



**Alaska  
Fisheries Science  
Center**

National Marine  
Fisheries Service

U.S. DEPARTMENT OF COMMERCE

## **AFSC PROCESSED REPORT 2003-11**

### Report to Industry on the 2003 Eastern Bering Sea Crab Survey

November 2003



This report does not constitute a publication and is for information only.  
All data herein are to be considered provisional.

Cover Photo: Richard MacIntosh, Research Fisheries Biologist with the Alaska Fisheries Science Center, sorts catch on board the FV *Fierce Allegiance* as part of a seasonal study of Bering Sea snow crab. After more than 31 years working in Alaska, he continues to appreciate the challenges and rewards of research in its diverse and unique waters.

**Alaska Fisheries Science Center  
Processed Report 2003-11**

**REPORT TO INDUSTRY ON THE  
2003  
EASTERN BERING SEA  
CRAB SURVEY**

by  
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## RESULTS OF THE 2003 NMFS BERING SEA CRAB SURVEY EXECUTIVE SUMMARY

This document summarizes data presented in the Report to Industry on the 2003 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. Louis J. Rugolo or Dr. Robert S. Otto at 907-481-1700, NMFS, 301 Research Court, Kodiak, AK 99615-7400. Guideline Harvest Levels (GHLs) are for the combined general and CDQ fisheries. This report reflects data analysis and management decision making through September 25, 2003.

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

Legal males: 12.3 million crabs; 30% increase.

Pre-recruits: 9.0 million crabs; 8% decrease.

Large Females: 34.0 million crabs; 76% increase.

Status: The abundance of legal males increased while that of pre-recruit males decreased slightly. This may indicate declining legal abundance for 2004. The apparent abundance of mature females increased but this may be more of a reflection of instability in the estimates than any true increase in stock size. High numbers of sub-legal male crab in 2002 evidently produced good recruitment to the 2003 legal stock. Almost all newshell females carried new eggs. Reproductive stock estimates were above the minimum stock size threshold (MSST) due largely to this apparent increase in female abundance. The stock is above the overfished level of abundance defined in the plan, although it remains substantially below the peak populations of the 1970s.

GHL: 15.7 million pounds (7,100 metric tons(t)). Fishery opened 15 October 2003.

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

Legal males: 1.3 million crabs; 26% decrease.

Pre-recruits: 0.1 million crabs; no real change.

Large Females: 1.1 million crabs; percent change difficult to detect.

Status: Crabs are highly concentrated and indices have very low precision. Females are particularly poorly estimated. Since reproductive stock estimates are above the MSST defined in the plan, the stock is not considered to be overfished. No recruitment is apparent. Red king crabs in the Pribilof Islands are usually harvested with blue king crabs and are currently the dominant species. A principal concern is that an unacceptable level of blue king crab incidental catch could occur in a red king crab fishery.

GHL: Fishery will not open in 2003.

### Pribilof Islands blue king crab (*P. platypus*) Pribilof District.

Legal males: 0.2 million crabs; no real change.

Pre-recruits: < 0.1 million crabs; no real change.

Large Females: 1.1 million crabs; 11% decrease.

Status: Population abundance is low and trends are not easily detectable. Little or no recruitment is apparent. The reproductive stock estimate fell below the MSST

in 2002 and remains so in 2003. This stock is considered to be overfished. A rebuilding plan was submitted to the Council in October 2003.

GHL: Fishery will not open in 2003.

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

Legal males: 0.6 million crabs; no real change.

Pre-recruits: 0.3 million crabs; 47% increase.

Large Females: 0.8 million crabs; 600% increase. Not well estimated.

Status: Indices of abundance are affected by the portion of the stock occupying untrawlable grounds. The population declined steeply in 1999, falling below the MSST defined in the plan. The reproductive stock estimate rose slightly above the MSST in 2003. The stock has been considered overfished since 1999 but may be showing signs of recovery. However, this is clouded by extreme uncertainty in the estimate of female abundance. The 2003 abundance of mature males was below the threshold for opening the fishery.

GHL: Fishery will not open in 2003.

Tanner crab (*Chionoecetes bairdi*) Eastern District.

Legal males: 7.4 million crabs; 6% increase.

Pre-recruits: 24.7 million crabs; 62% increase.

Large Females: 15.1 million crabs; 44% increase.

Status: The 2003 population estimates demonstrate increasing trends in male and female abundance. The veracity of these increases is uncertain and unsupported by modes in size frequencies seen in 2001 and 2002. The reproductive stock estimate was below the MSST for the previous 6 years (1997-2002) and just barely above the MSST in 2003. The mature female biomass is still below the threshold value of 21 million pounds defined in the plan.

GHL: Fishery will not open in 2003.

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

Large males: 65.2 million crabs; 16% decrease.

Pre-recruits: 166.5 million crabs; 34% decrease.

Large Females: 614.0 million crabs; 20% increase.

Status: Large and pre-recruit male abundances continue to decline through 2003, while that for large females increased slightly. The decline in total mature biomass was less severe than indicated by declining male abundance as it was partially offset by increased mature female biomass. The abundances for small males and females remain well below the previous 20-year average. Total mature biomass, which slightly exceeded the MSST in 2001, was well below this threshold in 2002 and 2003. Recruitment reached a dramatic and historical low in 1994, and remains exceedingly low through 2003. Future outlook for this stock is poor. The stock is considered to be overfished. Under the current rebuilding plan and harvest strategy, the fishery would be closed if the stock continues to decline and falls below one-half of the MSST.

GHL: 20.8 million pounds (9,400 t). Fishery is currently scheduled to open 15 January 2004.

Hair crab (*Erimacrus isenbeckii*) All districts combined.

Legal males: 1.0 million crabs; 52% decrease.

Large Females: 0.2 million crabs; 65% decrease. Not well estimated.

Status: The population has been declining for several years. Recruitment trends are unclear due to poor representation of small crabs in the survey.

GHL: Fishery will not open in 2003.

# THE 2003 EASTERN BERING SEA SURVEY

The National Marine Fisheries Service (NMFS) conducts an annual trawl survey in the eastern Bering Sea (EBS) to determine the distribution and abundance of crab and groundfish resources. This report summarizes survey results for commercially important crabs. It is intended to aid the fishing industry in locating productive grounds and judging overall availability of various species. Survey-derived data are also used as part of the basis for management decisions. Results are presented for red king crab (*Paralithodes camtschaticus*), blue king crab (*P. platypus*), hair crab (*Erimacrus isenbeckii*), Tanner crab (*Chionoecetes bairdi*) and snow crab (*C. opilio*).

Information on groundfish resources is available from the Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, Washington 98115.

Landing statistics for 2003 are preliminary data obtained from the Alaska Department of Fish and Game (F. Bowers, ADF&G, Dutch Harbor, personal communication). Those needing final statistics should contact ADF&G directly.

## Survey Area and Methods

The 2003 EBS crab survey consisted of 398 bottom trawl tows which covered an area of approximately 159,598 square nautical miles (nmi). The survey area (Figure 1) has been standardized since 1990. The survey was conducted aboard two chartered vessels, the F/V *Aldebaran* and F/V *Arcturus*, between June 2 and July 22. The same vessels have been used since 1993. Methodology was identical to that of previous surveys, and most tows were made at the centers of squares defined by a 20x20 nmi (37x37 km) grid. Near St. Matthew Island and the Pribilof Islands,

additional tows were made at the corners of squares. Average bottom water temperatures are shown in Chart 6 for each grid square.

Both vessels fished an eastern otter trawl with an 83 ft (25.3 m) headrope and a 112 ft. (34.1 m) footrope. This has been the standard trawl since 1982. Each tow was one-half hour in duration; average length was 1.41 nmi (2.62 km). Crabs were sorted by species and sex, and then a sample of crabs was measured (to the nearest millimeter) to provide a size-frequency distribution. Crab sizes are reported as carapace width (cw) for Tanner, snow and hair crabs, and carapace length (cl) for all others. Procedures for estimating abundance were similar to previous years (see Appendix A). Note that population estimates are indexes and are most precise for large crabs; they may not represent absolute abundance and are least precise for females and small crab due to differential crab behavior and gear selectivity.

Because of variations in tow length, catches presented in accompanying charts and tables are standardized to the nearest whole number of crab caught per square nmi. Where more than one tow was made in a square (including corner tows), charts indicate average crab density for all tows. Tables 7-11 present data for all tows where a species was caught, without averaging. It is advisable to cross-reference charts and tables.

The following abbreviations are used in the text: (in) inches, (m) meters, (km) kilometers, (mm) millimeters, (fm) fathoms, (lbs) pounds, (t) metric tons, (°C) degrees Celsius, (nmi) nautical miles, (cl) carapace length, (cw) carapace width, (MSST) minimum stock size threshold, (NPFMC) North Pacific Fishery Management Council, and (MSFCMA) Magnuson-Stevens Fishery Conservation and Management Act. GHL refers to Guideline



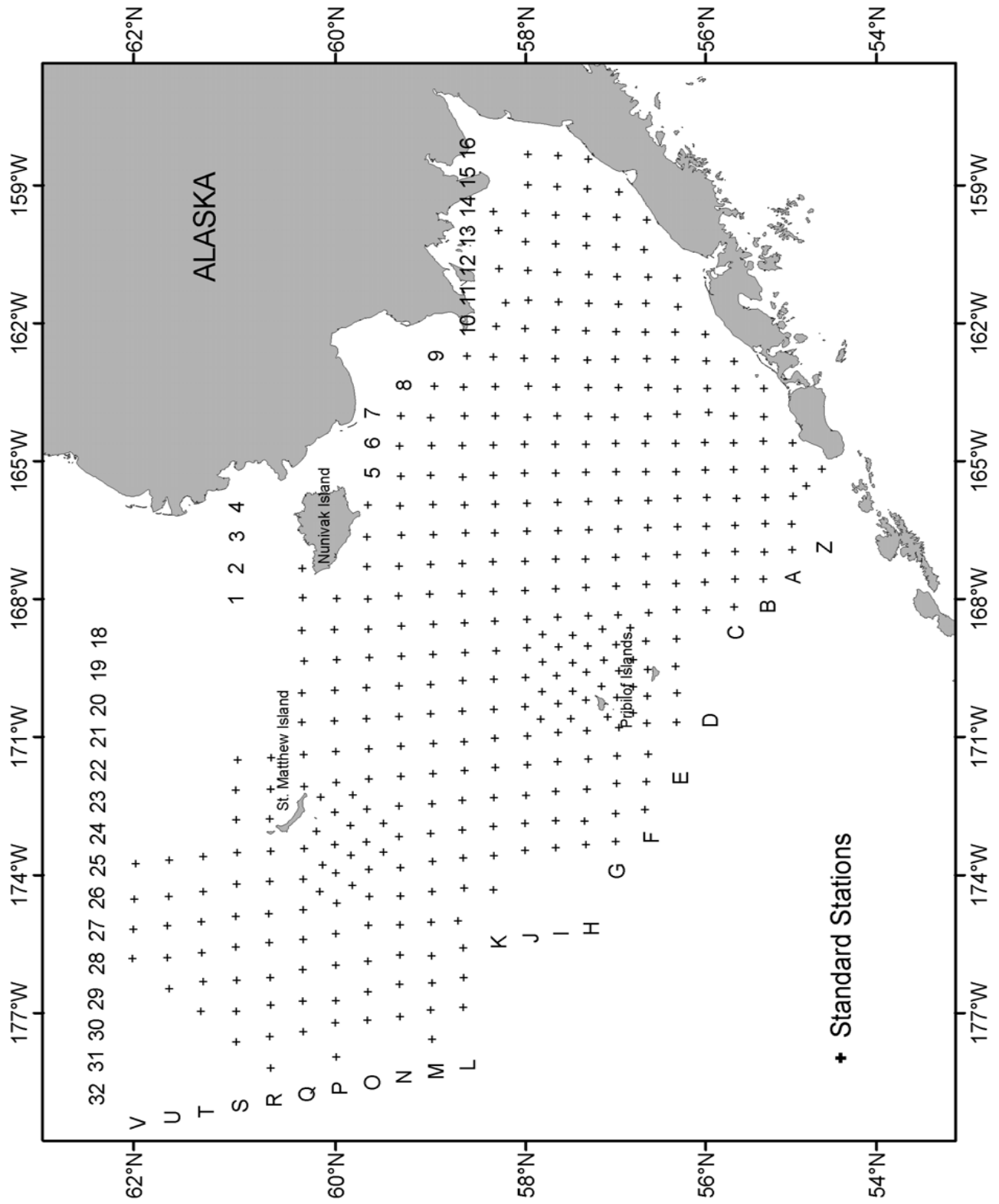


Figure 1. NMFS eastern Bering Sea crab survey area in 2003

## Red King Crab Bristol Bay Statistical Area

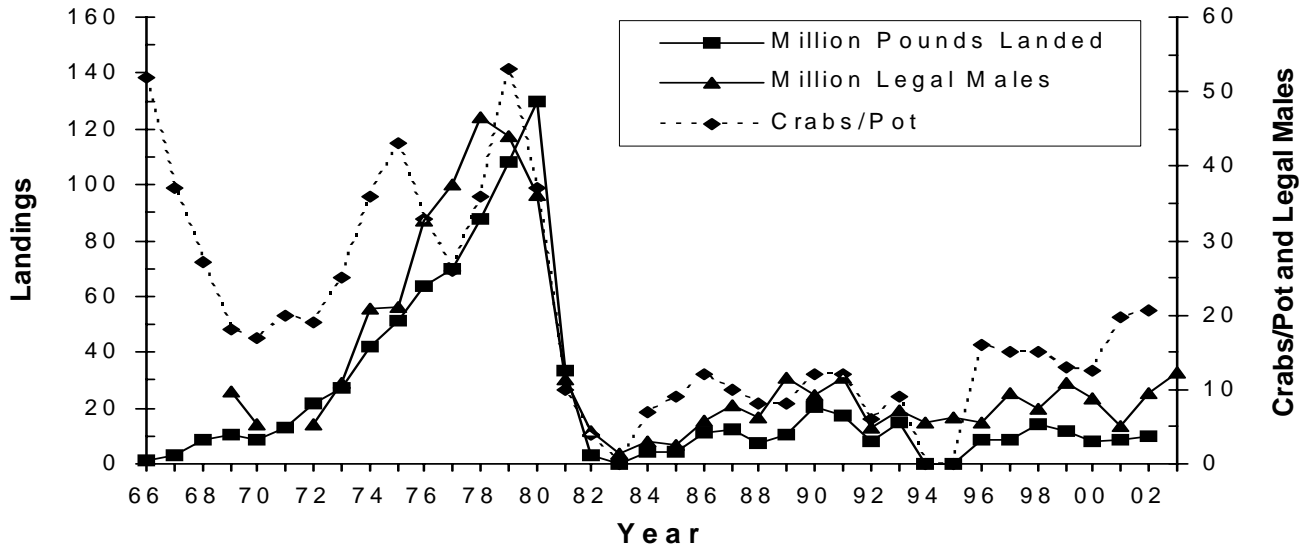


Figure 2. U.S. landings in millions of pounds, CPUE as crabs/pot-lift, and abundance of legal red king crab (*P.camtschaticus*) in millions in Bristol Bay, estimated from NMFS trawl surveys (abundance data include the Pribilof District prior to 1983).

Harvest Levels which are for the combined general and Community Development Quota (CDQ) fisheries. FMP refers to the current (1998) version of the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs. Terminology for shell condition categories is explained in Appendix B. Figures 14 through 16 show stock biomass, yield, and commercial catch histories relative to overfishing definitions for all stocks.

In this report, the 1997-2002 abundance estimates for all species have changed relative to those previously published. The changes are relatively minor, and comprise an approximate 1-5% increase in abundance compared to previous values. These resulted from recent corrections in the files containing the haul statistics for each survey year which did not properly categorize poor performance hauls prior to abundance estimation.

### Distribution and Abundance of Crab Stocks

#### Bristol Bay Red King Crab (*P. camtschaticus*)

Legal-sized ( $\geq 6.5$  in cw or 135 mm cl) male crabs were concentrated in central Bristol Bay (Chart 1 and Table 7). The abundance index of legal male red king crab in the Bristol Bay Registration Area (south of 58° 39'N and east of 168°W) was 12.3 million (Table 1 and Figure 2). This estimate represents a 30% increase from last year and exceeds the average for the previous 20 years (7.6 million). The index (9.0 million) for pre-recruit crab (110-134 mm cl) decreased by 8%. Abundance of small males decreased by 13% although the cohort recruiting in 2002 at a modal size of 70 mm is still prominent at 90 mm (Figure 3). The cohort with a modal size about 80 mm in 2000 grew to about 100 mm in 2001, to 120 mm in

Table 1. Annual abundance estimates (millions of crabs) for red king crab (*P. camtschaticus*) from NMFS surveys. Bristol Bay and Pribilof Districts are combined except where noted with a (B) or (P).

Carapace Length(mm) Width(in)	Males				Females			Grand Total
	Small	Pre-recruit	Legal	Total	Small	Large	Total	
	<110 <5.2	110-134 5.2-6.4	≥135 ≥6.5		<90 <4.3	≥90 ≥4.3		
1983	43.3	10.4	1.5	55.2	24.3	9.7	34.0	89.2
1984	81.8	12.6	3.1	97.6	57.6	17.6	75.1	172.7
1985	13.7	10.1	2.5	26.3	6.9	6.8	13.7	40.0
1986	11.8	12.3	5.9	30.1	4.5	5.4	9.8	39.9
1987	20.1	12.6	7.9	40.6	16.8	18.3	35.1	75.7
1988	8.5	6.4	6.4	21.3	2.7	15.7	18.4	39.7
1989	8.6	9.4	11.9	29.9	4.4	16.9	21.2	51.1
1990	8.2	10.2	9.2	27.6	7.2	17.5	24.7	52.2
1991	8.1	6.4	12.0	26.5	4.7	12.6	17.4	43.9
1992	7.0	5.5	5.8	18.3	2.2	13.4	15.6	33.9
1993	5.7	10.2	9.8	25.7	2.5	19.2	21.7	47.4
1994	6.2	6.7	7.5	20.4	3.4	10.1	13.5	33.9
1995	9.7	6.0	8.9	24.6	4.9	10.4	15.3	33.9
1996	17.2	3.5	6.0	26.7	13.7	12.9	26.6	53.3
1997	28.1	9.8	10.6	48.5	1.8	26.5	28.3	76.8
1998(B)	11.1	16.7	7.5	35.3	5.6	35.8	41.4	76.7
1999(B)	8.4	7.4	11.5	27.3	6.4	15.1	21.6	48.9
2000(B)	11.4	7.3	8.9	27.6	5.7	17.4	23.1	50.7
2001(B)	10.2	4.4	5.3	19.9	3.9	21.8	25.7	45.5
2002(B)	20.7	9.9	9.5	40.0	18.9	19.4	38.3	78.3
2003(B)	17.9	9.0	12.3	39.3	10.8	34.0	44.8	84.1
<u>Limits<sup>1</sup></u>								
Lower	9.9	5.5	7.5	26.3	5.2	18.0	25.1	51.4
Upper	26.0	12.6	17.1	52.2	16.5	50.0	64.6	116.8
±%	45	39	39	33	52	47	44	39
1998(P)	0.2	0.6	0.4	1.2	0.0	1.0	1.1	2.2
1999(P)	6.5	0.6	1.1	8.2	6.3	3.1	9.4	17.6
2000(P)	0.0	0.4	1.2	1.5	0.0	0.6	0.6	2.2
2001(P)	1.4	2.5	1.8	5.6	0.0	4.0	4.0	9.6
2002(P)	0.0	0.0	1.8	1.8	0.0	0.4	0.4	2.3
2003(P)	0.0	0.1	1.3	1.4	0.0	1.1	1.2	2.6

<sup>1</sup> Mean ± 2 standard errors for most recent year; Bristol Bay only.

