years' LBA estimates also indicated that a reduction in mortality likely occurred since 1994. Unfortunately, mortality and catchability are not easily separated and difficult to estimate from survey data alone. The procedure for estimating a change in catchability requires multiple years of data after a change is recognized; therefore, only change in

[1] ***Effective spawning biomass*** is the estimated biomass of mature female crabs that the population of mature male crabs successfully mate in a given year.

mortality was evaluated. Three shifts in mortality rate over time were built into the LBA previously. We updated the LBA model to estimate a new mortality shift during 1994 to 1998 given the apparent reduction in mortality since 1994. In previous year's assessments, the mortality rate was assumed the same from 1985 to 1997. Lower mortality allows more crabs to survive to larger sizes. Therefore, compared to previously published estimates, current estimates of mature and legal male crab abundance increased during 1994 to 1997 and mature female crabs increased during 1995 to 1997 owing to the change in estimated mortality and addition of 1998 data.

Area-swept and updated LBA estimates of abundance by size for the past five years are shown in Figure 2. For male crabs the LBA estimates are similar to or slightly greater than area swept estimates over most sizes from 1994 to 1996 but smaller in 1997. Abundances of small male crabs (<115 mm CL) and legal crabs appear to be overestimated by the area-swept method in 1997. We reported on this in last year's assessment report (Zheng et al. 1997) and Dr. Robert Otto of NMFS, based on his analysis, reported a similar opinion at the annual meeting with industry in Ballard, Washington, in October 1997. The survey results in 1998 bear this out. For female crabs, the LBA estimates are greater than area swept estimates over most sizes from 1994 to 1997 but much smaller in 1998. This is caused by high survey abundance of large mature females (>115 mm) in 1998 that cannot be explained by low abundance in 1994 -1997. The LBA is intended to address such year-to year inconsistencies in the survey results.

Insights into changes in annual survey results can be gained by examining the size frequency distributions over the past five years (Figure 3). Area-swept estimates suggest a substantial decrease in abundance of males between 95 mm and 110 mm CL and males > 155 mm CL from 1997 to 1998. The dominant mode of males at 95 to 110 mm CL in 1997 grew in size to 110 to 130 mm CL in 1998 as expected but abundance unexpectedly declined sharply despite lower mortality. Also for large males, the abundance estimates for 1998 are much more consistent with results for 1994-1996 than with 1997. For females the survey in 1998, not 1997, produced some unexpected results. The large increase in abundance of mature females in 1998 was not fully anticipated based on growth alone of the 1990 year class. The dominate mode of females shifted from 97.5 mm CL to 107.5 mm CL as crabs molted to larger sizes but abundance of large females (>119 mm CL) increased an average of 70% in 1998 from female abundance (>114mm CL) in 1997. Lower mortality doesn't fully account for these increases so the LBA estimate of mature females is still about 15% below the area-swept estimate (Figure 1). However, LBA and area-swept estimates both indicate the ESB exceeds 55 million pounds. An increase in catchability of the trawl survey gear can affect area-swept abundance estimates and future survey data should provide sufficient information to evaluate this hypothesis.

Abundance estimates of juvenile males <95 mm CL and females <90 mm CL are unreliable and are not included in the LBA. However, size frequency modes of juvenile crabs tracked the strong year class that is apparently now fully recruited to the modeled stock (Figure 3).

In 1998, abundance of crabs from the 1991 year class recruiting into the modeled population were at low levels similar to the recruitment experienced in the previous decade (Table 1).

The 1998 size frequency distribution shows a new year class of crabs centered about 70 to 75 mm CL. Unlike the 1990 year class, this new mode was not observed as it passed through the 50 to 65 mm CL size interval in 1996 and 1997. Therefore, the significance of this mode of small crabs is not yet clear. Repeated observations over the next few years will allow estimation of the size of the size of this year class.

Just as historical survey results enter into the LBA and modify the interpretation of data from 1998, the 1998 survey results also provide additional information about reconstructed stock size in recent years. This is a common feature of contemporary estimation procedures for fish and invertebrate populations. Thus, historical abundance estimates generated with data from 1972-1998 (Table 1) differ somewhat from estimates generated with data from 1972-1997 (see Table 1 in Zheng et al. 1997b). Estimates for recent years change the most; older estimates remain most stable. Likewise, next year's assessment will bring new data to bear on the status of the stock.

Blue King Crabs

St. Matthew Island. CSA estimates of St. Matthew Island blue king crab abundance and 95% bootstrap confidence limits for 1998 are shown in Table 2. Compared to 1997, all segments of the population showed slight decline in abundance except postrecruits (old-shell legals). Prerecruit abundance (105-119 mm CL) declined to 1.8 million crabs from 2.0 million in 1997 and accounts for most of the decline in mature abundance (≥105 mm CL) to 5.3 million crabs in 1998. Abundance of legal males remained at 3.5 million crabs as a decline in recruits was compensated by an increase in postrecruits (Figure 4.)

Pribilof Islands. For the Pribilof Islands, changes from last year included continued decline in mature male abundance from 1.3 to 1.1 million crabs and a decrease in legal male abundance from 1.1 to 0.9 million crabs (Table 2, Figure 4). This change is attributable to a decrease in newshell recruits (135-148 mm CL). A sharp decline of recruits to the fishery was partly offset by a small increase in postrecruits. Prerecruit abundance was unchanged from 1997 to 1998 at 0.2 million crabs.

FISHERY MANAGEMENT IMPLICATIONS

Bristol Bay Red King Crabs

Potential Effects of Recent Management Actions. Decline in bycatch of red king crabs in directed crab fisheries and in groundfish fisheries probably contributed to the apparent

decline in mortality since 1994. In 1996, more stringent bycatch measures were implemented in the groundfish fisheries. Not only were bycatch caps reduced but non-pelagic trawling was prohibited in the Red King Crab Savings Area and all trawling was prohibited in the Nearshore Bristol Bay Closure Area (Witherell and Roberts 1996). Also, an industry sponsored bycatch avoidance program has likely lowered bycatch of prohibited species.

Regarding directed crab fisheries, the Bristol Bay red king crab fishery was closed in 1994 and 1995 and a new harvest strategy was adopted in 1996 to conserve and rebuild the stock. Management measures aimed to decrease bycatch of red king crabs in other directed crab fisheries include: area closures in the (Tanner crab) fishery; coincident openings of the red king and Tanner crab fisheries to minimize bycatch; and gear restrictions to reduce bycatch of female and sublegal male crabs. The closure of the Bristol Bay red king crab fishery in 1994 and 1995 and the Tanner crab fishery in 1997 and 1998 also reduced bycatch of red king crabs.

Typically as abundance increases, the geographic area inhabited by a crab stock expands. Comparison of the crab abundance by survey station in 1994 to that in 1998 shows similar geographic distributions but greater abundance overall (Figure 5). Abundance appeared to increase most significantly in the two trawl closure areas, however it is premature to infer cause and effect at this time. Geographic distribution is affected by population size structure and associated preferred depth ranges and habitats. We suspect that a combination of conservation measures plus a good 1990 year class have combined to improve the status of this stock.

Directed Crab Fishery. The Alaska Board of Fisheries harvest strategy for Bristol Bay red king crabs sets a GHL by harvest rate coupled to a fishery threshold (ADF&G 1998). When the stock is at or below threshold of 8.4 million mature females (>90 mm CL) or 14.5 million pounds of ESB, the fishery is closed. When the stock is above both of these criteria, GHL is determined by the ESB and abundance of mature and legal-sized males. A mature male harvest rate of 10% is applied to promote stock rebuilding when ESB is below the target rebuilding level of 55 million pounds. Once the stock is rebuilt (at or above 55 million pounds of ESB) a 15% harvest rate is applied to mature male abundance. To prevent a disproportionate harvest of large male crabs, the GHL is capped so that no more than 50% of the legal male crabs may be harvested in any one year.