### Red King Crab Length Frequency Bristol Bay

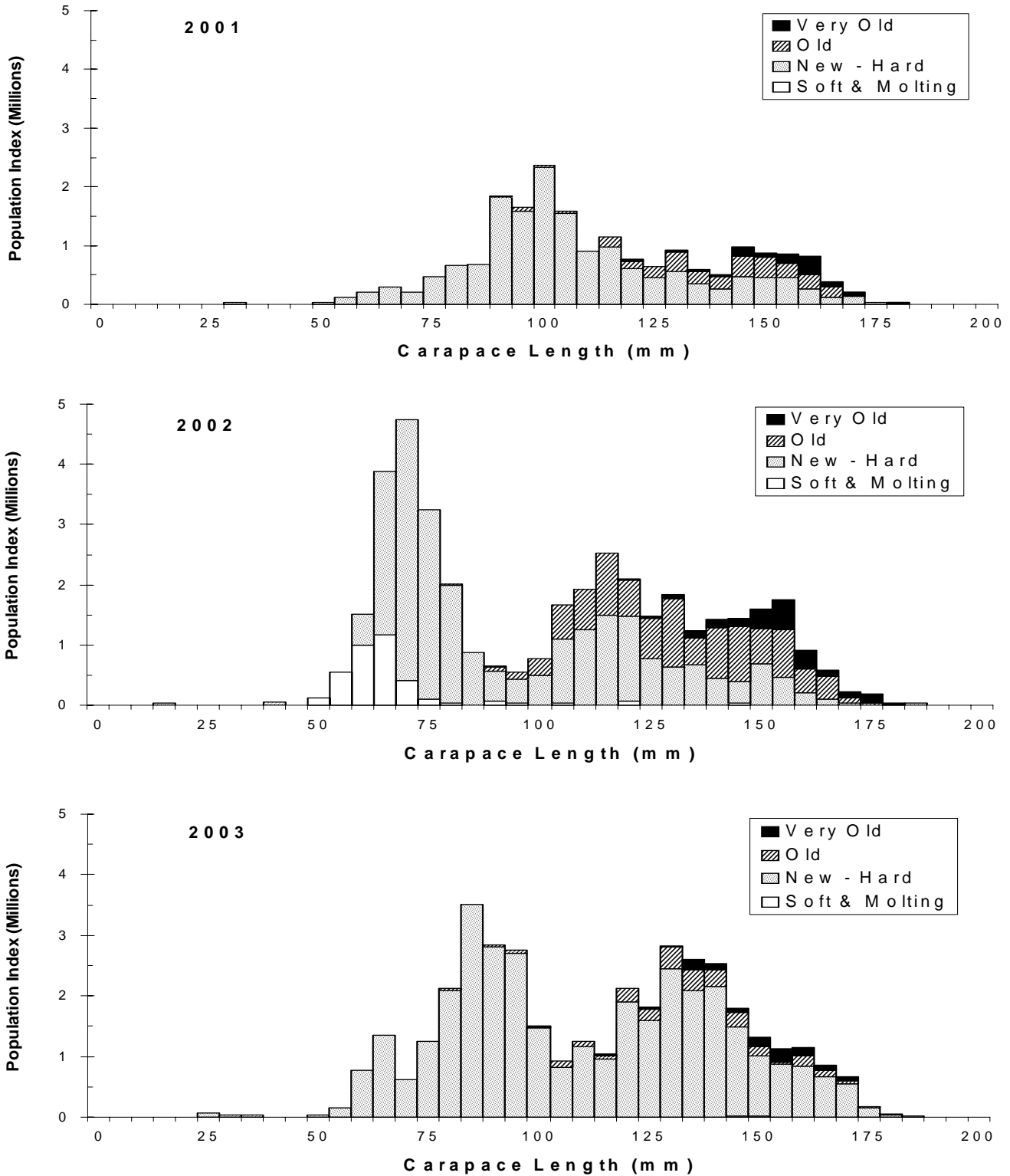


Figure 3. Size-frequency of male red king crab (*P. camtschaticus*) by 5 mm length classes, 2001-2003.

## Blue King Crab Pribilof District

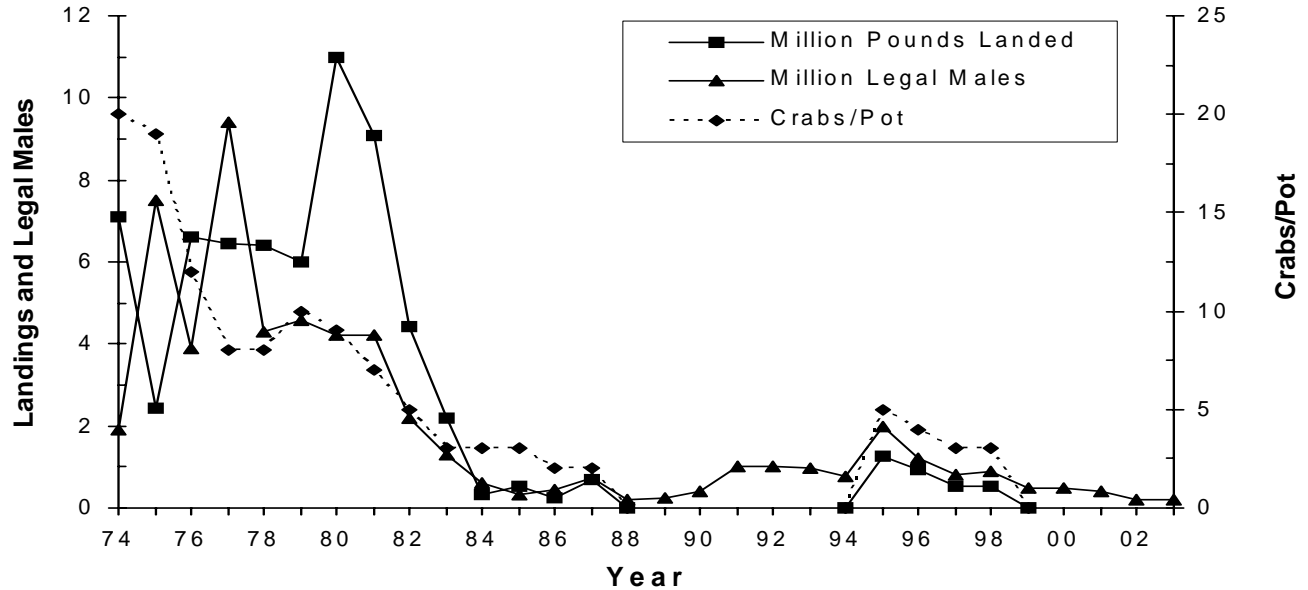


Figure 4. U.S. landings in millions of pounds, CPUE as crabs/pot-lift, and abundance of legal blue king crab (*P. platypus*) in millions in the Pribilof District, estimated from NMFS trawl surveys.

2002, and is evident in the 135-140 mm mode in 2003. No legal male crab were in molting or softshell condition, and 11% were new-hardshell crabs; the remainder were oldshell and older crabs. The 2003 abundance index (34.0 million crabs) for large ( $\geq 90$  mm cl) females represents a 76% increase from last year. This apparent increase should be viewed cautiously since there was no antecedent of it in the 2002 length frequency. Thus, it is more likely a reflection of the instability of the estimates rather than any true increase in stock abundance. Among female crabs, 69% were mature, of which 99% had molted and extruded new, uneyed eggs. Fluctuations in the timing of molting, mating, and embryo extrusion may be related to annual variations in water temperature.

ADF&G has developed a length-based assessment (LBA) model, which was fitted to the survey time series data. Resultant estimates of the abundance of mature males and

females are used to establish the fishery GHL (ADF&G Regional Information Report 5J99-09). The LBA estimate of 29.7 million mature females was slightly smaller than the survey estimate for large females and equated to 60.7 million pounds of effective spawning biomass. Total mature biomass is above the MSST threshold, allowing a 15% harvest rate under the ADF&G harvest strategy. This resulted in a GHL of 15.7 million lbs (7,100 t), including 1.2 million lbs of CDQ. The total GHL translates into approximately 2.42 million crabs at an average weight of 6.5 lbs.

### Pribilof Islands Red King Crab (*P. camtschaticus*)

In the Pribilof District (south of 58° 39'N and west of 168° W), the abundance index for legal male red king crab was 1.3 million (Table 1), down 26% from last year. The index for large females showed a 159% increase from 2002 but females are poorly esti-

Table 2. Annual abundance estimates (millions of crabs) for blue king crab (*P. platypus*) in the Pribilof District from NMFS surveys.

	<u>Pribilof District</u>							Grand Total
	Males				Females			
	Small	Pre-recruit	Legal	Total	Small	Large	Total	
	Length(mm) Width(in)							
	<110 <5.2	110-134 5.2-6.4	≥135 ≥6.5		<90 <4.3	≥90 ≥4.3		
1983	0.6	0.8	1.3	2.8	0.2	9.2	9.4	12.2
1984	0.5	0.3	0.6	1.3	0.3	3.1	3.4	4.7
1985	0.1	0.2	0.3	0.5	0.2	0.5	0.7	1.2
1986	<0.1	<0.1	0.4	0.5	<0.1	1.9	1.9	2.4
1987	0.6	0.1	0.7	1.4	0.4	0.6	1.0	2.4
1988	1.1	0.0	0.2	1.3	0.8	0.4	1.2	2.5
1989	3.2	0.1	0.2	3.5	2.3	1.3	3.6	7.1
1990	1.8	1.2	0.4	3.5	1.8	2.7	4.5	8.0
1991	1.3	1.0	1.0	3.4	0.6	2.8	3.4	6.7
1992	1.6	1.2	1.0	3.8	1.3	2.1	3.4	7.1
1993	1.0	0.8	1.0	2.8	0.3	2.2	2.5	5.3
1994	0.3	0.5	0.8	1.6	0.1	4.3	4.3	5.9
1995	0.8	1.2	2.0	3.9	0.4	4.0	4.5	8.4
1996	0.3	0.7	1.2	2.3	0.1	4.6	4.7	7.0
1997	0.3	0.4	0.8	1.5	0.1	2.5	2.6	4.1
1998	0.8	0.4	0.9	2.1	0.3	2.1	2.3	4.4
1999	0.1	0.2	0.5	0.8	0.0	2.5	2.5	3.3
2000	0.1	0.2	0.5	0.9	0.0	1.4	1.4	2.3
2001	0.0	0.1	0.4	0.6	0.0	1.6	1.6	2.2
2002	0.0	0.0	0.2	0.2	0.0	1.2	1.3	1.5
2003	0.0	0.0	0.2	0.3	0.0	1.1	1.2	1.4
<u>Limits<sup>1</sup></u>								
Lower	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Upper	0.1	0.0	0.4	0.4	0.1	2.8	2.8	3.3
±%	147	200	79	67	147	149	143	129

<sup>1</sup> Mean ± 2 standard errors for most recent year.

## Blue King Crab Length Frequency Pribilof District

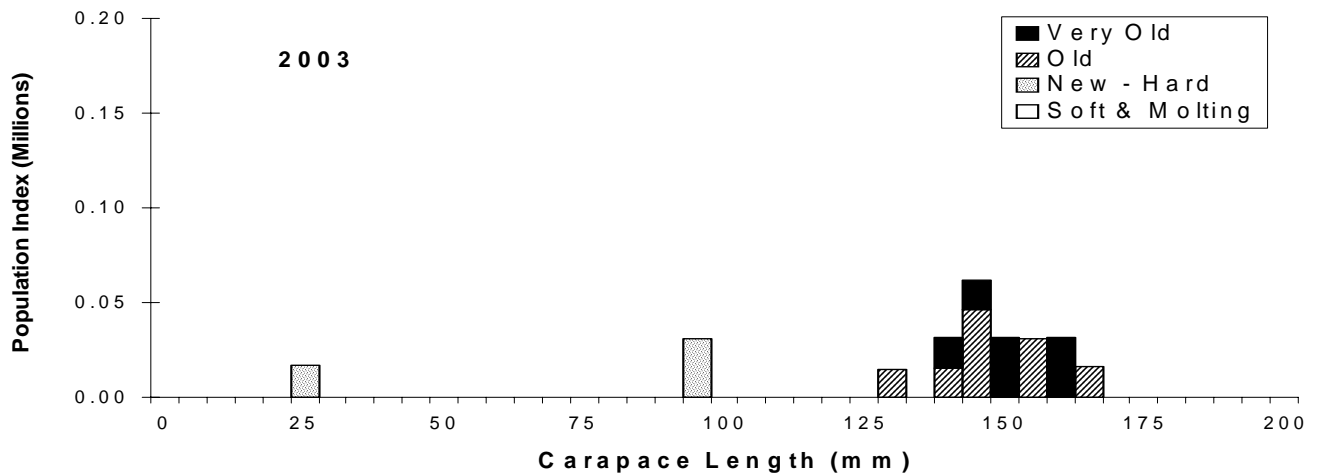
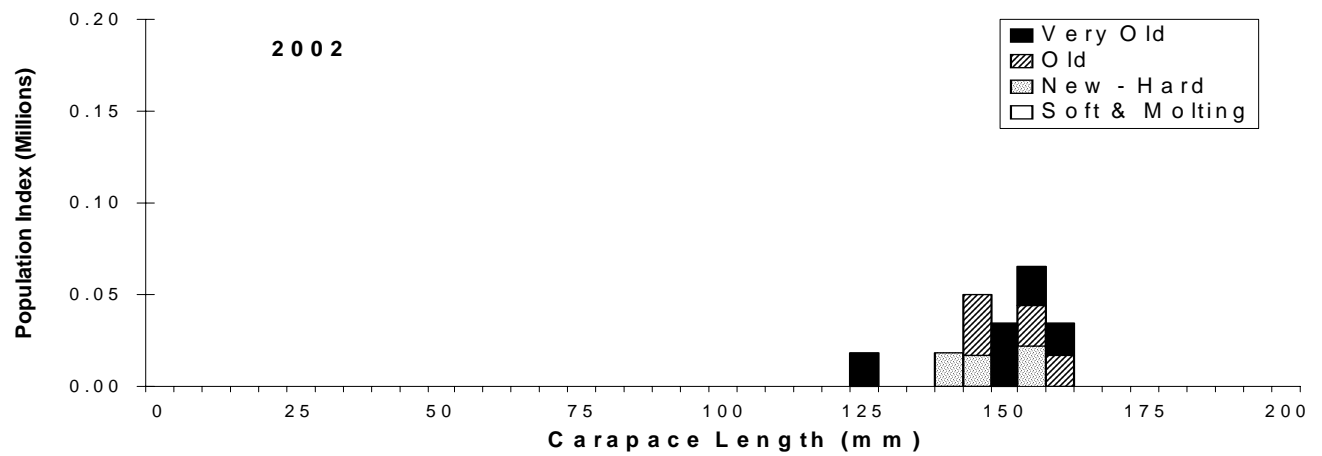
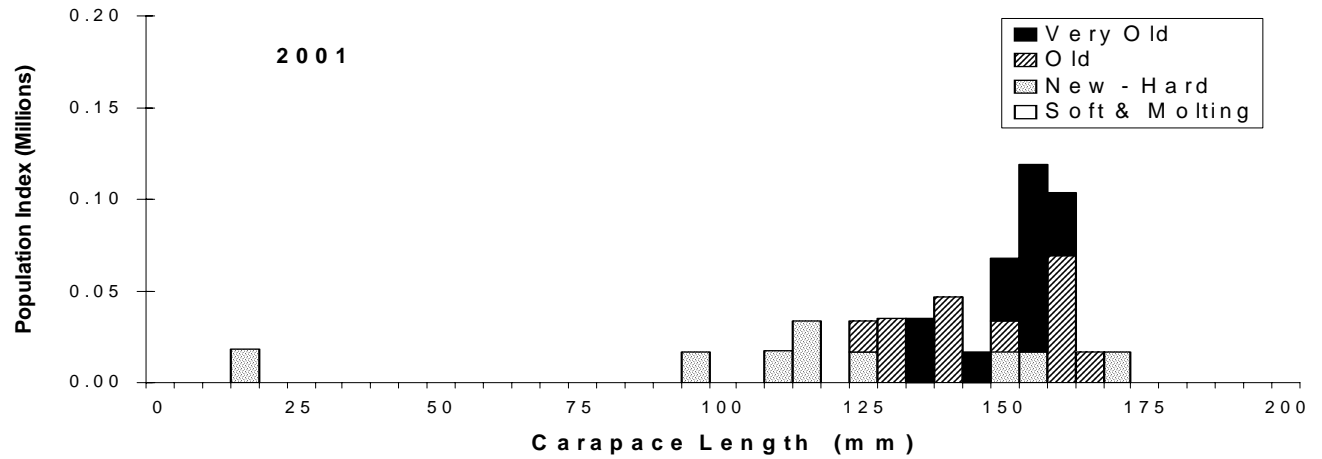


Figure 5. Size-frequency of Pribilof District male blue king crab (*P. platypus*), by 5 mm length classes, 2001-2003.

## Blue King Crab Northern District

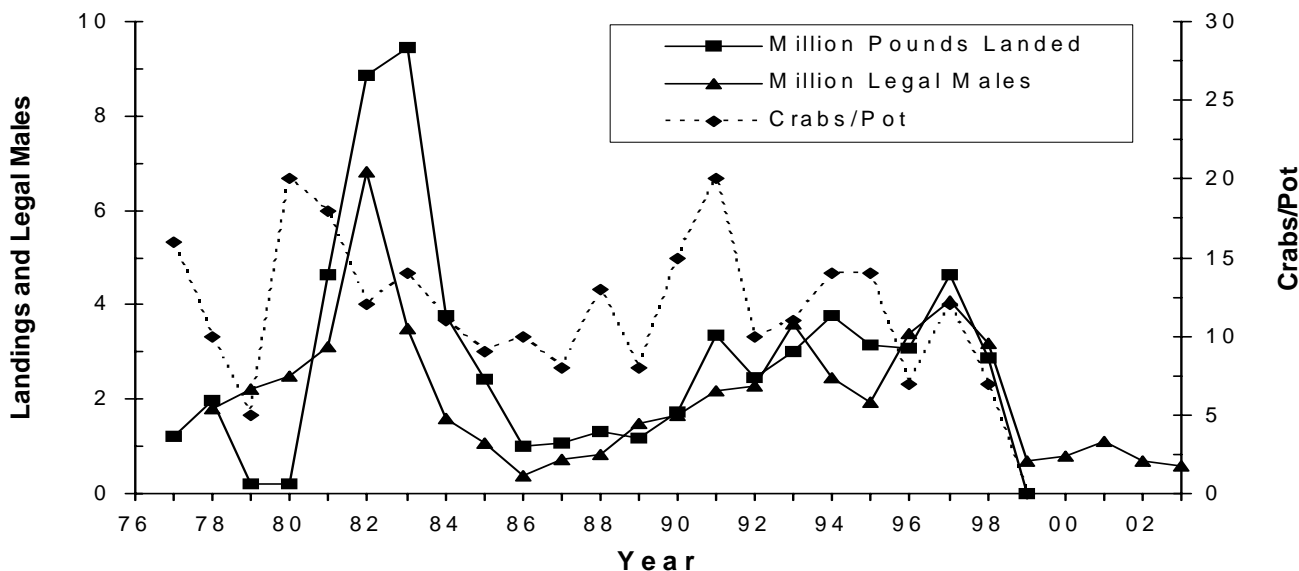


Figure 6. U.S. landings in millions of pounds, CPUE as crabs/pot-lift, and the abundance of legal blue king crabs (*P. platypus*) in millions in the Northern District (St. Matthew Island), estimated from NMFS trawl surveys.

mated. From 1996 to 1998, a combined fishery for red and blue king crabs in the Pribilof District opened on September 15. However, due to low abundance of blue king crab (see next section), the combined fishery has not opened since 1998. Historically, red king crab have not been abundant in the Pribilof Islands and landings were taken incidentally during the blue king crab fishery. Although this stock is not considered overfished under provisions of the MSFCMA, the fishery will remain closed due to the desire to avoid bycatch of blue king crab that mingle in the same grounds, and due to the extremely low precision of the abundance estimates. In the absence of a St. Matthew fishery, effort levels were also feared to be excessive.

### Pribilof Islands Blue King Crab (*P. platypus*)

Legal ( $\geq 6.5$  in cw or 135 mm cl) males

were found primarily east of St. Paul Island (Chart 2 and Table 8A). The abundance index for legal males was 0.2 million (Table 2 and Figure 4), and well below the average for the previous 20 years (0.7 million). The index (0.015 million crab) of pre-recruits (110-134 mm cl) is down 21% relative to last year. The abundance of small males ( $< 110$  mm cl), is very difficult to determine. Size-frequency data (Figure 5) are very sparse and only 13 legal males were captured. All of these were oldshells and older.

The abundance index (1.1 million crabs) for large ( $\geq 90$  mm cl) females showed an 11% decrease from last year. However, estimates of female abundance are usually very imprecise due to the preference of these crab for rocky habitat which is not well sampled by trawls. Among sampled mature females, none were softshell, 25% were new



Table 3. Annual abundance estimates (millions of crabs) for blue king crab (*P. platypus*) in the Northern District (St. Matthew Island) from NMFS surveys.

Carapace Length(mm) Width(in)	Northern District							Grand Total
	Males				Females			
	Small <105 <4.3	Pre-recruit 105-119 4.3-5.4	Legal ≥120 ≥5.5	Total	Small <80 <3.8	Large ≥80 ≥3.8	Total	
1983	1.8	1.6	3.5	6.9	0.2	2.4	2.7	9.6
1984	1.4	0.6	1.6	3.6	0.2	0.5	0.7	4.3
1985	0.5	0.4	1.1	1.9	0.1	0.1	0.2	2.1
1986	0.6	0.4	0.4	1.4	0.3	0.1	0.3	1.7
1987	1.1	0.7	0.7	2.5	0.5	0.2	0.7	3.2
1988	1.4	0.7	0.8	2.9	0.9	0.8	1.7	4.6
1989	4.8	1.0	1.5	7.3	1.6	1.7	3.3	10.5
1990	1.4	0.8	1.7	3.9	0.4	0.2	0.6	4.5
1991	2.9	1.5	2.2	6.6	0.8	0.7	1.5	8.1
1992	2.3	1.5	2.3	6.0	0.9	0.4	1.3	7.4
1993	4.6	2.0	3.6	10.2	1.4	3.0	4.4	14.6
1994	1.5	1.4	2.5	5.4	0.1	0.4	0.5	5.9
1995	1.9	1.1	1.9	4.9	0.6	0.1 <sup>1</sup>	0.7	5.6
1996	2.6	2.0	3.4	8.0	1.1	0.9	2.0	10.0
1997	2.5	2.3	4.1	8.8	0.6	0.9	1.5	10.3
1998	2.4	1.8	3.2	7.4	0.6	0.5	1.2	8.6
1999	0.6	0.2	0.7	1.5	0.3	0.0 <sup>1</sup>	0.3	1.8
2000	0.6	0.3	0.8	1.7	0.1	0.1	0.2	1.9
2001	0.8	0.6	1.1	2.5	0.3	0.2	0.5	2.9
2002	0.2	0.2	0.7	1.1	0.0	0.1 <sup>1</sup>	0.1	1.2
2003	1.4	0.3	0.6	2.3	0.3	0.8	1.0	3.3
<u>Limits<sup>2</sup></u>								
Lower	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Upper	3.4	0.7	0.9	4.8	0.7	1.7	2.4	7.3
±%	142	112	56	109	156	131	135	117

<sup>1</sup> These estimates have low precision since few crabs were caught.

<sup>2</sup> Mean ± 2 standard errors for most recent year.

### Blue King Crab Length Frequency Northern District

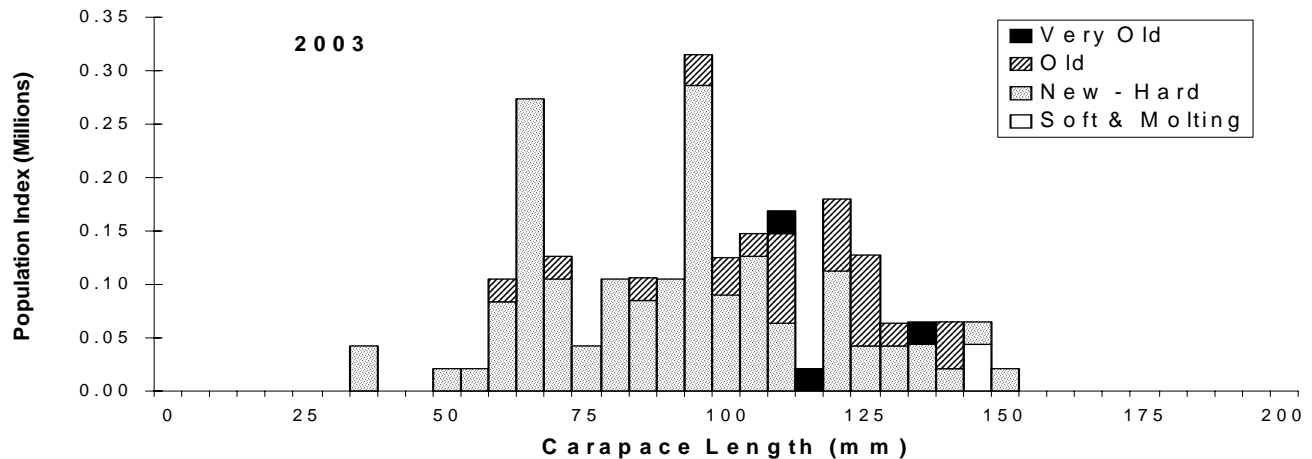
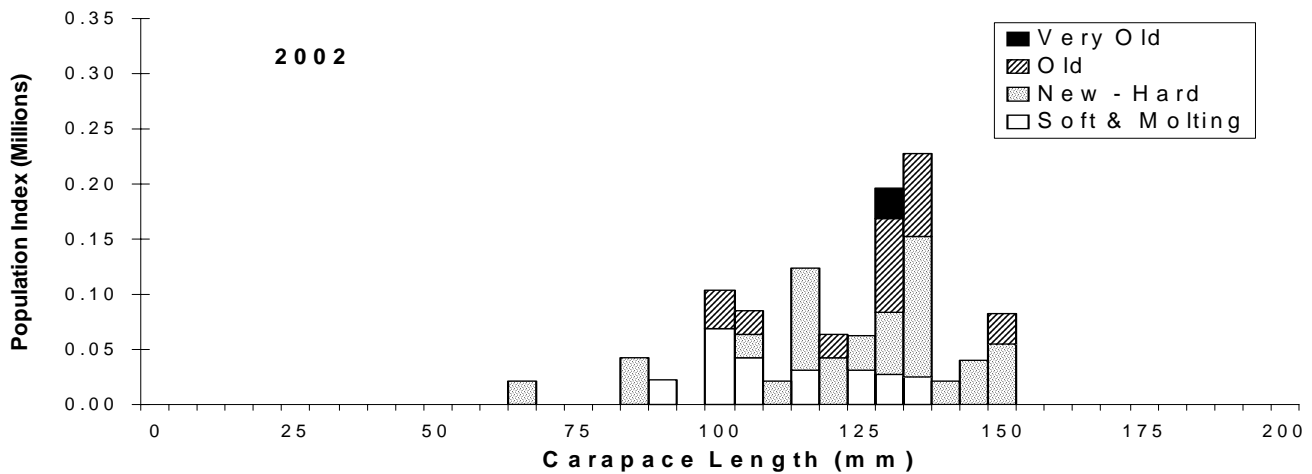
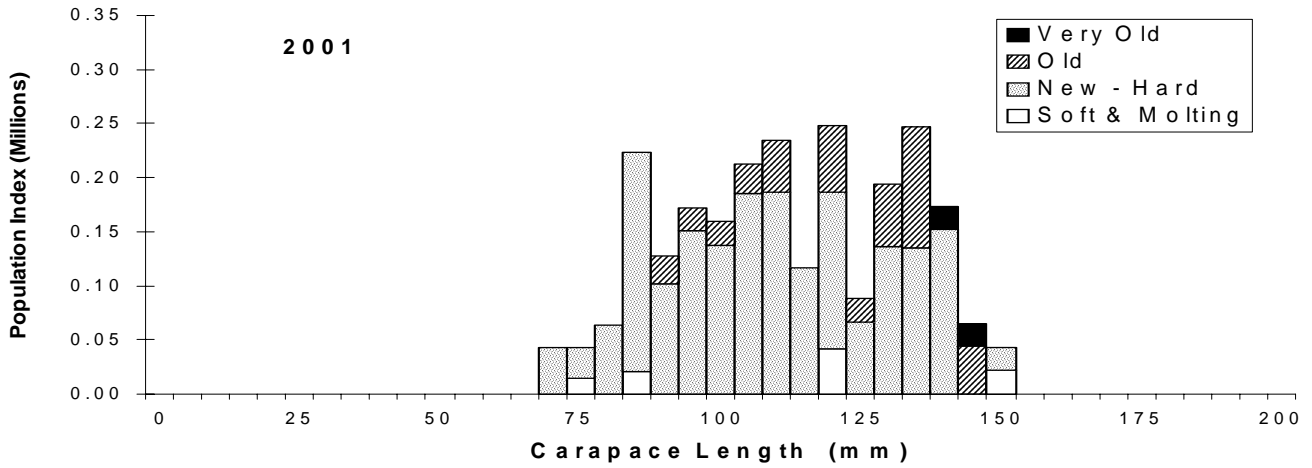


Figure 7. Size-frequency of Northern District (St. Matthew Island) male blue king crab (*P. platypus*), by 5 mm length classes, 2001-2003.

## Tanner Crab Eastern District

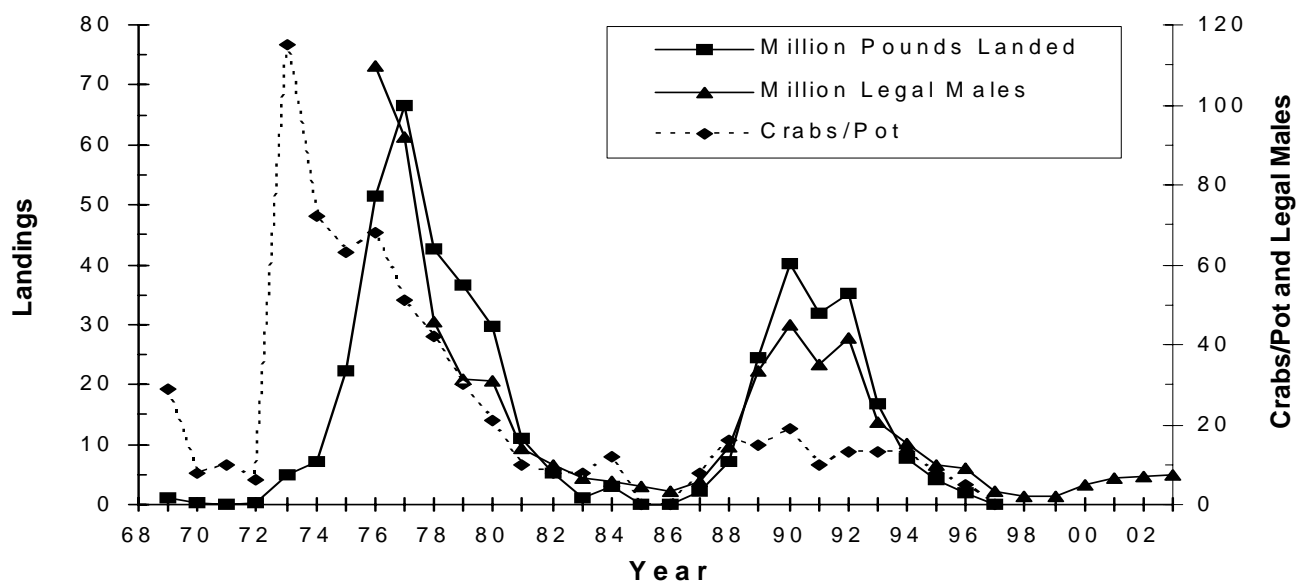


Figure 8. U.S. landings in millions of pounds, CPUE as crabs/pot-lift, and the abundance of legal male Tanner crab (*C. bairdi*) in millions in the Bristol Bay and Pribilof Districts (prior to 1989) or the Eastern District (since 1989), estimated from NMFS trawl surveys.

hardshells, of which 100% carried new eggs, and 75% were oldshells, of which 100% carried empty embryo cases. Blue king crab are predominantly biennial spawners. Only a portion of the female population spawns in a given year, while the remainder is in a non-embryo-bearing phase. This fishery was closed from 1988 through 1994 due to low stock abundance, then re-opened from 1995-1998. The fishery has been closed since then. The population is at an extremely low historical abundance (Figure 4), and trends are not easily detectable. Total mature biomass is below MSST and the stock has fallen into the "overfished" category. The fishery remained closed in 2002 because of low stock abundance since both ADF&G catch-survey analysis and the NMFS survey estimates of mature male abundance are well below the 0.77 million crab level established as a threshold in the ADF&G harvest strategy.

### St. Matthew Island Blue King Crab (*P. platypus*)

Legal ( $\geq 5.5$  in cw or 120 mm cl) males were captured primarily southwest of St. Matthew Island (Chart 2 and Table 8B). The abundance index for legal males was 0.6 million crabs (Table 3 and Figure 6), essentially unchanged from last year. The abundance index (0.3 million) of pre-recruit crabs (105-119 mm cl) increased 47% from last year. Legal and pre-recruit male abundance indices are still well below their averages for the previous 20 years (1.9 and 1.1 million, respectively). Size-frequency is shown in Figure 7. Only 10 legal males were captured. The index for large females ( $\geq 80$  mm cl) is poorly determined due to a habitat preference for inshore, rocky and untrawlable grounds. Only 35 large females were captured. Due to low stock abundance, the fishery has not opened since the 1998 opening. This stock is considered overfished un-

Table 4. Annual abundance estimates (millions of crabs) for Tanner crabs (*C. bairdi*) from NMFS surveys. Data since 1988 are for Eastern District; all prior data for Bristol Bay and the Pribilof Districts; both areas contain virtually all legal males.

Carapace Width(mm) Width(in)	Males				Females			Grand Total
	Small	Pre-recruit	Legal	Total	Small	Large	Total	
	<110 <4.3	110-137 <sup>1</sup> 4.3-5.4	≥138 <sup>1</sup> ≥5.5		<85 <3.4	≥85 ≥3.4		
1983	141.8	38.1	5.1	185.0	180.1	45.4	225.5	410.5
1984	82.5	24.9	4.7	112.1	107.0	33.4	140.4	252.5
1985	29.8	11.4	3.9	45.0	24.2	15.6	39.8	84.8
1986	109.0	14.7	2.6	126.4	68.2	13.7	81.9	208.3
1987	229.9	22.0	5.9	257.8	192.4	35.5	227.8	485.6
1988	287.3	62.8	14.3	364.4	184.8	81.0	265.8	630.2
1989	403.0	110.9	33.6	547.5	338.6	63.8	402.4	949.9
1990	286.1	87.4	45.1	418.6	266.5	97.4	363.9	782.5
1991	267.2	115.8	35.1	418.1	232.1	116.8	348.9	767.0
1992	121.0	112.7	41.8	275.5	98.9	63.9	162.8	438.3
1993	76.6	70.5	20.6	167.7	57.6	29.6	87.2	254.9
1994	47.9	43.2	15.4	106.6	57.9	27.5	85.4	192.0
1995	40.4	35.7	10.0	86.1	66.6	37.2	103.8	189.9
1996	52.6	26.7	9.2	88.5	59.3	27.7	87.1	175.6
1997	66.5	10.0	3.4	80.0	71.1	10.1	81.2	161.2
1998	75.3	12.3	2.2	89.7	62.4	6.6	69.0	158.7
1999	202.4	15.1	2.1	219.5	128.7	17.2	145.9	365.4
2000	104.1	18.2	5.0	127.3	80.6	13.7	94.3	221.6
2001	290.1	17.7	6.5	314.3	284.0	13.5	297.5	611.7
2002	204.6	15.2	7.0	226.8	200.4	10.5	210.9	437.6
2003	217.5	24.7	7.4	249.6	184.1	15.1	199.2	448.8
<u>Limits<sup>2</sup></u>								
Lower	132.7	17.1	3.1	162.3	97.6	9.8	111.5	215.4
Upper	302.4	32.4	11.7	337.0	270.6	20.4	286.8	623.8
±%	39	31	58	35	47	35	44	52

<sup>1</sup> Values prior to 1987 are interpolated from 5 mm width classes.