In 1998 the estimates of mature female abundance and ESB were 28.9 million and 56.3 million pounds, respectively – both above the thresholds needed to conduct a directed commercial fishery. Because ESB exceeds the target rebuilding level of 55 million pounds, a 15% harvest rate is applied. Applying this harvest rate times mature male abundance of 17.3 million results in a harvest of 2.58 million crabs. Because 1.05 million is only 35% of the legals, the 50% cap is not required. By multiplying 2.58 million crabs times an average weight of 6.3 pounds per legal crab, a preseason GHL of 16.4 million pounds has been established for the 1998 fishery. A total of 3.5% of the GHL or 600,000 pounds is reserved

for the community development quota (CDQ) fishery resulting in a commercial fishery GHL of 15.8 million pounds. The actual CDQ harvest level will be based on the total catch from the commercial fishery.

Implications on the Bering Sea Groundfish Trawl Fisheries. Prohibited species catch (PSC) limits for red king crabs caught during groundfish trawl fisheries are set annually as a function of estimated ESB of Bristol Bay red king crabs (see Figure 3 in Zheng et al. 1996a). When ESB exceeds 14.5 million pounds but is less than 55 million pounds, the PSC is 100,000 crabs. When ESB exceeds 55 million pounds, the PSC is 200,000 crabs. Given the estimate of 56.3 million pounds of ESB for 1998, the red king crab PSC limit for the Bering Sea will be set at 200,000 crabs for 1999 groundfish trawl fisheries.

A portion of the year-round closure to non-pelagic trawling in the Red King Crab Savings Area (162° to 164° W, 56° to 57° N) is open to the rock sole fishery in years when there is a red king crab fishery in Bristol Bay (Witherell and Roberts 1996). Thus, the portion of the Red King Crab Savings Area bounded by 56° to 56° 10' N latitude will remain open to the rock sole fishery in 1999. A separate bycatch limit is established for this area not to exceed 35% of the red king crab prohibited species catch (PSC) limits apportioned to the rock sole fishery by the North Pacific Fishery Management Council.

Blue King Crabs

For St. Matthew Island, the fishery management plan specifies a 20% harvest rate when the stock is above the threshold of 0.6 million mature males (Pengilly and Schmidt 1995). The mature male abundance was estimated at 5.3 million crabs in 1998, well above threshold. A GHL of 5 million pounds based on mature male abundance, the 20% harvest rate, and a mean weight of 3.96 pounds per legal crab. The blue king crab fishery at St. Matthew Island is scheduled to open on September 15, 1998.

For the Pribilof Islands, the fishery management plan specifies a threshold of 0.77 million mature male blue king crabs; no threshold is specified for red king crabs (Pengilly and Schmidt 1995). In recent years, trends in survey and fishery performance data have been used to set an aggregate GHL for a combined blue and red king crab fishery to avoid bycatch problems that would occur if each fishery with separate fisheries. From 1997 to 1998, the abundance of mature male blue king crabs declined from 1.27 to 1.07 million but is above the fishery threshold. NMFS area-swept abundance estimates of mature male red king crabs declined from 1.28 in 1997 to 0.73 in 1998. Given declining abundance, low precision of abundance estimates, and past fisheries' performance below expectations, a 10% harvest rate was used to set the 1998 GHL. A combined GHL of 1.3 million pounds was set for the blue and red king crab fisheries at the Pribilof Islands scheduled to open on September 15, 1998.

FUTURE OUTLOOK

The future outlook for eastern Bering Sea red and blue king crab stocks is mixed. Significant numbers of prerecruit males from the 1990 year class have yet to attain legal size. They will likely sustain harvest of Bristol Bay red king crab in the near future. However, the harvest rate may fall back to 10% in 1999 if mortality of mature females exceeds growth and recruitment. Several years of reduced abundance appears to follow the 1990 year class as evidenced by low numbers of recruit male and female crabs. Beyond that, the mode of small crabs around 72.5 mm CL may perhaps signal the leading edge of another sizeable year class but it is too soon to be certain. For St. Matthew and Pribilof Islands, wide confidence intervals in the mature male abundance estimates and poor information on juveniles and females make predictions difficult. Based on trends in prerecruits and recruits for blue and red king crabs at the Pribilof Islands, the stocks are not expected to improve in the near term. Trends in abundance of St. Matthew Island blue king crabs imply that this stock may remain fairly stable. Preliminary size frequency data from NMFS suggests a strong mode of male and female blue king crabs around 70-75 mm CL. The three-stage CSA should improve estimates of prerecruit and mature abundance of blue king crab as these small crabs enter the modeled population. Accurate predictions of recruitment beyond 1999 are difficult because juvenile abundance estimates are imprecise and sometimes misleading due to uncertain catchability of small crabs by the survey trawl gear and limited trawlable areas around St. Matthew Island.

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Table 1. Annual abundance estimates (millions of crabs), effective spawning biomass (millions of pounds), and 95% confidence intervals for 1998 for red king crabs in Bristol Bay estimated by length-based analysis from 1972-1998. Size measurements are mm CL.

	Males					Females		
Year	Recruits	Small	Prerec.	Mature	Legal	Recruits	Mature	ESB
mm→	(to model)	(95-109)	(110-134)	(>119)	(>134)	(to model)	(>89)	
1972	NA	13.433	14.956	18.391	9.938	NA	59.756	55.117
1973	29.164	20.371	25.763	22.327	10.767	33.116	70.012	62.961
1974	20.442	14.931	34.477	33.745	14.714	28.195	71.462	92.826
1975	31.867	22.164	35.770	40.744	20.419	21.802	66.003	116.480
1976	42.739	29.906	45.117	48.522	25.290	34.273	75.124	128.924
1977	49.014	34.579	58.426	61.205	30.155	72.307	118.742	162.987
1978	18.973	14.851	57.005	73.848	39.192	46.451	119.728	199.635
1979	12.359	9.120	36.162	72.209	46.583	18.798	92.856	166.637
1980	23.534	16.245	25.528	58.611	43.528	35.859	93.407	165.973
1981	17.391	12.596	17.097	18.056	9.445	13.484	71.264	58.398
1982	23.109	16.176	16.043	10.014	2.938	17.276	29.922	23.609
1983	13.250	9.833	13.766	8.877	2.443	4.771	10.060	16.802
1984	18.832	13.155	12.990	8.096	2.351	12.124	13.904	16.365
1985	8.572	6.529	10.432	6.814	1.799	5.201	7.651	11.421
1986	5.838	4.409	12.083	11.384	4.257	4.110	9.505	15.080
1987	6.064	4.387	10.685	13.171	6.420	9.632	16.351	25.673
1988	5.736	4.173	9.729	13.785	7.861	5.816	17.356	28.947
1989	4.644	3.427	8.927	14.823	9.315	5.586	17.869	31.093
1990	1.367	1.182	6.881	14.522	9.858	0.897	13.545	26.101
1991	4.042	2.781	4.978	11.710	8.419	3.671	13.283	25.679
1992	5.601	3.959	5.994	9.902	6.773	3.231	12.637	24.679
1993	2.290	2.076	6.976	10.157	6.089	1.977	10.927	22.113
1994	1.094	1.012	5.667	8.958	5.015	0.401	8.147	17.812
1995	2.879	2.061	4.741	9.421	6.187	1.492	9.250	20.516
1996	3.023	2.312	5.085	9.919	6.856	3.832	12.631	26.486
1997	19.474	13.165	10.630	11.381	6.850	16.378	28.375	37.171
1998	4.285	3.980	18.128	17.314	7.454	2.047	28.920	56.323
Lower	3.106	NA	14.419	12.721	4.702	1.516	21.832	NA
Upper	6.694	NA	22.109	21.328	9.860	4.107	37.678	NA

Table 2. Annual abundance estimates (millions of crabs) and 95% confidence intervals for1998 for male blue king crabs off St. Matthew and Pribilof Islands by 3-stage catch-survey analysis from 1975 to 1998. Survey catchability is fixed at 1.0 for legals. Estimates of prerecruits are in relative abundance comparable to "area-swept" estimates. St. Matthew Island recruits are newshell males of size 120-133 mm CL and Pribilof Island recruits are newshell males of size 135-148 mm CL. All other legal males are postrecruits. Mature crabs include prerecruits plus legals. Size measurements are mm CL.