<sup>2</sup> Mean ± 2 standard errors for most recent year.

### Tanner Crab Width Frequency Eastern District

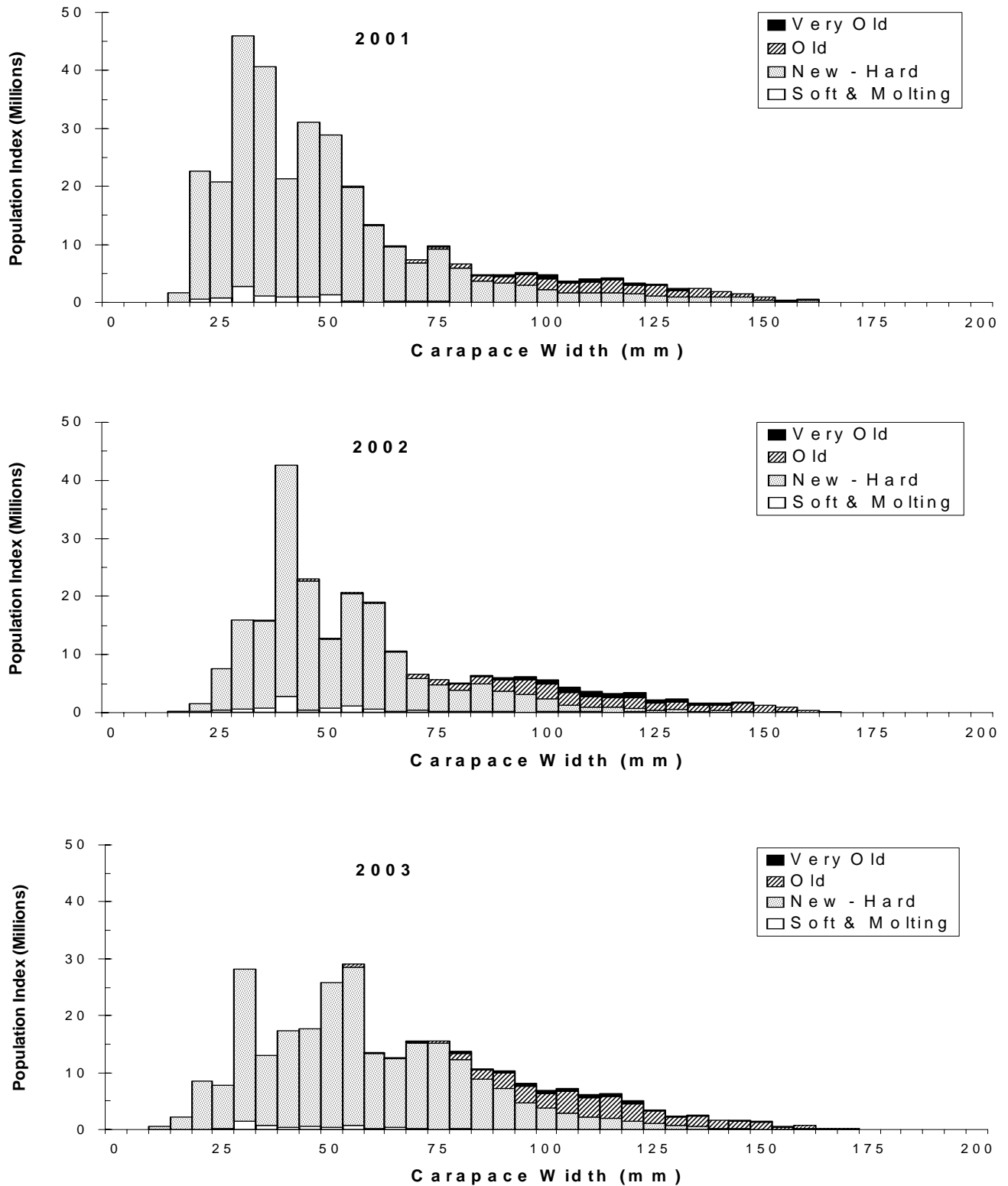


Figure 9. Size-frequency of male Tanner crab (*C. bairdi*) in the Eastern District, by 5 mm width classes, 2001-2003.

## Snow Crab All Districts

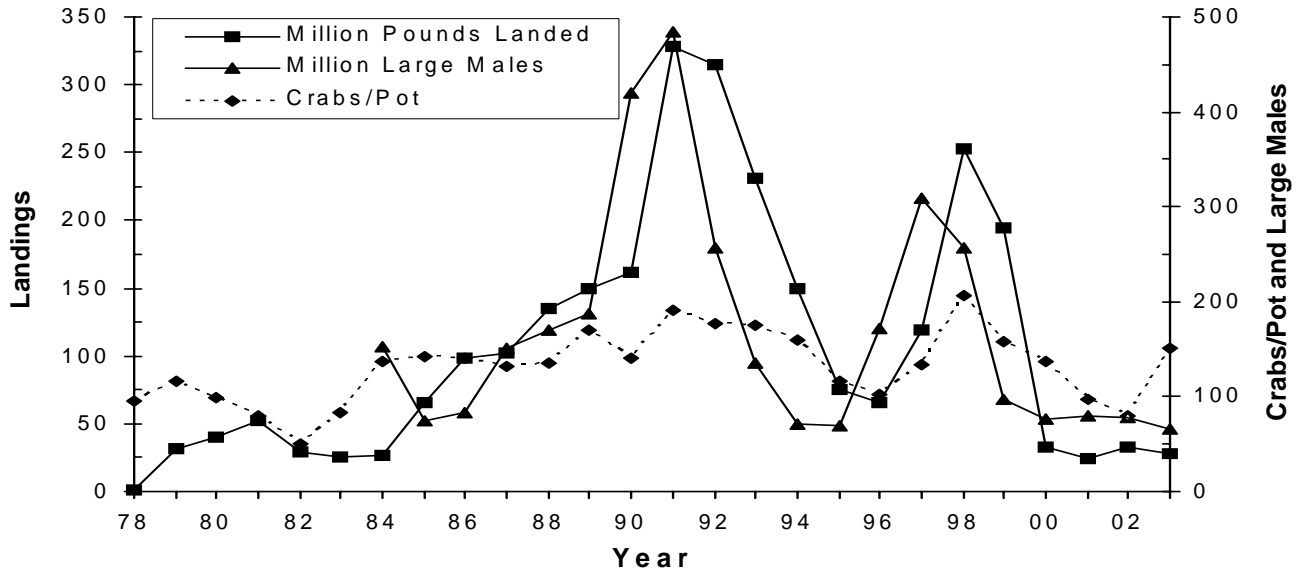


Figure 10. U.S. landings in million of pounds, CPUE as crabs/pot-lift, and the abundance of large male snow crab (*C. opilio*) in millions (all districts combined), estimated from NMFS trawl surveys.

der the provisions of the MSFCMA and rebuilding plan.

### Tanner Crab (*C. bairdi*)

The legal minimum size of 5.5 in cw (spine tip to spine tip) is equivalent to 138 mm cw measured between the spines (scientific measure). Legal males were sparsely distributed with regions of highest abundance in southwest Bristol Bay (Chart 3 and Table 9). The abundance index for legal male *C. bairdi* in the Eastern District (east of 173° W) was 7.4 million crabs (Table 4 and Figure 8), a 6% increase from last year although still only slightly more than one-half of the 13.9 million crab 20-year average. Virtually all the legal males occurred in the Eastern District. The abundance index (24.7 million) for pre-recruit crabs (110-137 mm cw) showed a 62% increase, and the index of 217.5 million for small males (< 110 mm cw) showed a 6% increase. The 2003 male size-frequency reveals a prominent

mode in the 50-60 mm cw range (Figure 9). It is often difficult to follow these modes to larger widths in subsequent survey years. Among legal males, 11% were new-hardshells, and 89% were oldshell and older. Most old-shell crab will not molt again during their lifespan. The abundance index (15.1 million) of large ( $\geq 85$  mm cw) females showed a 44% increase. Among sampled mature females, 6% were softshells; 46% were new-hardshells, of which 98% carried new eggs; and 48% were oldshell and older, of which 96% carried new eggs. All mature females sampled had completed hatching by the time of the survey.

The fishery has been closed since 1996 due to low abundance and it will remain closed in 2003. The estimated spawning biomass for this stock has been below the MSST since 1997. The fishery will remain closed this year under the rebuilding plan for the Bering Sea *C. bairdi* stock that has been approved by the Alaska Board of Fisheries and the North

Table 5. Annual abundance estimates (millions of crabs) for eastern Bering Sea snow crabs (*C. opilio*) from NMFS surveys (all districts combined).<sup>1</sup>

Carapace Width(mm) Width(in)	Males				Females			Grand Total
	Small	Pre-recruit	Large	Total	Small	Large	Total	
	<78 <3.1	78-101 3.1-3.9	≥102 ≥4.0		<50 <2.0	≥50 ≥2.0		
1983	1292.1	490.7	75.3	1858.1	673.1	1228.5	1901.6	3759.7
1984	912.0	325.5	153.2	1390.6	610.5	581.7	1192.2	2582.8
1985	420.2	127.6	74.9	622.6	258.2	123.5	381.7	1004.3
1986	1039.8	139.2	83.1	1262.0	790.6	422.0	1212.6	2474.6
1987	4070.5	405.2	144.4	4620.0	2903.0	2795.0	5698.0	10318.0
1988	2996.3	470.9	171.0	3638.2	1235.3	2322.7	3558.0	7196.2
1989	2823.7	822.4	187.1	3833.1	1922.8	3790.7	5713.5	9546.6
1990	1834.5	1025.9	420.3	3280.7	1463.3	2798.1	4261.4	7542.1
1991	3277.4	693.8	484.1	4455.3	3289.0	3575.0	6863.9	11319.2
1992	2827.0	331.4	256.4	3414.8	2433.9	1914.3	4348.2	7763.0
1993	5345.9	250.7	135.0	5731.5	3989.8	1982.6	5972.4	11703.9
1994	4027.6	254.9	71.6	4354.0	3417.6	1674.3	5091.8	9445.8
1995	3607.7	479.0	68.8	4155.5	2090.3	2409.4	4499.7	8655.2
1996	1815.2	884.9	171.6	2871.7	1189.0	1364.2	2553.2	5424.9
1997	800.5	722.4	309.0	1831.9	955.6	1428.3	2383.9	4215.8
1998	666.3	359.7	257.3	1283.3	813.5	1174.4	1988.0	3271.3
1999	396.8	127.4	96.6	620.8	320.7	484.3	805.0	1425.7
2000	916.5	133.3	77.0	1126.9	657.1	1511.7	2168.8	3295.7
2001	1550.2	287.7	79.3	1917.2	480.9	1564.6	2045.5	3962.7
2002	496.1	253.1	77.5	826.7	180.5	510.5	691.0	1517.7
2003	1145.2	166.5	65.2	1376.9	640.0	614.0	1253.9	2630.8
East(%) <sup>2</sup>	29.5	48.5	54.9	33.0	15.5	77.9	46.1	39.2
<u>Limits<sup>3</sup></u>								
Lower	606.9	121.6	49.5	826.1	262.4	196.5	539.2	1365.3
Upper	1683.4	211.5	80.8	1927.6	1017.5	1031.5	1968.7	3896.3
±%	47	27	24	40	59	68	57	48

<sup>1</sup> Values for 1981-1983, and small and pre-recruit males for 1984, are interpolated from 5 mm width classes.

<sup>2</sup> Percent of size group in Eastern District (east of 173°).

<sup>3</sup> Mean ± 2 standard errors for most recent year.

### Snow Crab Width Frequency All Districts

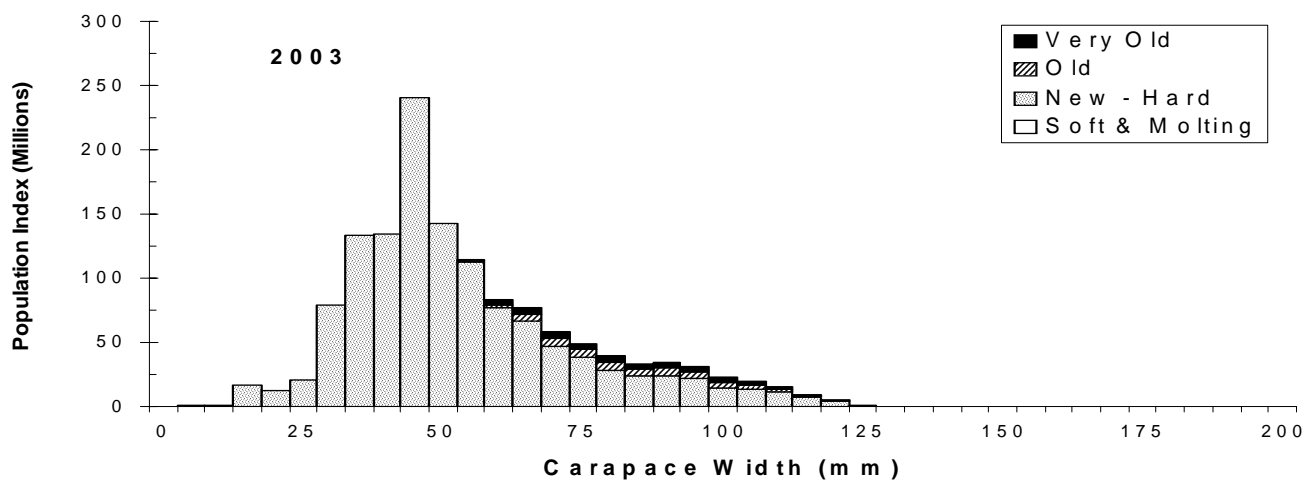
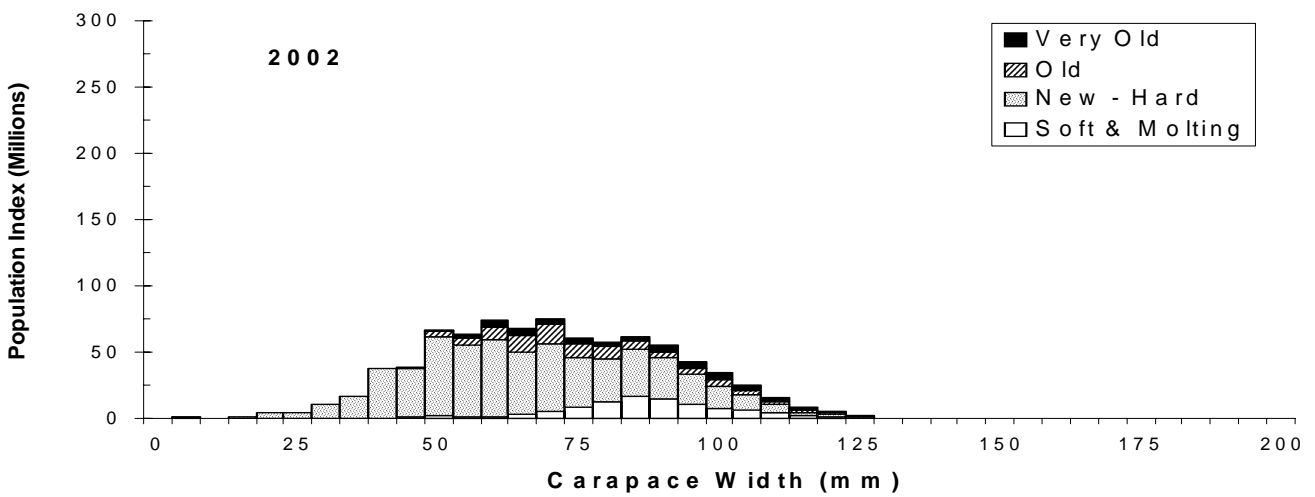
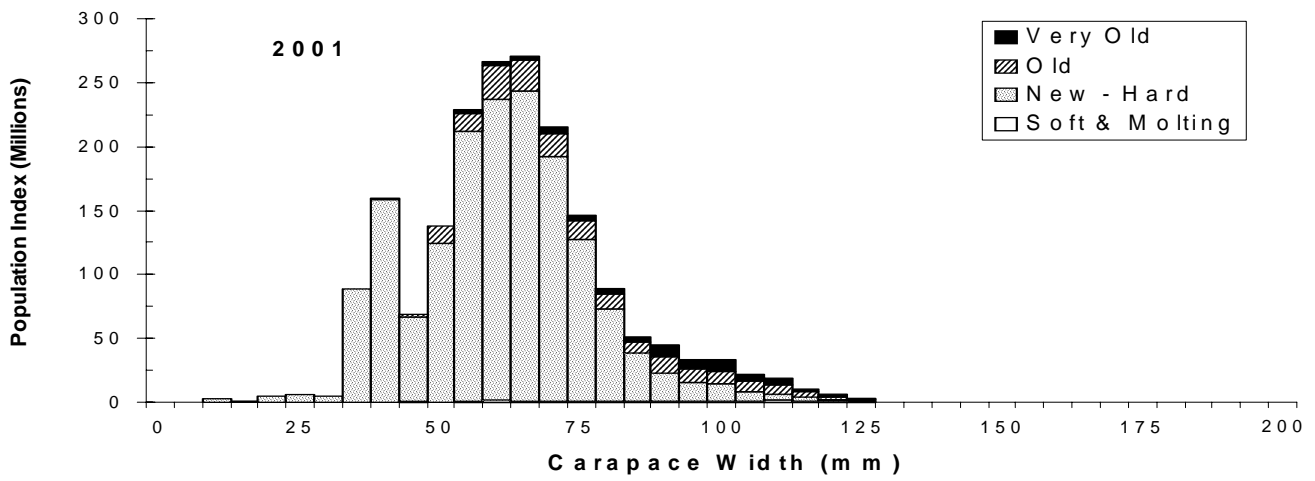


Figure 11. Size-frequency of male snow crab (*C. opilio*), all districts combined, by 5 mm width classes, 2001-2003.



## Hair Crab All Districts

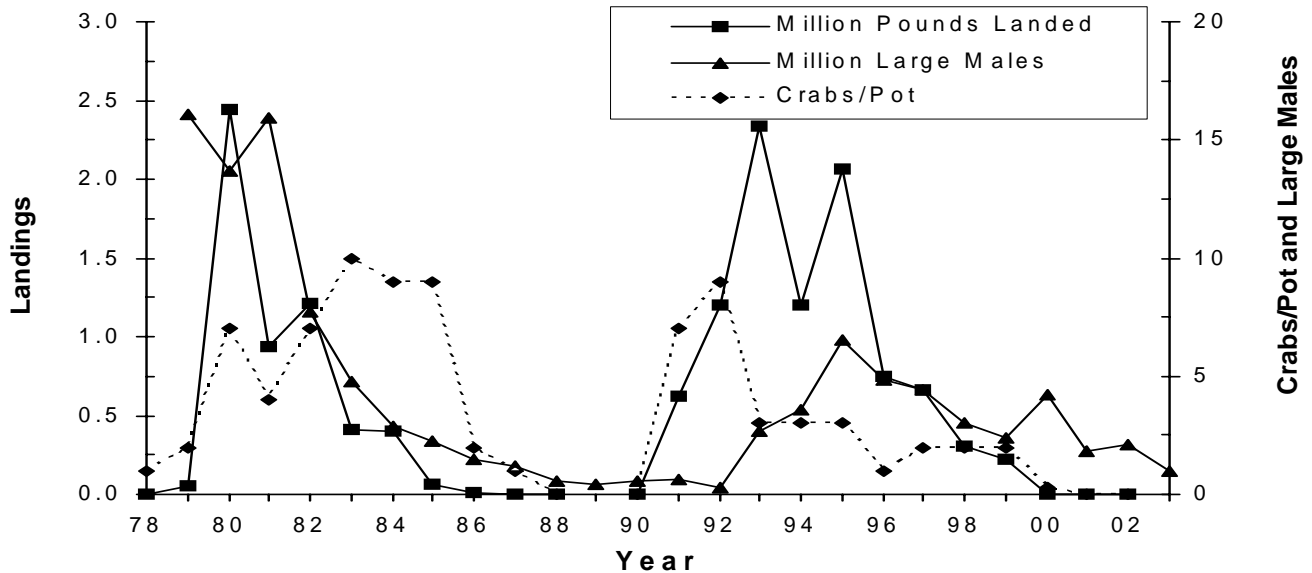


Figure 12. U.S. landings in millions of pounds, CPUE as crabs/pot-lift, and the abundance of large male hair crab (*E. isenbeckii*) in millions (all districts combined), estimated from NMFS trawl surveys.

Pacific Fishery Management Council.

### Snow Crab (*C. opilio*)

Although the legal minimum size limit for *C. opilio* is 3.1 in cw (78 mm cw), processors currently prefer a minimum size of 4.0 in cw (102 mm). The size ranges for male snow crab used in this report are defined as follows: small, < 3.1 in (78 mm); pre-recruits, 3.1-3.9 in cw (78-101 mm); and large  $\geq 4.0$  in cw (102 mm).

Large ( $\geq 102$  mm cw) males were discontinuously distributed east of the Pribilof Islands (Chart 4 and Table 10). The abundance index for large ( $\geq 102$  mm cw) males (Eastern and Western Districts combined) is 65.2 million crabs (Table 5 and Figure 10), which represents a 16% decrease from last year and is less than one-half of the 20-year average (169.7 million). Approximately 46% of these crab were in the Eastern District as compared to

46% in 2001 and 60% in 2002. Pre-recruit males (78-101 mm cw) showed a 34% decrease in abundance. The abundance index (614.0 million) for large females ( $\geq 50$  mm cw) showed a 20% increase. It can be difficult to track size-frequency modes of small and pre-recruit crabs from one year to the next (Figure 11). Among large male crabs, < 1% were in molting or softshell condition, 69% were new-hardshells indicating a recent molt, and 30% were oldshell and older. Among sampled mature females, 17% were new-hardshells, of which more than 99% carried new eggs, and 83% were oldshells and older, of which 94% carried new eggs. The remainder had not produced a new clutch.

In 2003, NMFS developed a length-based assessment model fitted to the survey time series data, and reflecting the essential population and fisheries dynamics of the species (Turnock 2003). Over the last 26 years

Table 6. Annual abundance estimates (millions of crabs) for hair crab (*E. isenbeckii*) from NMFS surveys.

Carapace Length(mm) Width (in)	Males		Females		Grand Total
	Small	Large	Total		
	<83 <3.25	≥83 ≥3.25	Total		
1983	0.2	4.4	4.6	0.8	5.5
1984	0.7	3.3	4.1	0.5	4.6
1985	0.3	2.6	2.9	0.3	3.1
1986	0.7	1.8	2.5	0.4	2.9
1987	1.6	1.3	2.9	0.9	3.8
1988	3.0	0.9	3.9	0.9	4.7
1989	11.4	1.5	12.8	0.7	13.5
1990	13.0	1.1	14.1	0.9	15.0
1991	4.5	1.3	5.7	1.2	6.9
1992	2.5	1.2	3.6	0.5	4.2
1993	9.1	2.6	11.8	1.5	13.3
1994	4.7	3.6	8.2	1.3	9.5
1995	4.6	6.5	11.1	0.7	11.8
1996	3.6	4.9	8.4	1.1	9.5
1997	1.6	4.4	6.0	0.3	6.3
1998	0.5	3.0	3.5	1.4	4.9
1999	1.5	2.4	3.9	2.0	5.8
2000	0.5	4.2	4.7	1.3	6.0
2001	0.5	1.8	2.3	2.2	4.5
2002	0.4	2.1	2.5	0.6	3.1
2003	1.3	1.0	2.3	0.5	2.8
<u>Limits<sup>1</sup></u>					
Lower	0.2	0.5	1.0	0.2	1.2
Upper	2.3	1.5	3.5	0.8	4.3
±%	82	47	54	63	55.6

<sup>1</sup> Mean ± 2 standard errors for most recent year.

### Hair Crab Length Frequency All Districts

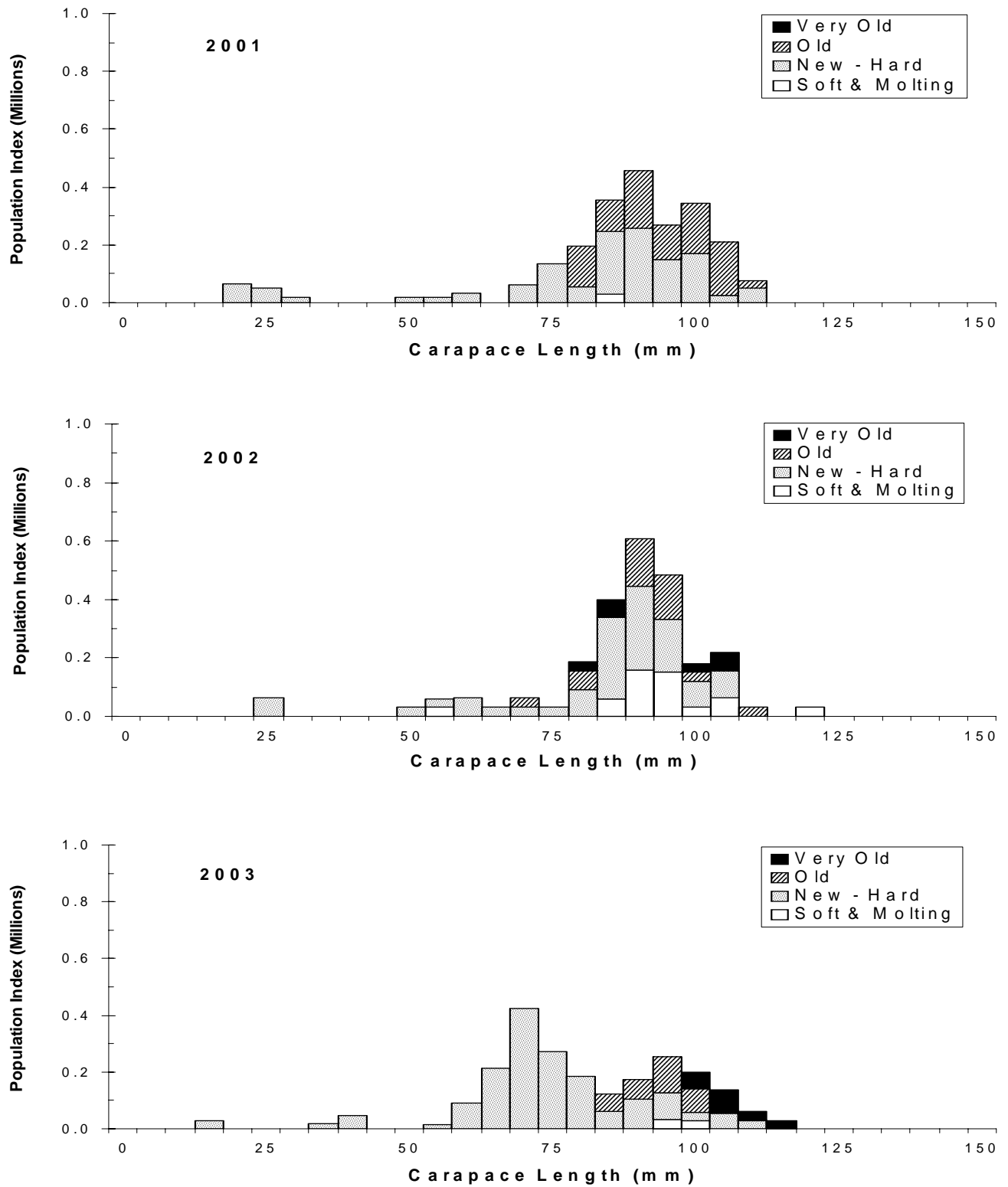


Figure 13. Size-frequency of male hair crab (*E. isenbeckii*), by 5 mm length classes, 2001-2003.

(1978-2003), resultant estimates of the recruitment of male and female crab 25 mm to 50 mm cw reveal that recruitment fell to a dramatic and historical low in 1994, and that it has since remained depressed. The future outlook of this stock is poor in light of this decade-long pattern of unprecedented low recruitment of new individuals to the stock.

The 2003 spawning stock biomass (306.2 million lbs) is below the minimum stock size threshold of 460.8 million lbs as defined in the FMP, and represents a 2% decrease relative to 2002. Expected recruitment of crabs to mature size groups apparently failed. A very restricted fishery was allowed under the current rebuilding plan for the Bering Sea *C. opilio* stock. The GHL for 2004 has been set at 20.83 million lbs (9,400 t) of large crabs ( $\geq 4.0$  in cw) of which 1.56 million lbs are for CDQ fisheries. The fishery will open on January 15, 2004. In 2003, the GHL was 25.61 million lbs while landings were 28.5 million lbs and the average CPUE for the general and CDQ fisheries was 151 crab/pot-lift.

### **Hair Crab (*Erimacrus isenbeckii*)**

Historically, hair crab have been concentrated just north of the Alaska Peninsula and near the Pribilof Islands. In recent years, however, abundance of hair crab north of 58° N lat. has been increasing (Chart 5 and Table 11). Female and small male crabs are infrequently encountered in this survey, therefore, these data provide little understanding of their distribution.

The abundance index for large ( $\geq 3.25$  in cw or  $\geq 83$  mm cl) male hair crab (Table 6 and Figure 12) is 1.0 million, a 52% decrease from last year and less than half of the 20-year average of 2.7 million. Size-frequencies (Figure 13) indicate little recruitment to the stock. The abundance index of total females is usually unreliable. Seventy-four percent of both males and females were new-hardshell crabs.

Changes in abundance indexes of hair crab are difficult to interpret due to patchy distribution, burying habits, in-shore distribution, and suspected variability in catchability between years. Further, changes in fishery practices and management over the time series decreases the usefulness of correlations between fishery and survey data (Figure 12).

The directed fishery for hair crab in the Pribilof Islands has no statutory minimum legal size regulation, so we have defined large crabs as those larger than a minimum size of 3.25 in cw that has been specified as a condition of permits during recent years. There are also no regulatory districts defined, but management is based on districts defined for red king crab (e.g., Bristol Bay, Pribilofs, and Northern districts). In 2003, there are an estimated 0.8 million lbs of large male ( $\geq 83$  mm cw) crabs in the Northern District. No fishery has occurred since 2000, and the fishery will not open in the 2003/2004 season.

### **Acknowledgments**

Successful completion of the annual EBS crab and groundfish survey is crucially dependent on the skippers and crews of the participating vessels. We wish to extend a special thanks to Rich Horak and Jeff Boddington of the F/V *Arcturus* and Norman Bakken and Jeff Boddington of the F/V *Aldebaran* and their crews.

We also wish to thank all of the people who participated in this survey, including P. Cumiskey, R. Clark, E. Munk, C. Armistead, P. Anderson, A. Schroeder, B. O'Gorman, E. Burreson and B. Mason. This document was produced by J. Corlew.

## **Citations**

Turnock, B. J. 2003. Stock assessment of eastern Bering Sea snow crab. Report to the North Pacific Fishery Management Council. 68 p. National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, Washington.

## APPENDIX A

### Methods of Estimating Crab Population Size

Population abundance indices are determined by the 'area-swept' method, using a stratified systematic sampling design. Distance traveled by the trawl was determined from positions recorded at the beginning and ending of each tow. Area fished (area swept by the trawl) was calculated by multiplying the distance traveled by the effective width of the trawl. Wingspread on this trawl ranges from 47-58 ft. For consistency with previous reports an effective width of 50 ft (15.2 m) was assumed.

All stations (grid squares) within a district or management area were used for estimating the abundance of each species. Stations where multiple (corner or repeat) tows were made were grouped into strata; these include a block of 12 stations southwest of St. Matthew Island and 16 stations around St. Paul Island.

The catch-per-unit-effort (CPUE) was calculated for each station as number of crabs per square nautical mile. Average CPUE was calculated within each multiple tow block and

each management district. Abundance indices were calculated by extrapolating the average CPUE of each size/sex group over the geographic area of each district. Variance and standard error (SE) of the index were calculated arithmetically. Confidence intervals were calculated by adding or subtracting 2 SEs to the population estimate. Note that, since the data are usually not normally distributed, variance estimates and confidence intervals are approximate. Nevertheless, they are provided in order to indicate the range of the data relative to previous years' estimates.

Threshold levels have been established for certain crab stocks by the Crab Plan Team of The North Pacific Fishery Management Council. In accordance with Alaska Board of Fisheries policy, and the Alaska Department of Fish and Game's Management Plan for Westward Region Crab stocks, such fisheries will be closed if the abundance index falls below the threshold level.

## APPENDIX B

### Crab Shell Condition

All crabs measured in the NMFS eastern Bering Sea trawl survey are coded as to shell condition. Shell condition incorporates several factors including exoskeleton discoloration, scratching and wear, and fouling by encrusting organisms, and can be used to estimate the time since a crab has last molted. The shell condition categories used in this report and the estimated times since last molting that they imply are given below:

**Molting<sup>1</sup>:** Joints swollen and/or well developed second exoskeleton present. Crab is actively molting or will molt within days.

**Softshell<sup>1</sup>:** Carapace is still soft and pliable from recent molt. Crab has molted within weeks.

**New-hardshell:** Carapace firm to hard and lacking scratches, wear, discoloration, and encrusting organisms. Crab has probably molted within the last year.

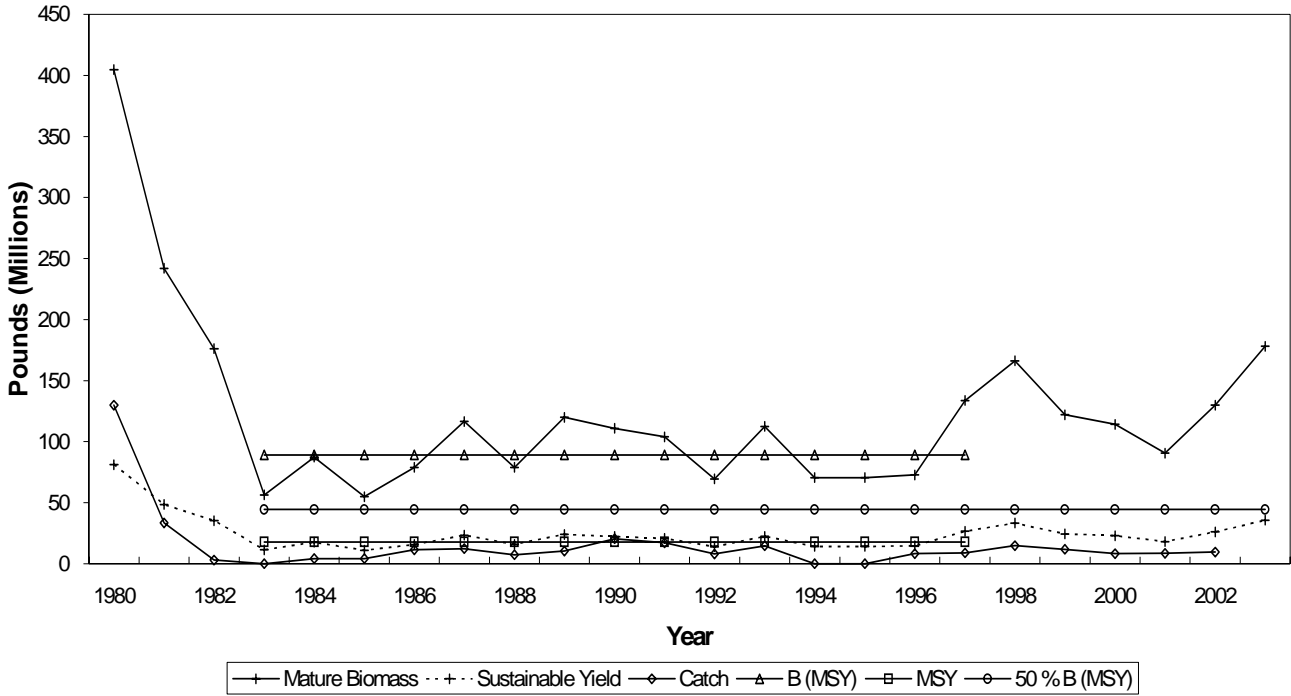
**Oldshell:** Usually has at least some scratching, spine wear. Crab may have darker coloration, and encrusting organisms are frequently present. Crab has probably not molted within the last year.

**Very oldshell:** Undersides of legs yellowed; abundant scratches and stains; spines and claws very worn; encrusting organisms almost always present and often abundant. Time since the last molting is almost certainly greater than one year but not definitely known.

**Very, very oldshell:** Shells extensively stained and usually with extensive cover of encrusting organisms. Time since the last molting not definitely known.

<sup>1</sup> Note that in the report, Molting and Softshell categories are frequently combined. The time span over which these conditions occur in a crab is only a matter of weeks. A high percentage of molting and softshell crabs in a survey population indicates that the molting season is not yet over.