	St. Matthew Island					Pribilof Islands				
Year	Prerec.	Mature	Recruit newshell	Post. oldshell	Legal	Prerec.	Mature	Recruit newshell	Post. oldshell	Legal
mm→	(105-119)	(≥105)	(120-133)	(≥120)	(≥120)	(120-134)	(≥120)	(135-148)	(≥135)	(≥135)
1975	NA	NA	NA	NA	NA	4.030	11.247	3.379	3.838	7.217
1976	NA	NA	NA	NA	NA	1.796	9.643	2.769	5.078	7.847
1977	NA	NA	NA	NA	NA	1.785	8.137	1.234	5.118	6.352
1978	1.789	2.945	0.722	0.434	1.156	3.033	8.313	1.227	4.053	5.280
1979	1.877	3.908	1.514	0.517	2.031	1.649	6.994	2.084	3.261	5.345
1980	2.108	5.134	1.589	1.438	3.026	1.088	5.514	1.133	3.294	4.426
1981	2.374	6.334	1.784	2.177	3.960	0.710	3.531	0.748	2.073	2.821
1982	1.758	5.874	2.009	2.107	4.116	0.352	1.964	0.488	1.124	1.612
1983	1.066	4.108	1.487	1.555	3.042	0.395	1.369	0.242	0.732	0.974
1984	0.479	2.133	0.902	0.753	1.654	0.223	0.998	0.272	0.504	0.775
1985	0.316	1.294	0.405	0.573	0.978	0.155	0.849	0.153	0.541	0.694
1986	0.598	1.209	0.268	0.343	0.611	0.042	0.600	0.106	0.451	0.558
1987	0.831	1.614	0.506	0.277	0.783	0.058	0.469	0.029	0.382	0.411
1988	0.999	2.094	0.703	0.391	1.095	0.012	0.279	0.040	0.227	0.267
1989	1.184	2.596	0.845	0.567	1.412	0.360	0.565	0.008	0.197	0.205
1990	1.356	3.197	1.002	0.839	1.841	0.810	1.208	0.247	0.151	0.398
1991	1.652	3.841	1.147	1.041	2.189	0.658	1.509	0.557	0.294	0.851
1992	1.493	3.923	1.398	1.033	2.430	0.611	1.690	0.452	0.628	1.079
1993	1.545	4.161	1.263	1.353	2.616	0.460	1.676	0.420	0.796	1.216
1994	1.316	4.041	1.307	1.418	2.725	0.402	1.616	0.316	0.897	1.214
1995	1.851	4.310	1.113	1.346	2.459	0.410	1.582	0.276	0.895	1.172
1996	2.254	5.096	1.567	1.275	2.842	0.620	1.631	0.281	0.729	1.011
1997	1.957	5.423	1.908	1.558	3.466	0.194	1.269	0.426	0.649	1.075
1998	1.843	5.296	1.656	1.797	3.453	0.192	1.066	0.134	0.740	0.874
Lower	NA	3.73	NA	NA	2.39	NA	0.73	NA	NA	0.55
Upper	NA	6.93	NA	NA	4.53	NA	1.37	NA	NA	1.17

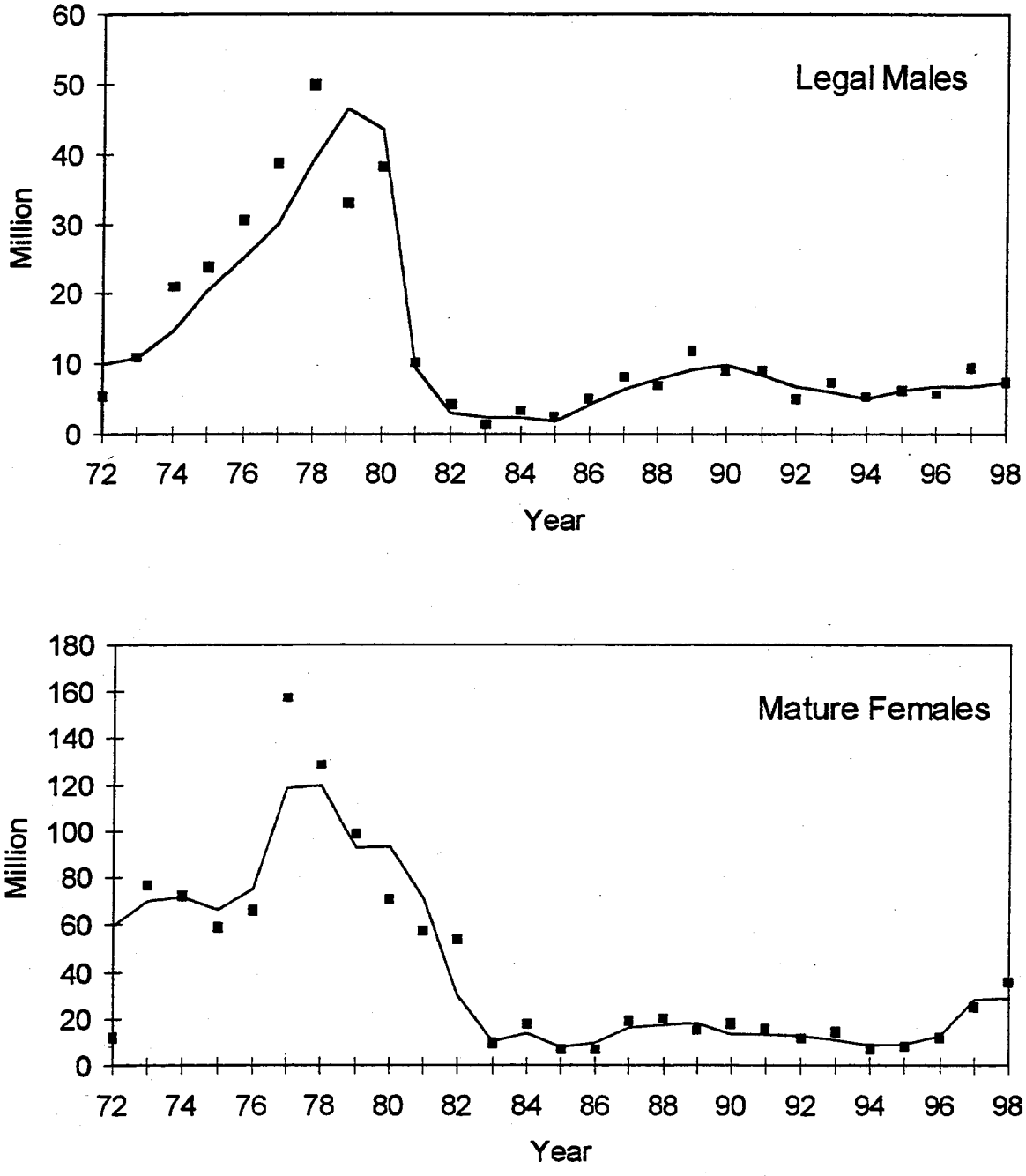


Figure 1. Comparison of abundance estimates (millions of crabs) of Bristol Bay red king crabs from area-swept estimates (dots) and length-based analysis (line) for legal males (top panel) and mature females (bottom panel).

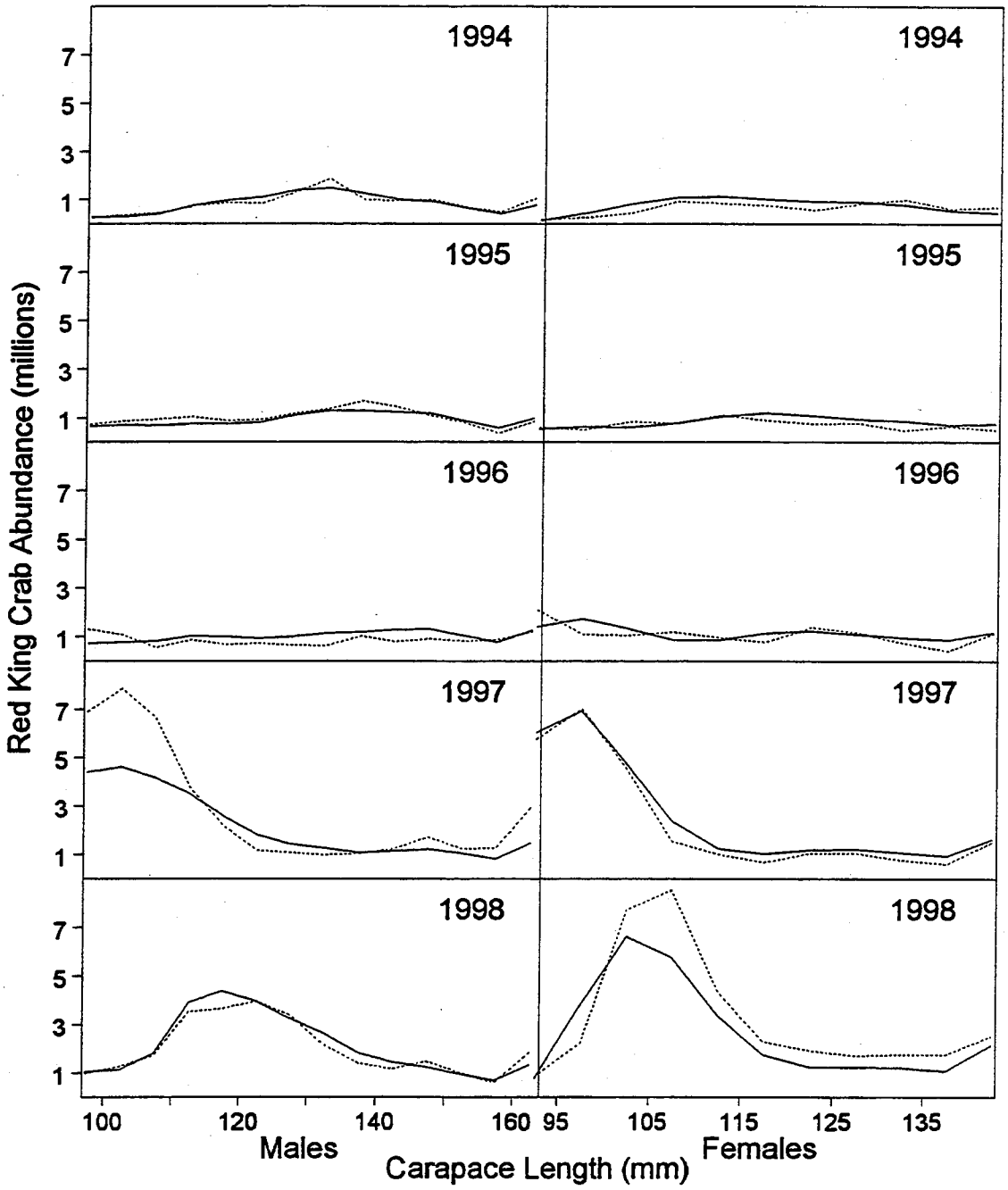


Figure 2. Size-frequency distributions of male and female red king crabs in Bristol Bay, 1994-1998, estimated by area-swept methods (dotted line) and the LBA (solid line).

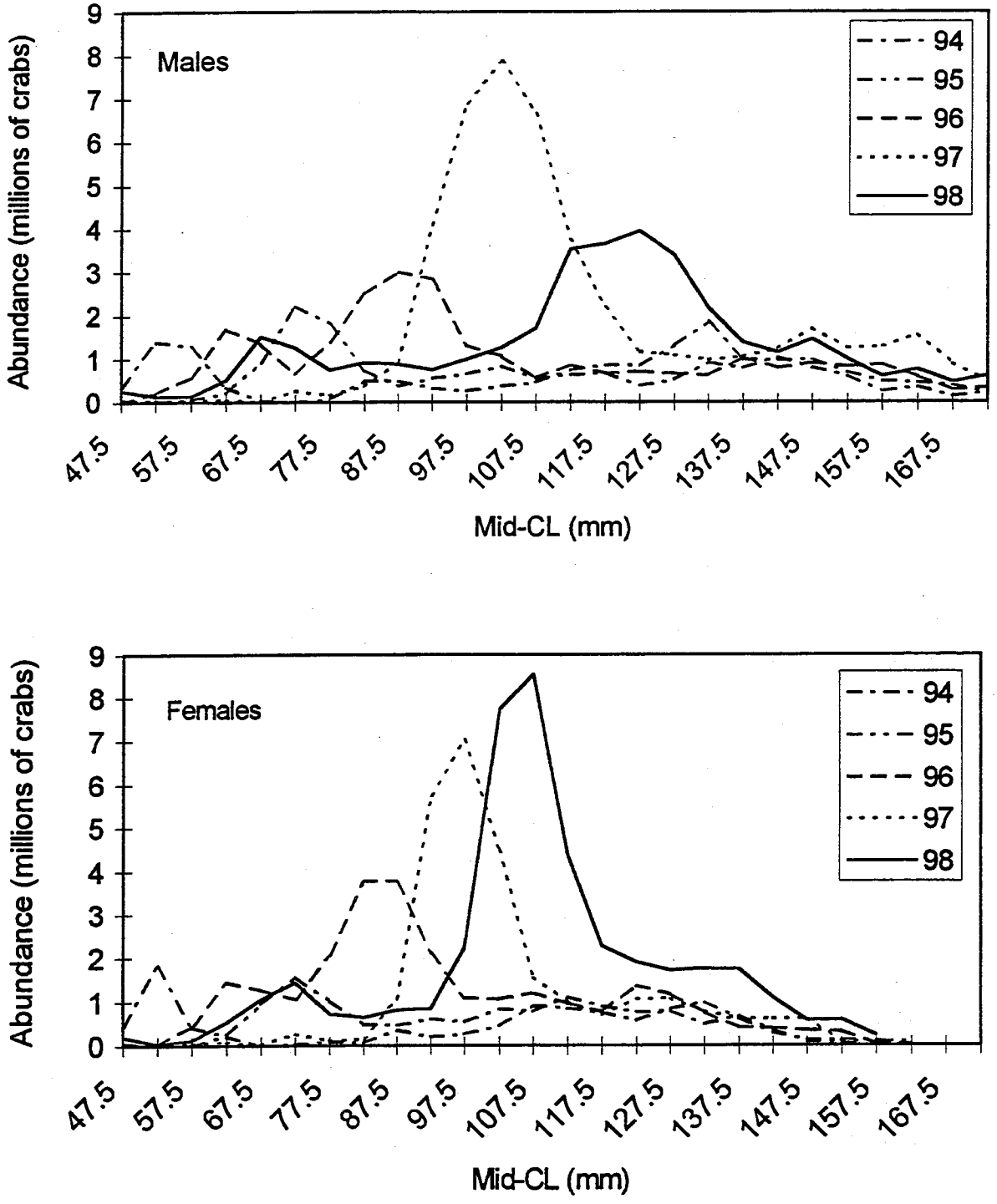
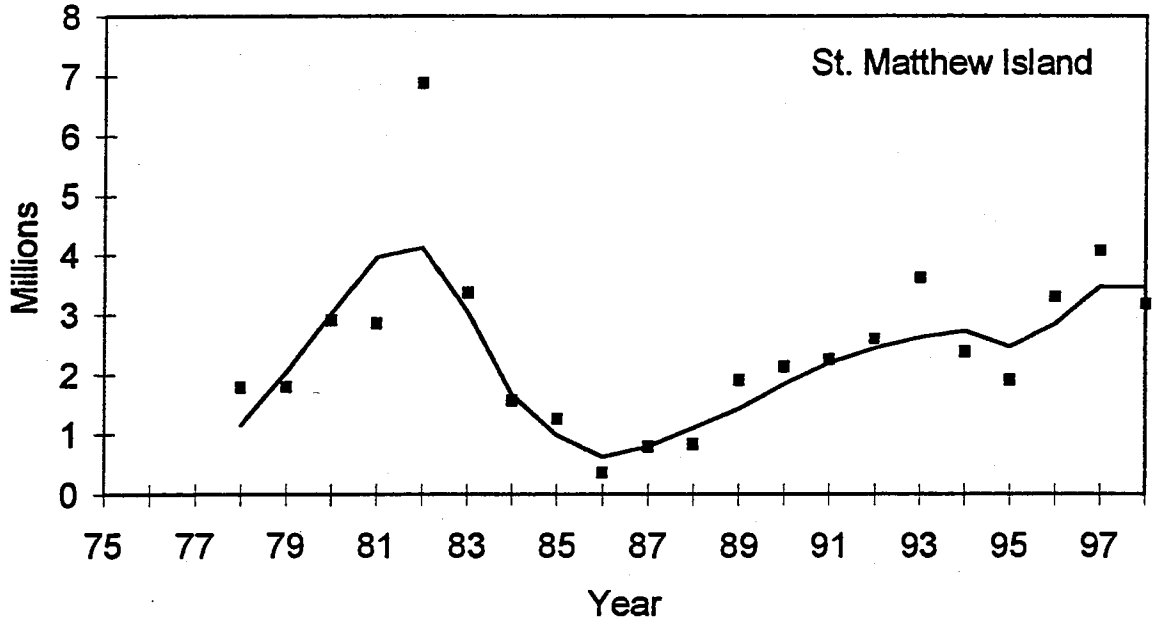