**Bristol Bay Red King Crab  
History Relative To Overfishing**



**Pribilof Island Red King Crab  
History Relative To Overfishing**

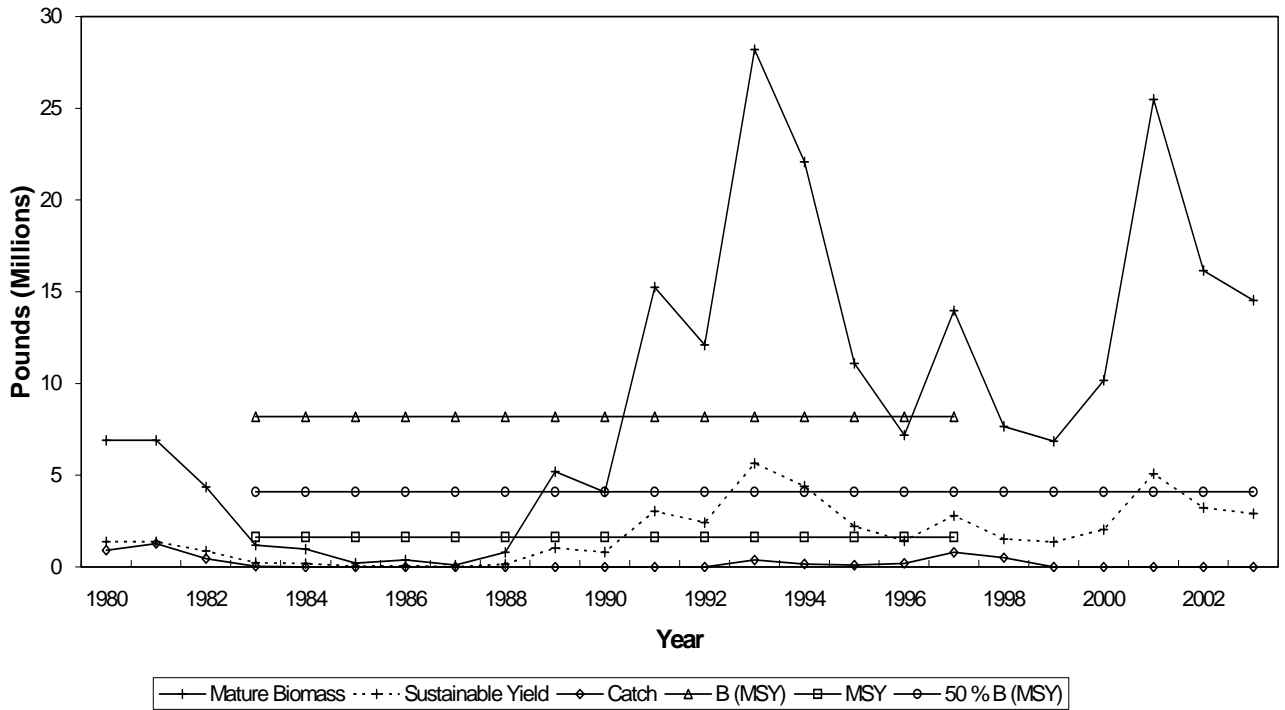
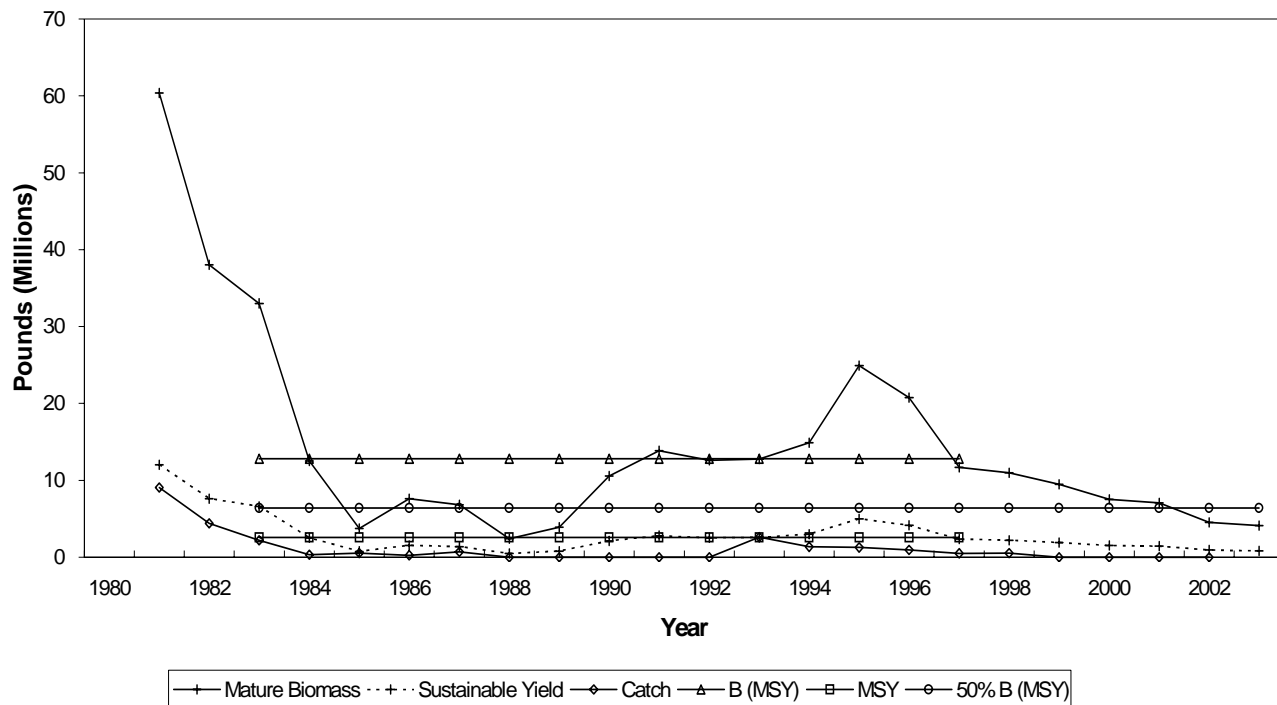


Figure 14. History of Bristol Bay and Pribilof Islands red king crab fisheries relative to overfishing under the Magnuson-Stevens Fishery Conservation and Management Act. Stocks are considered overfished if mature biomass is below 50% MSY.



**Pribilof Islands Blue King Crab  
History Relative To Overfishing**



**St. Matthew Island Blue King Crab  
History Relative To Overfishing**

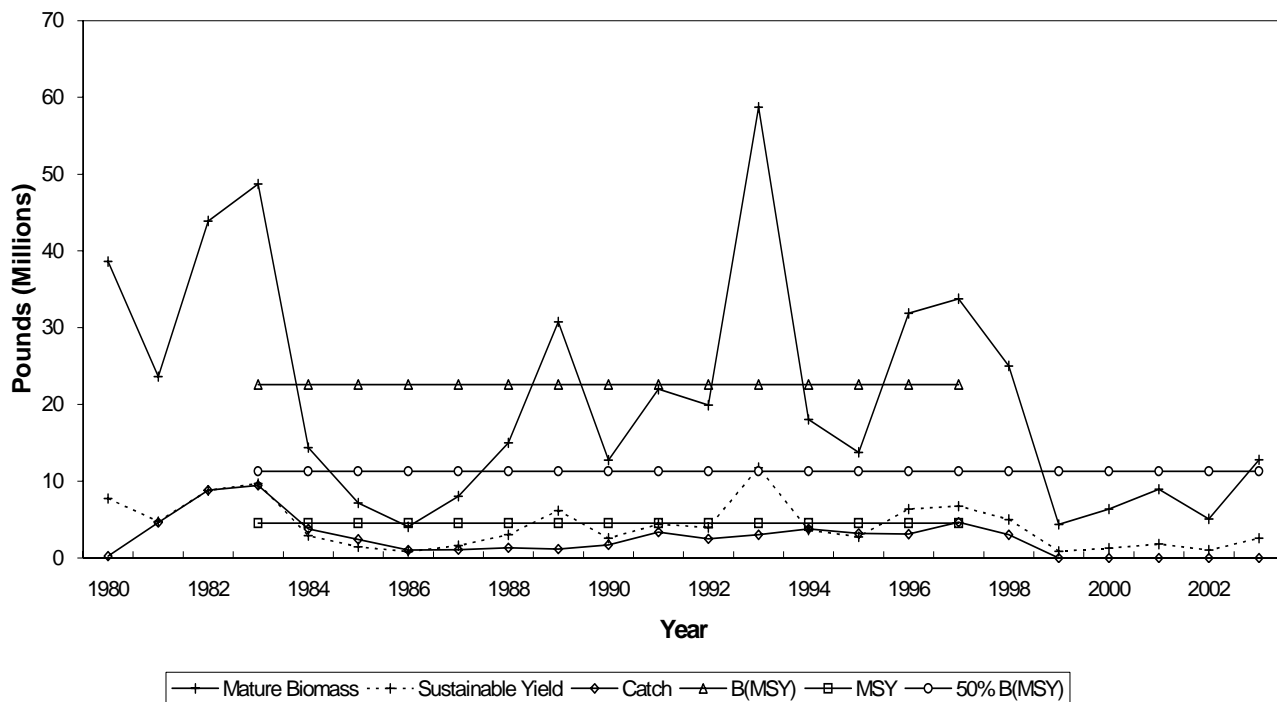
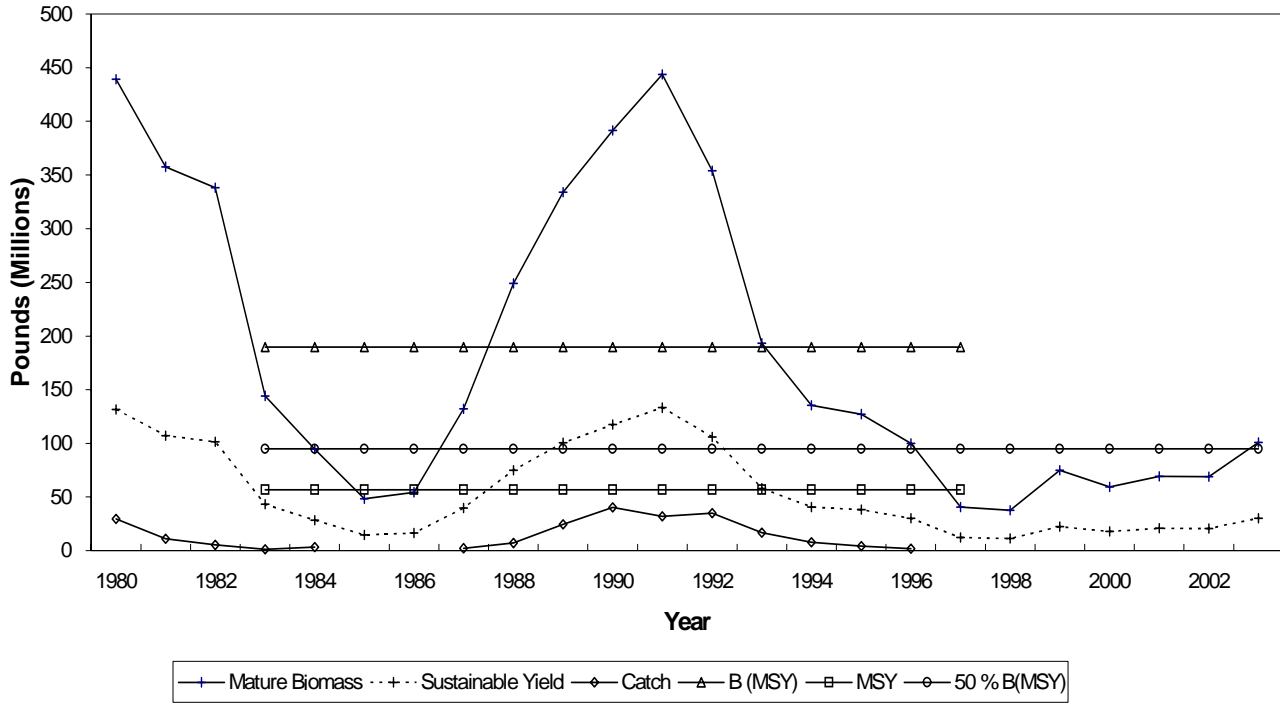


Figure 15. History of Pribilof Islands and St. Matthew Island blue king crab fisheries relative to overfishing under the Magnuson-Stevens Fishery Conservation and Management Act. The St. Matthew Island stock is considered overfished because mature biomass falls below 50% MSY.