Figure 3. Size frequency distributions of male (top panel) and female (bottom panel) red king crabs in Bristol Bay from NMFS trawl surveys during 1994-1998. Abundance estimates are based on area-swept methods not LBA.



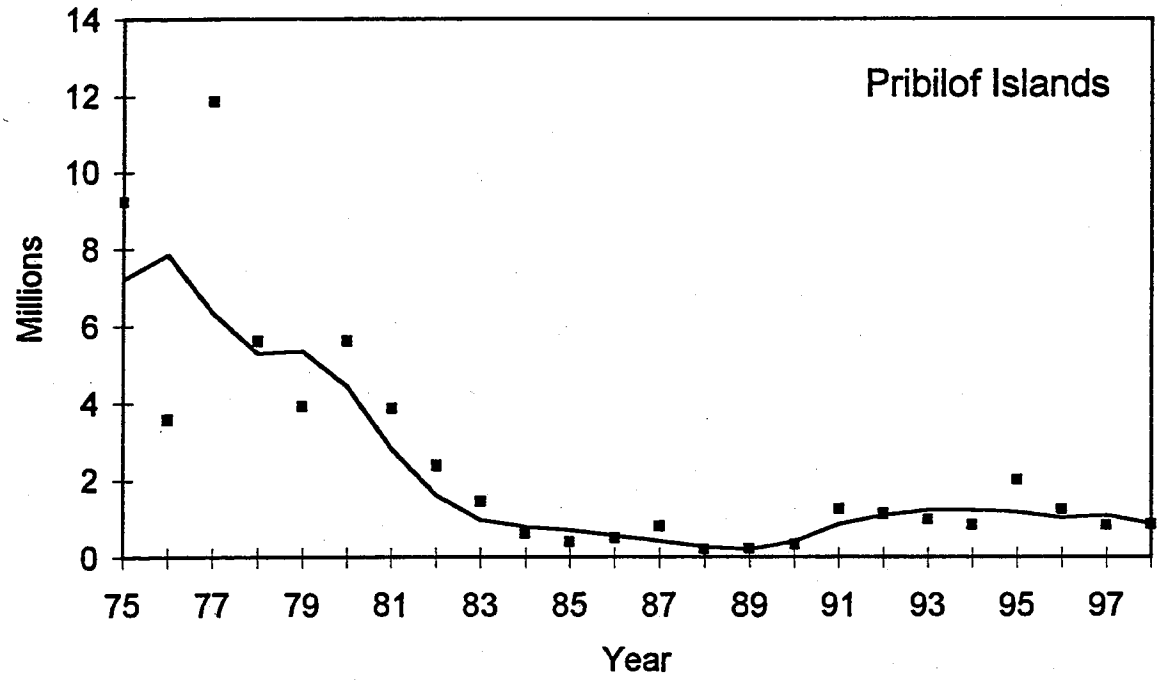


Figure 4. Comparison of abundance estimates (millions of crabs) of legal-sized male blue king crabs from area-swept estimates (dots) and catch-survey analysis (line) for St. Matthew (top panel) and Pribilof Islands stocks (bottom panel).

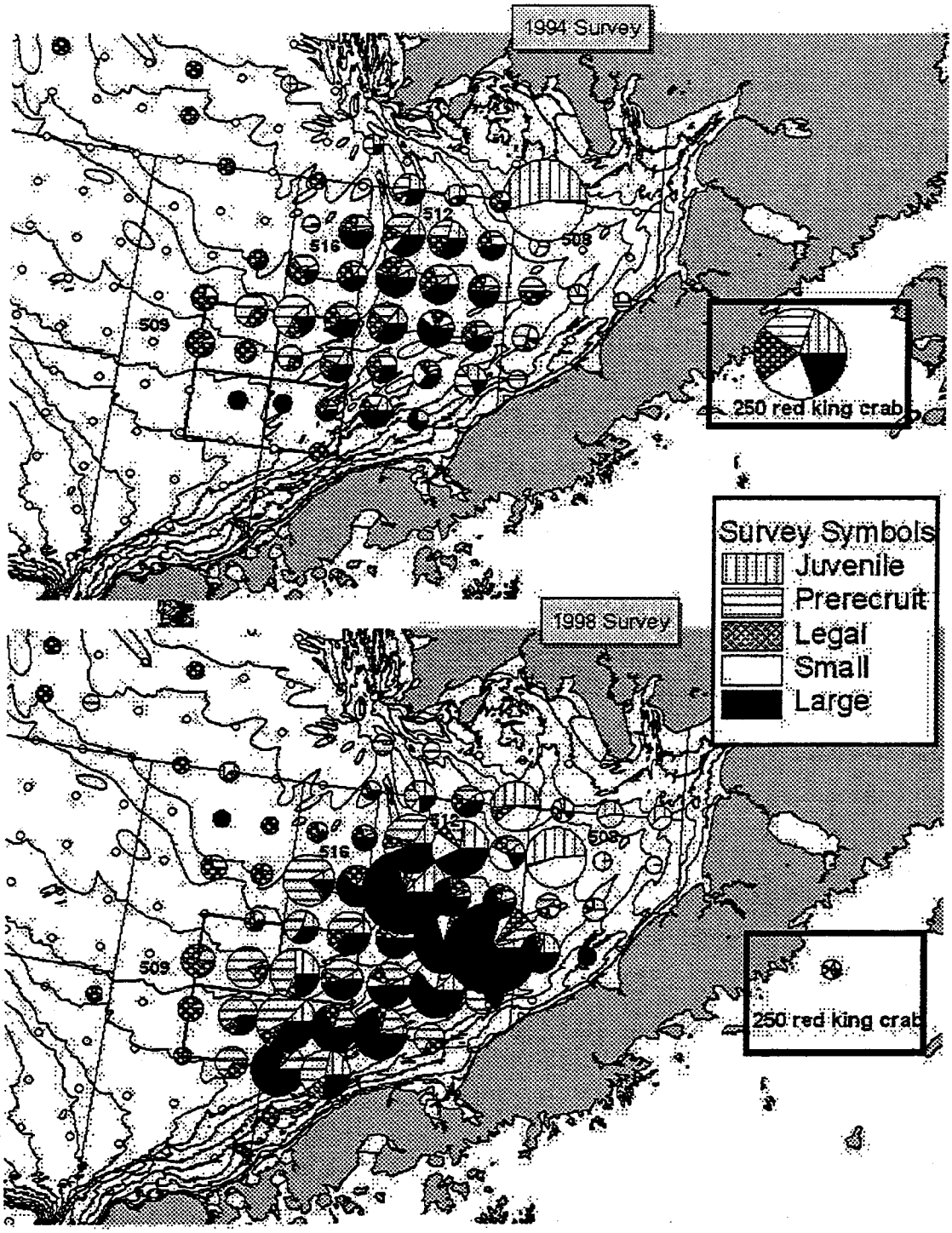


Figure 5. Abundance of male and female red king crabs by station towed during the NMFS annual trawl survey in 1994 and 1998. Abundance is estimated by NMFS area-swept methods and scaled separately for 1994 and 1998. Data were provided by Brad Stevens and Bob Otto, NMFS, Kodiak.

Anecdotal Observations from 1998

The Alaska Department of Public Safety recently added the motor patrol vessel "Stimson" to their vessel fleet. This 157' house aft crabber was formerly the F/V Pinnacle. This is a state-of-the-art crab vessel and will provide an excellent platform for enforcement duties in the BSAI. The vessel's home port is Dutch Harbor.

The 1998 season marked the first for CDQ crab in the Bering Sea. Shortly after the late March closure of the open-access fishery for snow crabs, all 6 CDQ groups participated in this fishery which was allowed to harvest 3.5% of the open-access catch. A total of 8.9 million pounds of snow crabs were harvested.

The Kodiak Fisheries Research Center, the Alaska Fisheries Science Center's new Kodiak lab, will open in the fall of 1998. The new facility will house part of the Resource and Assessment Conservation Engineering (RACE) Division's Shellfish Assessment Program, and has dedicated space for visiting scientists and the Alaska Department of Fish and Game wet laboratory.

The membership to the North Pacific Fishery Management Council's Crab Plan Team has changed. From the Alaska Fisheries Science Center, Jack Turnock is a candidate to replaced Jerry Reeves, who retired. Gretchen Harrington is the National Marine Fisheries Service's candidate to replaced Kim Rivera, who transferred to the protected resources division of NMFS. And, from the University of Alaska Fairbanks, Mark Hermann replaced Joshua Greenberg, who is on sabbatical in New England.

The 1998 Bering Sea trawl survey conducted comparative research tows to determine if the survey tow duration could be accurately reduced from 30 minutes to 15 minutes. The concern is that crab aggregate, therefore, a shorter tow time might not be as accurate because it might miss crab aggregations (or hit them). NMFS plans to reduce the survey tow time for the groundfish survey to 15 minutes.

The components of the Bering Sea ecosystem appear to be changing, temperature is rising, oceanographic conditions are different, and the marine biota is experiencing marked changes in population sizes and ranges. These large changes appear to be occurring over a variety of time scales.

A massive bloom of *coccolithophores* has been observed in 1998, similar to the one that occurred in 1997. This bloom appears to be larger than last year's, ranging from outer Bristol Bay up to the Bering Strait. Unusual algae blooms are a symptom of alterations in the marine environment, including anomalous atmospheric and oceanic conditions. Scientists are not sure if the blooms are indicative of specific events, such as El Nino, or larger change, such as global climate change. Coccolitophores usually occur in nutrient poor waters. Coccolitophores reflect light and turn the waters aquamarine, thus reducing the light available for other primary producers (diatoms and other phytoplankton) which are the base of the Bering Sea food chain. These anomalous blooms can alter trophic dynamics throughout the food wed. Studies of zooplankton feeding patterns are being conducted to determine which species can feed on coccolitophores. More information is available from the internet site http://rho.pmel.noaa.gov/~vance/seawifs/eos.html.

In general, it seems species are moving north. White-sided dolphins were sighted in the Bering Sea in 1997 and 1998, which maybe indicative of greater range extension during warmer years. In the summer of 1997 and 1998, Northern Right whales, one of the most endangered whale species, were sighted in the southeast Bering Sea, which is their historical habitat. Right whales are near surface feeders targeting mainly copepods. Studies are being conducted to determine the genetics and population structure of these whales.

The 1998 NMFS eastern Bering Sea crab survey observed the following changes in species ranges. The *C. opilio* stocks shifted east and very few small *C.opilio* were observed in the survey. Rock sole and a large number of 25-30 cm cod were encountered north of St. Matthew Island. A relatively high prevalence of bitter crab disease was observed around St. Matthew Island.

A Summary of Crab Bycatch in North Pacific Groundfish Fisheries

by Dave Witherell, North Pacific Fishery Management Council

Bycatch management measures implemented for groundfish fisheries off Alaska have focused on reducing the incidental capture and injury of species traditionally harvested by other fisheries. These species include king crab, Tanner crab (C. bairdi), snow crab (C. opilio), Pacific herring, Pacific halibut, and Pacific salmon and steelhead trout. Collectively, these species are called "prohibited species," as they cannot be retained as bycatch in groundfish fisheries and must be discarded with a minimum of injury.

How much crab is taken as bycatch?

The amount of crab bycatch in groundfish fisheries is estimated from observer data. Crab bycatch has been much reduced in recent years, as shown in the adjacent table. Management measures implemented to control crab bycatch in Bering Sea and Aleutian Islands (BS/AI) groundfish trawl fisheries have been very effective at reducing bycatch. Note that the 1997 and 1998 BSAI crab bycatch figures are among the lowest on record.

Number of crab taken as bycatch in BSAI and Gulf of Alaska groundfish trawl fisheries, 1993-1997 (note that 1997 data are preliminary, and 1998 data through 8/20).

	Red king crab		*C. bairdi* crab		*C. opilio* crab	
Year	BSAI	GOA	BSAI	GOA	BSAI	GOA
1993	248,121	1,065	3,412,342	78,953	14,631,617	0
1994	280,096	72	2,496,761	53,296	12,351,899	0
1995	44,934	269	2,212,181	101,107	5,165,555	0
1996	28,682	192	1,809,492	153,994	3,141,473	0
1997	45,000	17	1,873,000	133,000	5,087,000	0
1998	20,000	na	900,000	na	1,500,000	na

How big of an impact is bycatch on directed crab fisheries?

One of the most pertinent questions regarding bycatch is how the bycatch impacts directed fisheries. Observer data indicate that the size of crab taken as bycatch in groundfish fisheries is smaller than legal size. Hence, the numbers of crab taken as bycatch must be adjusted to compare with the numbers of crab taken in directed crab fisheries.

In evaluating the impacts of crab bycatch in groundfish fisheries, it is informative to know what crab bycatch costs the directed crab fisheries. The answer to this question can be derived from the adult equivalent exercise done for Amendment 41. If groundfish fisheries caught no crab incidentally, the crab fishery may increase total ex-vessel revenues by about $10.5 million. For comparison, trawl fisheries that are limited by crab bycatch generate annual revenues of about $500 million exvessel from the groundfish they catch. Note that since this analysis was done, bycatch has been significantly reduced and exvessel prices have fallen, so actual impacts are likely much lower.

Value of crab bycatch in groundfish fisheries to directed crab fisheries, based on 1993-1995 average bycatch and price.

	Legal male Equivalents	Legal weight	Average price/lb	Total value ($)
Red king crab	33,231	6.5	3.80	820,800
Tanner crab	920,060	2.3	2.80	5,925,000
Snow crab	1,958,138	1.3	1.50	3,818,000
Total				**$10,563,800**

What is the Council doing to reduce bycatch?

Bycatch controls were instituted on foreign groundfish fisheries prior to passage of the Magnuson Stevens Act in 1976 and have become more restrictive in recent years. Bycatch limits for 1998 BSAI groundfish fisheries included 3,775 mt of halibut mortality, 1,697 mt of herring, 100,000 red king crabs, 2,850,000 C. bairdi crab, 4,654,000 C. opilio crab, 48,000 chinook salmon, and 42,000 other salmon. Bycatch limits for herring and crab

are based on biomass of those stocks, and therefore fluctuate from year to year. The Council has adopted many management measures to control bycatch and reduce the impacts of groundfish fishing on crab stocks.

- The Council has implemented **extensive area closures** (no trawl zones) to protect king crabs and their habitats, and reduce crab bycatch.

1. The Pribilof Islands Conservation Area was closed to all trawling year-round to protect 7,000 square miles of blue king crab habitat.

2. The Red King Crab Savings Area was established as a year-round bottom trawl closure area. This 4,000 square mile area is known to have high densities of adult red king crab and also tended to protect concentrations of C. bairdi.