**Whole EBS Tanner Crab  
History Relative To Overfishing**



**Whole EBS Snow Crab  
History Relative To Overfishing**

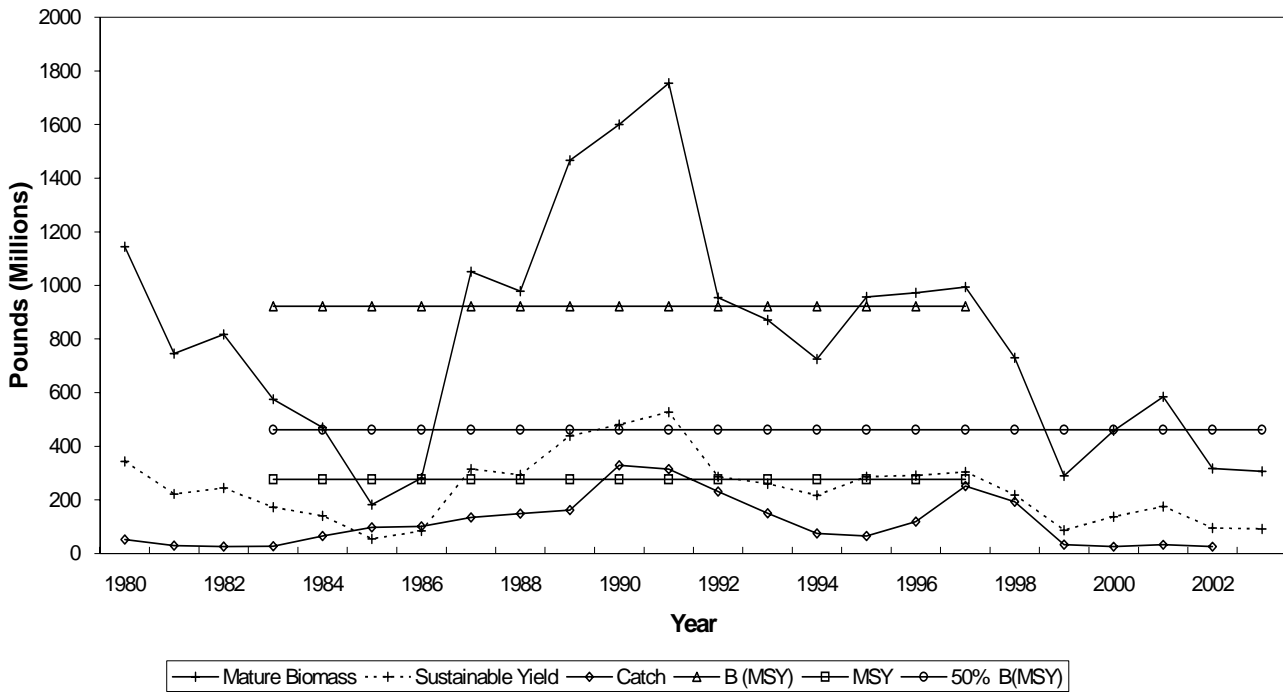
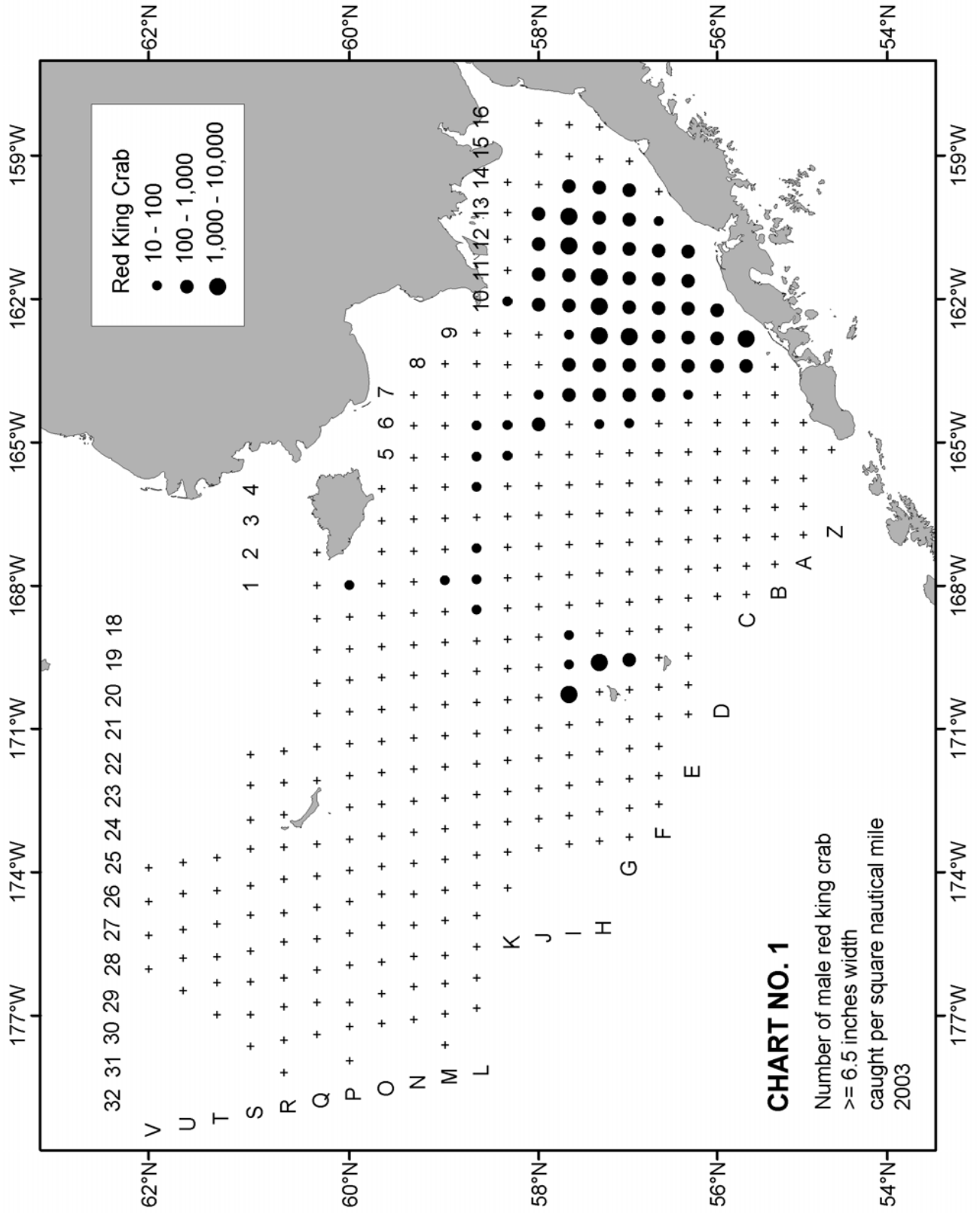
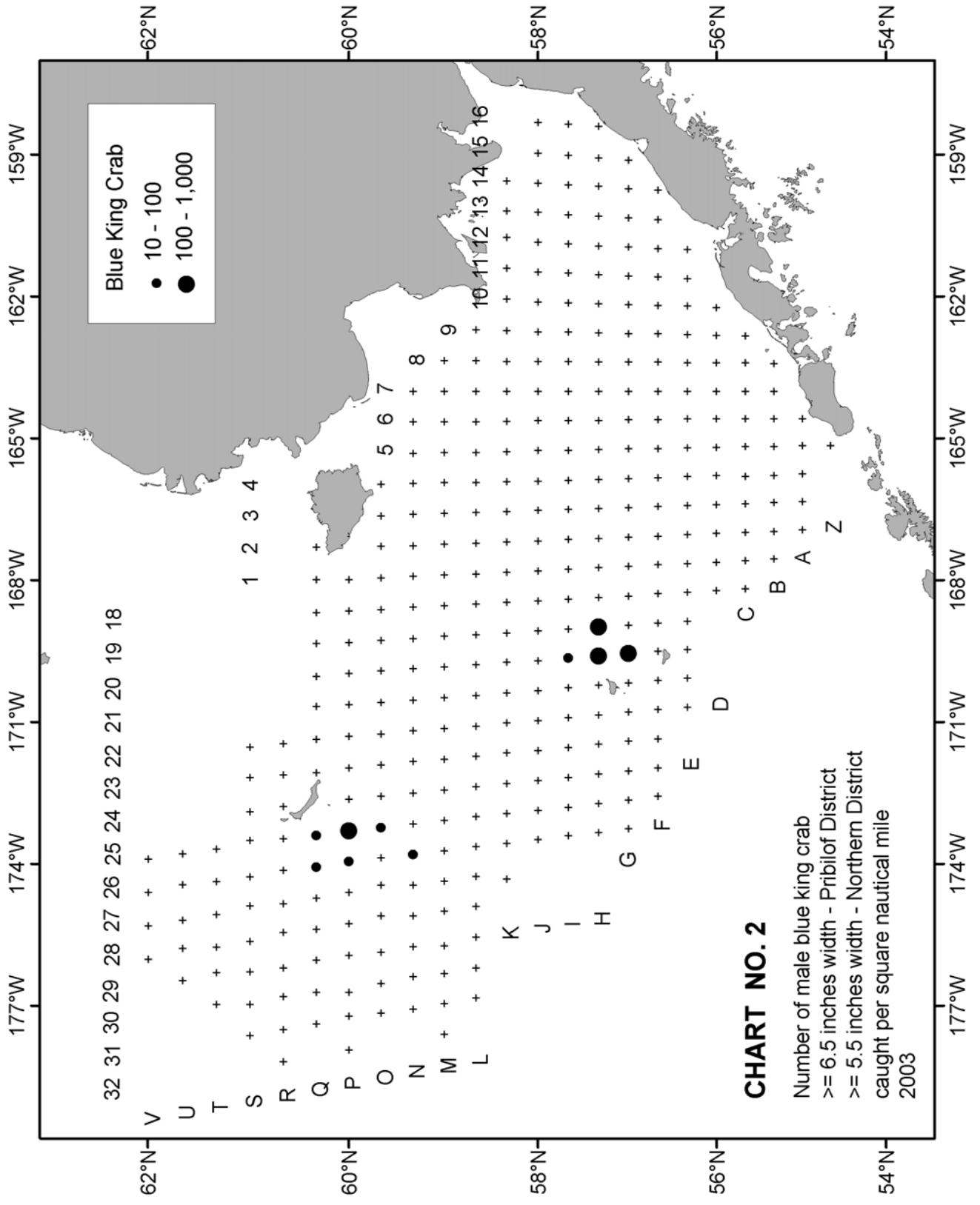
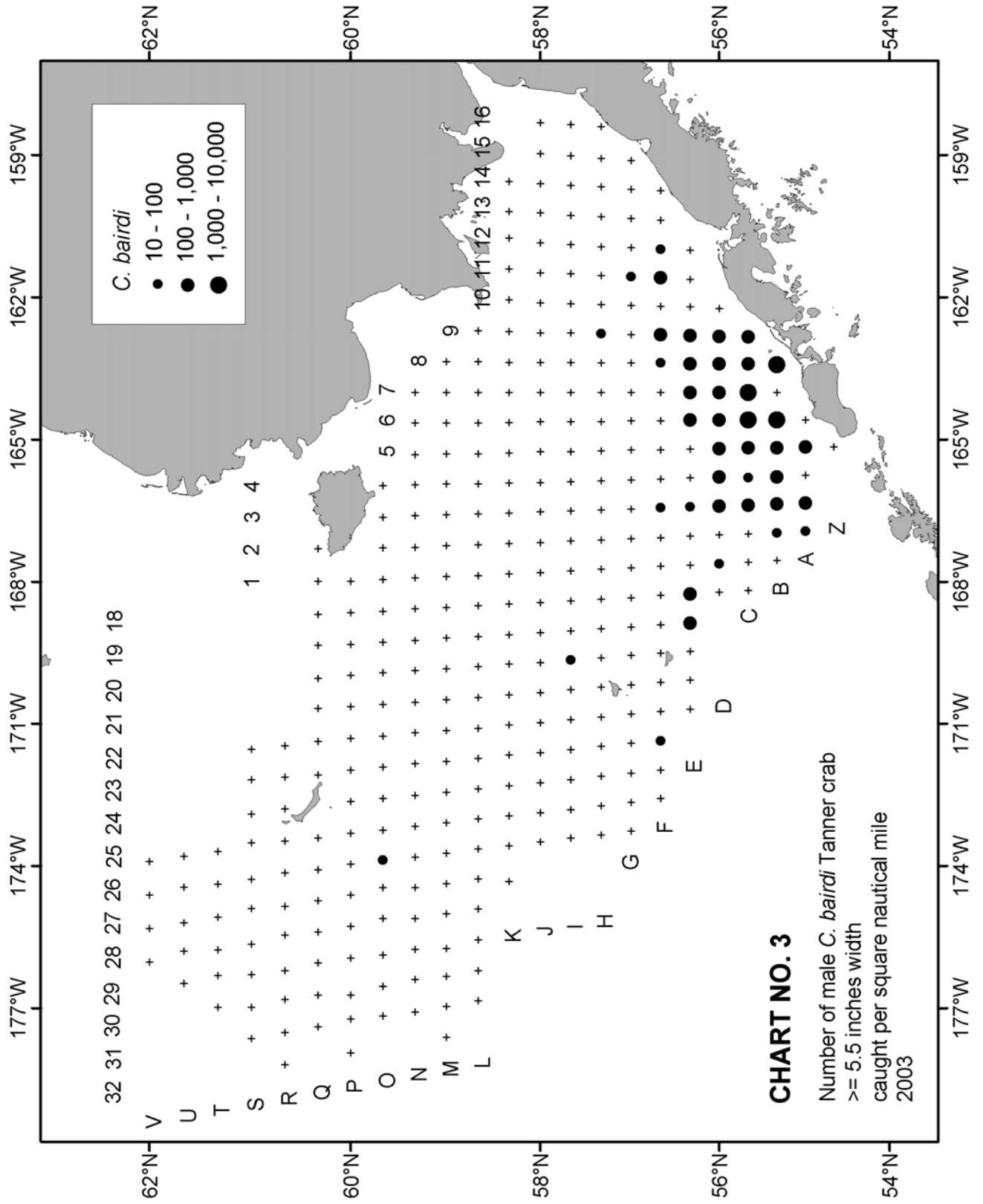
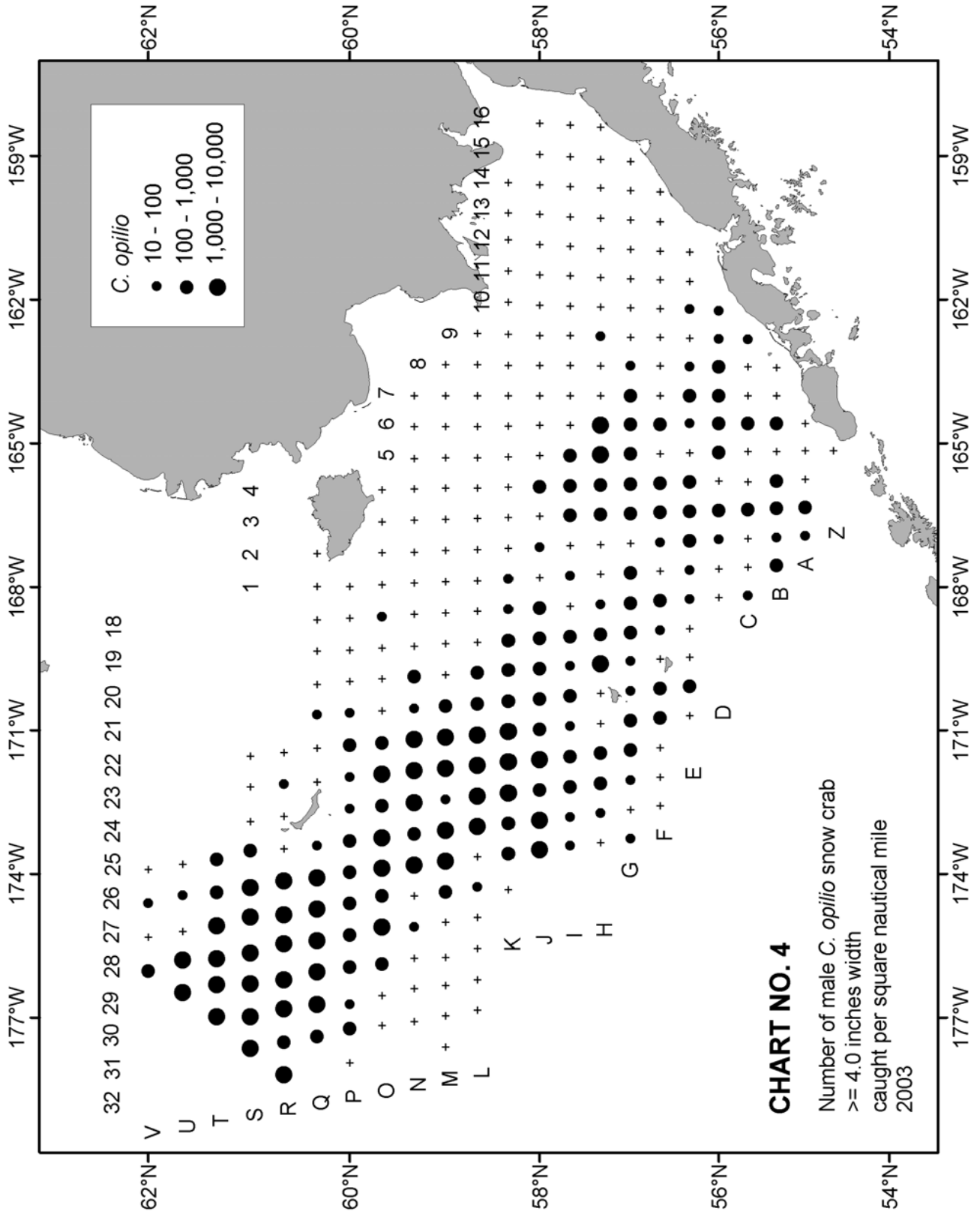


Figure 16. History of eastern Bering Sea Tanner and snow crab fisheries relative to overfishing under the Magnuson-Stevens Fishery Conservation and Management Act. Both stocks are considered overfished because mature biomass is below 50% MSY.



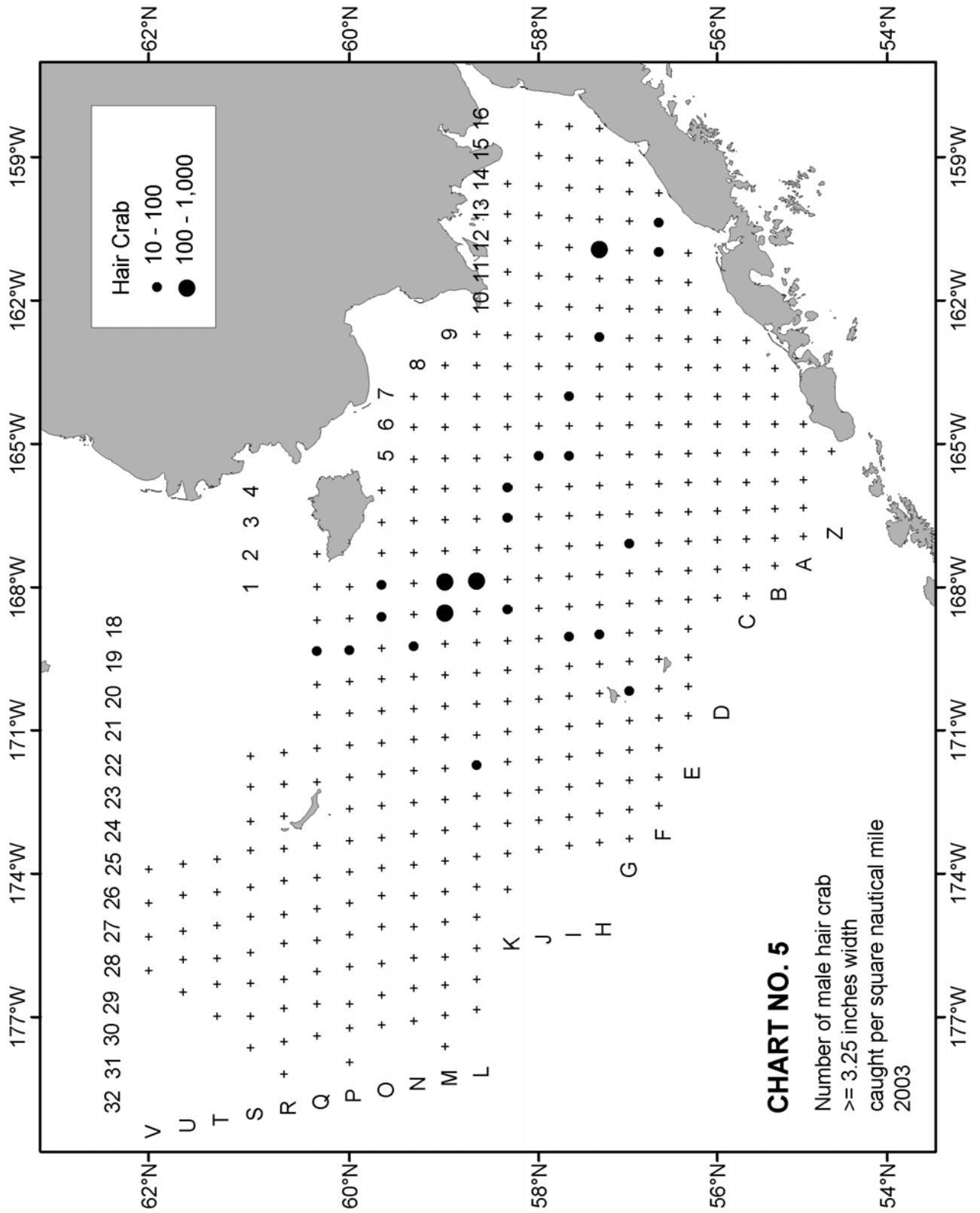






**CHART NO. 4**

Number of male *C. opilio* snow crab  
 >= 4.0 inches width  
 caught per square nautical mile  
 2003