3. To protect juvenile red king crab and critical rearing habitat including stalked ascidians and other living substrate, another year-round closure to all trawling was implemented for the nearshore waters of Bristol Bay. This area encompasses 19,000 square nautical miles.

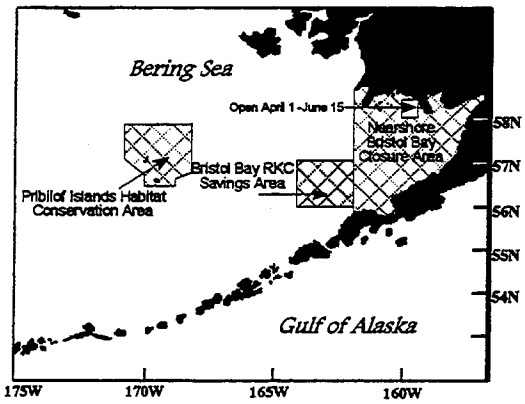


Figure 3 Location of marine protected areas in the Bering Sea.

4. There are also trawl closure areas in the Gulf of Alaska around Kodiak Island to protect king crab. These areas have very high king crab concentrations and, to promote rebuilding of the crab stocks, are closed all year or seasonally to all trawling except with pelagic gear.

- The Council has implemented **bycatch limits** for trawl fisheries to limit the impacts of groundfish fishing on BSAI crab stocks.

1. Bycatch limits for red king crab and C. Bairdi Tanner crab were established for domestic trawl fisheries back in 1987. The Council reduced in 1997 these crab bycatch limits to assist in crab stock rebuilding. Future limits will be based on crab stock size.

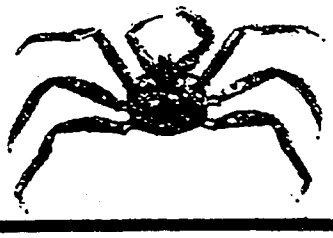
PSC limits for red king crab and C. bairdi Tanner crab.

Species	Zone	Crab Abundance	PSC Limit
Red King Crab	Zone 1	Below threshold or 14.5 million lbs of effective spawning biomass (ESB)	35,000
		Above threshold, but below 55 million lbs of ESB	100,000
		Above 55 million lbs of ESB	200,000
Tanner Crab	Zone 1	0-150 million crabs	0.5% of abundance
		150-270 million crabs	750,000
		270-400 million crabs	850,000
		over 400 million crabs	1,000,000
Tanner Crab	Zone 2	0-175 million crabs	1.2% of abundance
		175-290 million crabs	2,100,000
		290-400 million crabs	2,550,000
		over 400 million crabs	3,000,000

2. To address Magnuson-Stevens Act mandates to reduce bycatch, the Council recently adopted an amendment to prohibit the use of non-pelagic trawl gear for vessels targeting pollock in the BSAI. Total bycatch limits of prohibited species will be reduced to reflect this gear prohibition. Projected reductions in prohibited species bycatch are 100 mt of halibut mortality, 3,000 red king crab, 50,000 C. bairdi crab, and 150,000 C. opilio crab.

3. The Council has supported trawl industry initiatives to develop several bycatch reduction programs. These programs establish individual accountability for PSC bycatch as well as the Seastate real-time bycatch monitoring and avoidance.

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT OF FISH & GAME

STATE OF ALASKA
Department of Fish and Game
Frank Rue, Commissioner

Robert C. Clasby, Director
Commercial Fisheries Management
and Development Division

Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Rance Morrison
Area Shellfish Biologist
Dutch Harbor, Alaska

IMMEDIATE RELEASE (12:00 Noon)

Date: January 5, 1998

ATTENTION BERING SEA TANNER CRAB FISHERMEN

The 1998 Bering Sea *C. opilio* Tanner crab season is scheduled to open at 12:00 noon on January 15. The Guideline harvest levels for the Eastern and Western Subdistricts are 214 and 20 million pounds respectively. The total guideline harvest level (GHL) for the Bering Sea is 234 million pounds based on 4" and larger crab. For 1998, the Eastern and Western Subdistricts will be managed as a single stock.

Of the total 1998 GHL, 225.8 million pounds are available to the open access fishery and the remaining 8.2 million is set aside for CDQ harvest.

Tank inspections will be available according to the following schedule[1]:

Dutch Harbor	- 12:00 noon January 13 and throughout the season.
King Cove	- 12:00 noon January 13 and for 72 hours following.
Akutan	- 12:00 noon January 13 and for 72 hours following.
St. Paul	- 12:00 noon January 14 throughout the season.

Pre-tank inspections will be available for ALL VESSELS registering at the ports of Dutch Harbor, King Cove and Akutan beginning as early as January 9[1]. Vessels which have received a pre-tank inspection, and remain eligible, may obtain registration validation at key locations in Akutan, King Cove and Dutch Harbor.

-Continued-

[1] Pending ADF&G staff availability.

News Release January 5, 1998

NOTE: Pre-tank inspections will NOT be given at the port of St. Paul. Tank inspections will not be waived for vessels unable to enter Saint Paul harbor due to bad weather or crowding.

For vessels not receiving pretank inspections, and quick registrations, fishermen are reminded that the **holder** of a 1998 T91Q or T09Q Bering Sea Tanner crab interim-use permit card must be on the vessel at the time of regular tank inspection and during all fishing operations. Tank inspections will not be given without this card in possession. The white and yellow copies of the Vessel Registration form, obtained when tags were purchased, should also be onboard for the tank inspection.

At the time of tank inspection and vessel registration validation, **ALL** pots on board the vessel, and those in wet storage in the district for which the vessel is registering, must be tagged with the vessel's assigned pot tags. Pots may display only one regulatory tag, for the current fishery only. **ALL** crab pots must also be in compliance with regulations including, but not limited to, biodegradable and undersize crab escape mechanisms, three inch tunnel openings and tanner board rigidity requirements.

1998 *C. opilio* buoy tags may be purchased at the Dutch Harbor and Kodiak ADF&G offices Monday through Friday, 8:00 am to 12:00 noon, and 1:00 pm to 4:30 pm. The ADF&G office in Dutch Harbor will also be open for the sale of buoy tags during the above office hours on January 10 and 11 (Saturday and Sunday).

Fishermen are reminded, according to 5 AAC 35.053, a person or vessel that operates commercial, subsistence, sport, or personal use pots during the 14 days before the opening of the commercial Tanner crab season, in the Bering Sea District, may not participate in the commercial Tanner crab fishery in the Bering Sea.

Also, according to 5 AAC 35.506(d), a Tanner crab vessel from which pots having identification tags required by 5 AAC 35.526 are fished may not be, at the same time, validly registered to fish any other fishery with pot gear.

The U.S. Coast Guard office in Dutch Harbor will be presenting fishing vessel safety workshops January 10-12, 1998 in the Makushin Room of the Grand Aleutian Hotel in Dutch Harbor. ADF&G staff will be available at 7:00 pm on January 12 to discuss pre tank and tank inspections and answer questions on all issues relating to management of the 1998 *C. opilio* fishery.

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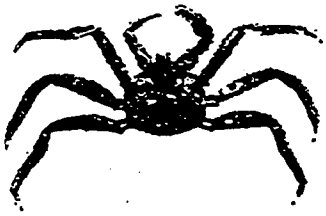
COMMERCIAL FISHERIES



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ALASKA DEPARTMENT OF FISH & GAME

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Commercial Fisheries Management
and Development Division

Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Rance Morrison
Area Shellfish Biologist
Dutch Harbor, Alaska

IMMEDIATE RELEASE

Date: March 11, 1998

ATTENTION BERING SEA *C. OPILIO* TANNER CRAB FISHERMEN

All waters of the Bering Sea will close to the taking of *C. opilio* Tanner crab at 12:00 noon on March 20, 1998.

A total of 228 vessels, including 12 catcher processors received tank inspections and participated in this fishery, which opened at 12:00 noon on January 15. Due to a short vessel strike, the majority of the fleet did not initially began setting gear until 08:00 hours on January 17.

Management of the fishery was based on the landed catch as reported by all processors on a weekly basis. Through March 7th, the total preliminary harvest, including unreported catch onboard vessels and in the fishing gear, stands at 195 million pounds. At the current rate of harvest the 226 million pound open-access fishery midpoint harvest guideline will be obtained by the time of the closure.

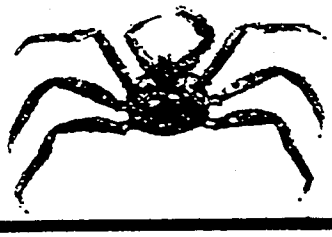
Fishermen are reminded that vessels in possession of *C. opilio* Tanner crab must be at a processing location within 24 hours following the closure, except for vessels delivering from the Western Subdistrict to Dutch Harbor or Akutan. These vessels have 72 hours following the closure to be at processing locations according to 5 AAC35.556 (c)(2)(D). If delivery is made to King Cove or ports east of King Cove, the operator of the vessel must contact a representative of the Department of Fish and Game, in Dutch Harbor, within 24 hours following the closure, and additional running time will be granted to reach the port of delivery. The amount of additional time is to be determined with the assumption that the vessel departed the fishing grounds immediately after the closure. Catcher processors must deliver under these same terms or

-Continued-

request extended possession within 24 hours following the closure. Terms of extended possession for catcher processors are outlined in 5 AAC 35.031(c)(3) of the commercial shellfish regulations.

At the time of the closure all gear remaining on the fishing grounds must be unbaited with the doors secured fully open. All fishing gear must be off the fishing grounds and in legal storage depths within seven days following the closure.

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT OF FISH & GAME

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Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Rance Morrison
Area Shellfish Biologist
Dutch Harbor, Alaska

IMMEDIATE RELEASE

Date: March 26, 1998

ATTENTION BERING SEA *C. OPILIO* TANNER CRAB FISHERMEN

In the March 11 news release, which announced the closure of the 1998 *C opilio* Tanner crab fishery, fishermen were incorrectly advised that all fishing gear had to be off the fishing grounds or in legal storage depths within the seven days following the closure. According to 5 AAC 35.527(4)(c) pots may be stored on the fishing grounds for up to 10 days following the closure of the commercial *C. opilio* Tanner crab fishery.

The department regrets any inconvenience caused by this error.

COMMERCIAL FISHERIES

NEWS RELEASE

ALASKA DEPARTMENT OF FISH & GAME

STATE OF ALASKA
Department of Fish and Game
Frank Rue, Commissioner

Robert C. Clasby, Director
Commercial Fisheries Management
and Development Division

Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Rance Morrison
Area Shellfish Management Biologist
Bering Sea/Aleutian Islands

IMMEDIATE RELEASE

Date: April 15, 1998

1998 Snow Crab Harvest Set for Community Development Quotas

ADF&G in Dutch Harbor has determined the preliminary total harvest for the 1998 open access snow crab fishery to be 245,017,190 pounds. As a result, 8,886,634 pounds are available for harvest in the Community Development Quota (CDQ) portion of the fishery, which is currently underway. By setting this number, the CDQ groups are allocated the exact poundage they may harvest. The CDQ groups must manage their quota carefully and may not exceed their allocation. Any deadloss must be counted against the group's quota. The allowable period for harvesting is not expected to extend beyond early June.

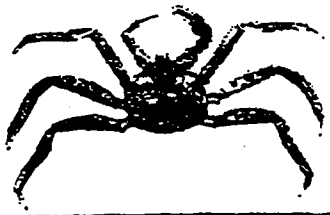
While this number is not the final total for the fishery, it is expected to be a very close estimate of the actual final harvest and CDQ groups should use this number to calculate their allocation and complete their CDQ fishery in a timely manner. This number, which is for CDQ use only, is based on the best available information and is not expected to be adjusted in the future.

The CDQ group's allocations for 1998 opilio or snow crab are as follows:

APICDA	(10%)	888,663	pounds
BBEDC	(19%)	1,688,460	pounds
CBSFA	(19%)	1,688,460	pounds
CVRF	(17%)	1,510,728	pounds
NSEDC	(18%)	1,599,594	pounds
YDFDA	(17%)	1,510,728	pounds

-end-

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT OF FISH & GAME

STATE OF ALASKA
Department of Fish and Game
Frank Rue, Commissioner

Robert C. Clasby, Director
Commercial Fisheries Management
and Development Division

Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Donn Tracy
Bering Sea/Aleutian Islands
Area Research Biologist
Westward Region

IMMEDIATE RELEASE

Date: May 5, 1998

ATTENTION CRAB PROCESSORS

Request for bids
Buyer for red king crab

The Alaska Department of Fish and Game will be conducting a test fishery on Bristol Bay red king crab during early to mid-August 1998. A number of male red king crabs greater than or equal to 6.5 inches carapace width (including spines) will be retained for sale. Although no guarantee on volume can be provided, an estimated harvest of 80,000 - 100,000 lb. is expected.

CONDITIONS OF THE SALE

1. To accommodate ADF&G research logistics, **the successful bidder must be based in Dutch Harbor/Unalaska or Akutan; floating processors stationed (docked or at anchor) within five miles of either of these areas at the time of delivery will also be considered eligible bidders.**

2. Delivery of crabs will begin on approximately August 8, 1997 at 9:00 a.m. However, the vessel may need to dock the prior evening at the processing facility. A delay in processing may occur if the vessel fails to arrive as scheduled. Once offloading has commenced, processing shall be continuous until the entire catch of crabs has been delivered to the processing facility.

- CONTINUED -

MAY 5, 1998

NEWS RELEASE

3. **Written bids from processors must be received by 4:30 p.m., on Wednesday, May 20.** In order for a bid to be valid it must state the price per pound of live red king crabs to be delivered to the specified processing facility. Interested bidders must be fully licensed to process crab in the state of Alaska at the time the bid is tendered, which must include possession of a valid 1998 Alaska Business License.

4. The successful bidder must render payment in full to the State of Alaska for all delivered (live) crabs on the date of delivery. Full or partial payment for tendered red king crabs at any time following the date of delivery will legally be considered a breach of contract between the processing facility and the State of Alaska. Completed bids must be mailed, Emailed or faxed to:

Donn Tracy
Alaska Department of Fish and Game
211 Mission Road
Kodiak, AK 99615
tel.: (907) 486-1822 or 486-1865
Fax: (907) 486-1824
Email: donnt@fishgame.state.ak.us

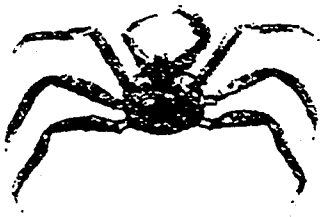
OR

Holly Moore
Alaska Department of Fish and Game
P.O. Box 920587
Dutch Harbor, AK 99692
tel.: (907) 581-1219 or 581-1239
Fax: (907) 581-1572
Email: hollym@fishgame.state.ak.us

The State of Alaska, Department of Fish and Game reserves the right to reject any or all of the bids submitted.

- END -

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT OF FISH & GAME

STATE OF ALASKA
Department of Fish and Game
Frank Rue, Commissioner

Robert C. Clasby, Director
Commercial Fisheries Management
and Development Division

Westward Region
211 Mission Road
Kodiak, AK 99615

Contact: Donn Tracy
BSAI Area
Research Biologist
Westward Region

IMMEDIATE RELEASE

Date: May 21, 1997

ATTENTION BERING SEA CRAB PROCESSORS

CONTRACT AWARD
BUYER FOR RED KING CRAB

The Alaska Department of Fish and Game has awarded the contract for the purchase of red king crab harvested during the 1998 Bering Sea test fishery to Westward Seafoods. All bids received by ADF&G from processors on or before May 20, 1998 were considered.

Requests for further information should be directed to:

Donn Tracy
Alaska Department of Fish and Game
211 Mission Road
Kodiak, AK 99615
tel.: (907)486-1822
fax: (907)486-1824
Email: donnt@fishgame.state.ak.us

END

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