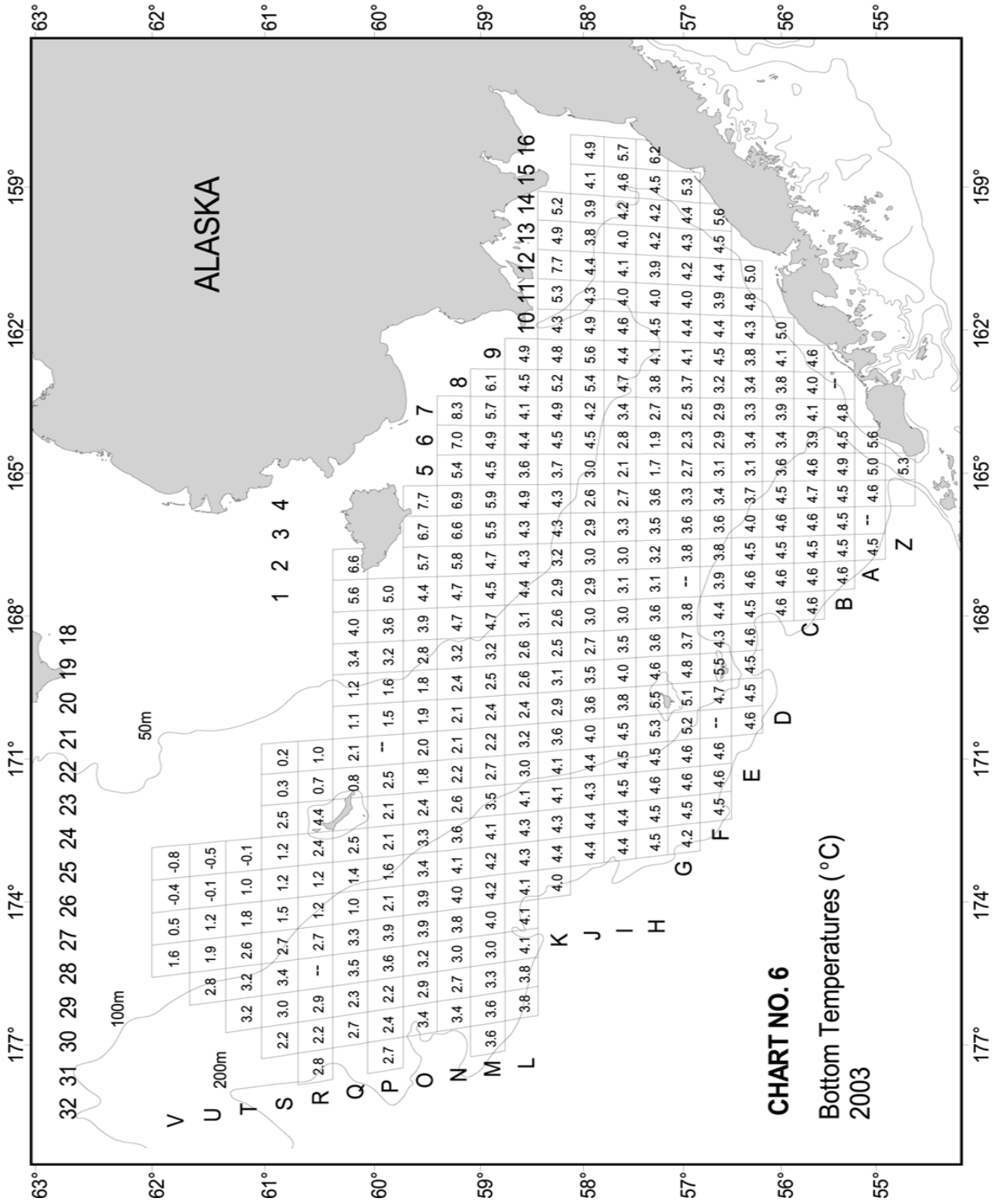




Table 7. Summary of crab density by tow (# per square nmi) for Red King Crab. (*Paralithodes camtschaticus*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
B08	55 19.7	163 24.7	25	0	0	0	636	0	636	636
C08	55 39.9	163 23.1	43	337	0	0	337	0	337	337
C09	55 40.5	162 50.2	26	1242	580	83	1904	0	1904	1904
D08	55 59.5	163 24.1	47	155	0	5723	5878	4022	9281	15159
D09	55 59.6	162 49.7	40	319	0	398	717	1673	1832	2549
D10	55 59.8	162 14.3	37	161	0	643	803	241	964	1768
E07	56 20.4	163 57.9	45	85	85	0	171	0	0	171
E08	56 20.1	163 25.0	45	330	165	3138	3634	2643	4542	8176
E09	56 20.3	162 47.5	40	155	0	1317	1472	2015	2480	3952
E10	56 20.2	162 11.7	42	240	400	1280	1919	1840	2879	4799
E11	56 19.8	161 37.8	33	748	249	249	1247	3075	0	4322
E12	56 20.3	160 59.5	28	333	416	0	748	83	0	831
F07	56 40.2	164 0.5	39	747	83	0	830	0	0	830
F08	56 39.9	163 23.0	39	486	162	162	810	162	0	162
F09	56 40.1	162 46.9	38	234	78	781	1093	1406	312	1718
F10	56 40.7	162 11.3	37	164	329	1480	1973	2959	1151	4110
F11	56 41.1	161 33.1	48	332	1993	498	2824	11128	830	11959
F12	56 39.9	160 59.1	36	580	166	1657	2403	1657	1243	2900
F13	56 41.3	160 23.2	32	81	81	2018	2180	2099	1130	3229
G06	57 0.2	164 36.2	37	83	0	0	83	0	0	83
G07	57 2.5	164 1.9	34	579	0	0	579	0	0	579
G08	56 59.9	163 22.5	34	489	652	0	1142	82	0	1223
G09	57 0.5	162 46.1	32	1269	1825	4601	7695	3887	1587	13169
G10	56 60.0	162 10.3	31	395	710	4893	5997	6155	2525	14678
G11	56 59.9	161 34.8	37	655	246	1556	2457	7453	2785	12694
G12	57 0.1	160 57.1	33	410	328	656	1394	2953	574	4921
G13	57 0.2	160 20.5	33	165	165	165	494	1895	0	2390
G14	56 59.9	159 42.0	29	244	81	0	326	163	81	570
G20	56 59.8	169 32.9	32	402	0	0	402	322	0	724
G20	57 9.9	169 19.0	38	75	0	0	75	0	0	75
G21	57 9.7	169 53.7	25	0	0	0	0	0	79	79
H06	57 20.2	164 37.2	34	82	0	0	82	0	0	82
H07	57 20.0	164 0.5	32	229	76	0	305	0	0	305

Table 7. Summary of crab density by tow (# per square nmi) for Red King Crab. (*Paralithodes camtschaticus*)

Station Date	N. Lat.	W. Long	Fathoms	Males				Females				GRAND TOTAL
				Large	Medium	Small	Total	Large	Small	Total		
											Total	
H08 06/14/03	57 20.2	163 23.3	27	483	80	0	563	0	0	0	563	
H09 06/10/03	57 19.7	162 48.8	25	21648	4493	490	26631	490	0	490	27121	
H09 06/10/03	57 14.1	162 48.2	27	8014	2535	654	11204	327	82	409	11613	
H09 06/10/03	57 20.3	162 56.1	26	576	0	0	576	82	0	82	658	
H09 06/10/03	57 24.8	162 46.7	25	3234	1859	404	5497	1132	0	1132	6629	
H09 06/10/03	57 19.5	162 37.8	26	3000	1784	1784	6567	1621	243	1865	8432	
H10 06/10/03	57 20.0	162 9.5	26	3351	2393	479	6223	1197	0	1197	7420	
H11 06/06/03	57 19.8	161 33.1	28	1137	1380	1786	4303	7226	568	7794	12097	
H12 06/05/03	57 19.7	160 56.0	33	661	991	1734	3386	10902	496	11397	14784	
H13 06/04/03	57 19.9	160 18.7	32	655	737	655	2046	2210	82	2292	4338	
H14 06/04/03	57 20.2	159 41.1	30	171	343	0	514	943	0	943	1458	
H15 06/02/03	57 20.6	159 4.2	25	0	0	81	81	0	0	0	81	
H16 06/02/03	57 28.9	158 4.0	8	0	0	327	327	0	245	245	573	
H20 07/05/03	57 19.8	169 34.7	34	1834	0	0	1834	5182	0	5182	7016	
I07 06/15/03	57 40.5	164 0.1	26	253	84	0	337	168	0	168	505	
I08 06/15/03	57 40.6	163 22.6	25	508	254	0	762	0	0	0	762	
I09 06/10/03	57 40.2	162 45.8	22	80	241	80	402	80	0	80	482	
I10 06/10/03	57 39.9	162 8.0	24	404	404	728	1537	81	809	890	2427	
I11 06/06/03	57 39.8	161 31.7	27	488	488	2033	3009	976	1139	2115	5124	
I12 06/06/03	57 40.4	160 52.7	30	1897	1580	1027	4504	1106	158	1264	5769	
I13 06/04/03	57 40.1	160 16.2	28	1235	576	1400	3212	1482	576	2059	5270	
I14 06/04/03	57 40.2	159 38.6	26	117	351	117	585	234	117	351	936	
I16 06/02/03	57 39.9	158 21.0	17	0	0	0	0	0	82	82	82	
I19 07/02/03	57 39.5	169 2.5	36	85	0	85	169	0	0	0	169	
I20 07/05/03	57 39.7	169 38.4	37	0	0	0	0	0	102	102	102	
I20 06/28/03	57 30.3	169 22.3	37	74	0	0	74	0	0	0	74	
I21 07/01/03	57 30.1	169 59.1	36	4081	247	0	4328	0	0	0	4328	
I21 07/01/03	57 40.0	170 16.3	38	79	0	79	158	0	0	0	158	
J06 06/16/03	58 0.2	164 37.2	23	242	81	0	323	162	0	162	485	
J07 06/15/03	58 0.1	164 1.8	24	82	82	0	165	82	0	82	247	
J08 06/15/03	57 58.9	163 21.8	23	0	0	0	0	170	0	170	170	
J09 06/10/03	58 0.6	162 45.3	20	0	161	0	161	161	0	161	322	
J10 06/10/03	58 0.1	162 6.6	19	247	411	411	1070	658	329	987	2057	

Table 7. Summary of crab density by tow (# per square nmi) for Red King Crab. (*Paralithodes camtschaticus*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
J11	57 59.1	161 29.3	28	269	0	2551	671	671	1343	4163
J12	57 59.7	160 50.6	24	571	245	408	326	489	815	2039
J13	57 59.9	160 13.2	26	166	998	499	499	83	582	2246
J14	57 59.6	159 36.2	22	0	84	84	84	0	84	253
J16	58 9.3	157 58.7	15	0	0	0	0	336	336	336
J20	57 50.0	169 21.7	35	0	0	0	162	0	162	162
K01	58 20.0	167 49.1	31	0	0	0	0	80	80	80
K04	58 20.4	165 55.5	22	0	79	0	79	0	79	158
K05	58 20.1	165 18.2	22	81	0	0	0	0	0	81
K06	58 20.1	164 38.8	22	79	79	0	158	0	0	158
K07	58 20.5	164 0.2	21	0	82	0	82	0	0	82
K09	58 20.0	162 42.8	15	0	0	0	79	0	79	79
K10	58 19.8	162 3.2	24	82	82	0	164	0	246	410
K11	58 12.7	161 32.9	19	0	317	317	633	0	158	791
K12	58 17.3	160 49.1	16	0	0	0	0	0	316	316
K13	58 16.7	159 58.0	21	0	0	80	80	240	0	320
K14	58 20.3	159 34.4	12	0	0	80	80	0	0	80
K14	58 29.7	159 50.1	13	0	0	159	159	0	0	159
L01	58 40.4	167 52.2	24	81	0	0	81	0	0	81
L02	58 40.0	167 12.7	23	80	0	0	80	80	0	159
L03	58 39.6	166 32.8	21	0	0	0	0	79	79	79
L04	58 40.0	165 56.3	19	81	0	81	162	0	0	162
L05	58 39.7	165 20.4	20	83	0	0	83	0	0	83
L06	58 40.2	164 39.3	19	84	0	0	84	0	0	84
L07	58 40.1	164 0.7	16	0	81	81	162	81	0	243
L09	58 38.1	162 42.5	12	0	0	0	163	0	163	163
L18	58 40.0	168 29.9	28	83	0	0	83	0	0	83
M01	59 0.6	167 52.8	20	84	0	0	84	0	0	84
M02	58 60.0	167 14.1	20	0	82	0	82	0	0	82
M03	58 59.8	166 35.1	17	0	0	159	159	0	80	239
M18	58 59.6	168 31.9	24	0	0	0	0	155	0	155
O04	59 39.4	165 55.8	12	0	0	76	76	0	0	76
P01	59 59.9	167 58.8	12	80	0	0	80	0	0	80

**Table 7. Summary of crab density by tow (# per square nmi) for Red King Crab. (*Paralithodes camtschaticus*)**

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
Q19 07/03/03	60 20.0	169 20.1	22	0	0	0	0	79	0	79
Q21 07/04/03	60 19.7	170 40.4	32	0	0	0	0	80	0	80

NOTE: Minimum carapace sizes used are: Large Males > 6.5 in; Medium Males = 5.2 to 6.5 in; Large Females > 4.3 in.

**Table 8A. Summary of crab density by tow (# per square nmi) for Pribilofs Blue Kings. (*Paralithodes platypus*)**

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
G20 06/29/03	56 59.8	169 32.9	32	80	0	0	80	0	80	161
G20 06/28/03	56 50.1	169 17.8	42	79	0	0	79	237	0	237
G20 06/28/03	57 9.9	169 19.0	38	150	0	0	150	150	0	150
H19 07/02/03	57 30.0	168 45.4	37	162	0	0	162	325	0	325
H19 06/28/03	57 20.1	168 59.7	37	310	0	0	310	4110	0	4110
H20 07/05/03	57 19.8	169 34.7	34	159	0	0	159	399	0	399
I18 07/02/03	57 40.2	168 23.9	37	0	0	0	0	0	78	78
I19 07/02/03	57 39.5	169 2.5	36	0	0	85	85	0	85	169
I20 06/28/03	57 30.3	169 22.3	37	74	74	0	148	222	0	222
K18 07/03/03	58 20.6	168 28.0	34	0	0	78	78	0	0	78

NOTE: Minimum carapace sizes used are: Large Males > 6.5 in; Medium Males = 5.2 to 6.5 in; Large Females > 4.3 in.

**Table 8B. Summary of crab density by tow (# per square nmi) for St. Matt. Blue Kings. (*Paralithodes platypus*)**

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
N26 07/19/03	59 20.1	173 48.2	59	83	0	0	0	0	0	83
O03 06/24/03	59 39.9	166 37.9	14	0	0	0	0	79	79	79
O25 07/18/03	59 30.1	172 53.0	48	157	0	78	0	0	0	235
O25 07/18/03	59 40.5	173 15.3	51	159	0	0	0	0	0	159
P24 07/18/03	59 60.0	172 38.7	35	79	0	238	159	0	159	477
P24 07/13/03	60 9.7	172 19.4	30	152	457	381	762	0	839	1830
P25 07/18/03	59 50.1	172 55.5	42	161	80	0	0	0	0	241
P25 07/18/03	60 0.1	173 18.5	40	310	77	232	0	155	155	775
P26 07/19/03	60 0.5	173 57.7	51	80	0	0	0	0	0	80
P26 07/18/03	60 7.3	173 46.3	47	241	80	0	0	0	0	321
P26 07/18/03	59 50.2	173 35.1	50	78	0	0	78	0	78	156
Q23 07/13/03	60 20.0	172 3.9	31	0	0	78	78	0	78	156
Q25 07/18/03	60 10.9	173 2.7	31	462	540	3623	1696	771	2466	7091
Q25 07/14/03	60 19.5	173 25.3	33	0	0	457	0	0	0	457
Q26 07/14/03	60 20.2	174 3.9	49	78	0	0	0	0	0	78
Q27 07/19/03	60 10.2	174 21.7	53	82	0	0	0	0	0	82
T30 07/16/03	61 20.3	176 58.3	62	0	0	0	0	82	82	82
U27 07/15/03	61 39.8	175 5.2	45	0	0	80	0	0	0	80

NOTE: Minimum carapace sizes used are: Large Males > 5.5 in; Medium Males = 4.3 to 5.5 in; Large Females > 3.8 in.

**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL		
				Large	Medium	Small	Large	Small	Total			
A02	06/20/03	55 0.2	166 56.6	83	81	485	7836	8401	81	10098	10179	18580
A03	06/20/03	55 0.9	166 22.2	77	416	1662	8726	10804	1336	12288	13624	24428
A04	06/20/03	55 0.1	165 44.8	70	0	494	3212	3706	494	4859	5353	9058
A04	06/13/03	54 50.1	165 30.6	81	0	0	8459	8459	0	9484	9484	17943
A05	06/13/03	55 0.0	165 9.5	59	242	646	2667	3556	162	2505	2667	6222
B01	06/20/03	55 20.9	167 32.4	79	0	157	4787	4944	0	3374	3374	8318
B02	06/20/03	55 19.9	166 56.7	74	81	969	3312	4362	323	3312	3635	7997
B03	06/20/03	55 19.9	166 20.9	71	428	1027	1797	3252	2054	2910	4963	8215
B04	06/20/03	55 19.9	165 46.7	65	167	501	5766	6435	919	1504	2424	8859
B05	06/20/03	55 20.1	165 9.8	60	900	491	19225	20616	491	3191	3681	24298
B06	06/13/03	55 21.0	164 32.4	54	4508	805	2173	7486	1207	1771	2978	10464
B07	06/13/03	55 20.7	164 0.8	41	0	78	941	1019	157	1019	1176	2195
B08	06/11/03	55 19.7	163 24.7	25	1272	1907	8265	11444	0	0	0	11444
C01	06/26/03	55 40.1	167 34.5	73	0	241	1207	1449	0	241	241	1690
C02	06/26/03	55 40.1	166 58.7	72	0	0	1572	1572	0	414	414	1986
C03	06/21/03	55 40.6	166 23.3	68	158	710	2052	2921	1895	4736	6631	9552
C04	06/21/03	55 39.8	165 48.0	63	84	1261	8656	10001	336	3782	4118	14119
C05	06/17/03	55 40.3	165 10.2	57	416	665	1746	2827	166	1746	1912	4739
C06	06/17/03	55 40.6	164 35.7	51	1108	862	4186	6156	246	2585	2832	8988
C07	06/13/03	55 41.8	164 0.4	50	1789	976	1952	4718	1627	3497	5124	9842
C08	06/13/03	55 39.9	163 23.1	43	841	3197	7320	11358	2356	4712	7067	18425
C09	06/11/03	55 40.5	162 50.2	26	331	1739	8363	10433	166	166	331	10764
C18	06/26/03	55 40.2	168 10.6	72	0	167	1167	1333	0	333	333	1666
D01	06/26/03	56 0.1	167 37.4	71	83	413	1075	1571	413	496	909	2480
D02	06/26/03	56 0.0	167 0.5	72	0	1810	4113	5923	2221	2139	4360	10282
D03	06/21/03	56 0.5	166 24.2	66	481	1844	13630	15955	3207	4169	7376	23332
D04	06/21/03	56 0.1	165 46.8	57	824	2308	3298	6430	495	6842	7337	13767
D05	06/17/03	55 59.6	165 11.1	50	160	1203	3288	4652	80	2406	2486	7138
D06	06/17/03	55 60.0	164 35.2	49	316	316	1501	2134	79	1422	1501	3635
D07	06/14/03	55 58.5	163 56.2	49	825	825	2805	4455	165	1815	1980	6435
D08	06/14/03	55 59.5	163 24.1	47	464	309	5104	5878	619	4022	4640	10518
D09	06/11/03	55 59.6	162 49.7	40	159	558	797	1514	398	239	637	2151
D10	06/11/03	55 59.8	162 14.3	37	0	0	161	161	0	0	0	161

**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Large	Small	Total		
D18	06/26/03	56 0.7	168 13.5	81	403	2660	3063	0	3789	3789	6852
E01	06/26/03	56 19.5	167 39.1	69	1075	8351	9426	2067	4299	6366	15792
E02	06/26/03	56 19.9	167 2.6	61	728	2912	3640	1213	1456	2670	6310
E03	06/21/03	56 20.3	166 24.8	55	789	1658	2526	316	553	868	3394
E04	06/21/03	56 20.1	165 48.1	49	644	1530	2175	322	886	1208	3383
E05	06/17/03	56 19.9	165 12.2	45	310	7670	7980	232	6198	6430	14410
E06	06/17/03	56 20.2	164 35.7	46	339	2793	3386	592	2878	3470	6856
E07	06/14/03	56 20.4	163 57.9	45	171	940	1368	0	342	342	1710
E08	06/14/03	56 20.1	163 25.0	45	248	578	991	0	578	578	1569
E09	06/11/03	56 20.3	162 47.5	40	232	620	1007	0	77	77	1085
E10	06/11/03	56 20.2	162 11.7	42	960	1840	2799	480	320	800	3599
E11	06/05/03	56 19.8	161 37.8	33	499	416	914	0	0	0	914
E12	06/05/03	56 20.3	160 59.5	28	499	83	582	0	0	0	582
E18	06/27/03	56 19.9	168 14.4	82	3232	24895	28458	0	32819	32819	61277
E19	06/27/03	56 19.9	168 52.4	69	6763	6927	14185	655	33077	33732	47917
E20	06/27/03	56 20.7	169 28.7	75	247	6183	6430	0	4452	4452	10882
E21	06/27/03	56 20.0	170 3.5	59	313	3595	3907	547	2970	3517	7424
E22	06/27/03	56 20.1	170 41.2	65	0	2889	2889	0	1846	1846	4736
F01	06/26/03	56 39.8	167 40.4	54	260	433	694	87	347	433	1127
F02	06/26/03	56 40.0	167 3.5	51	520	5462	5982	607	520	1127	7109
F03	06/21/03	56 40.2	166 25.8	44	646	2828	3556	566	2586	3152	6707
F04	06/21/03	56 40.1	165 51.0	42	245	491	736	82	164	245	981
F05	06/16/03	56 40.0	165 13.2	39	407	1140	1547	81	81	163	1710
F06	06/16/03	56 40.3	164 36.2	39	319	80	399	80	80	160	558
F07	06/14/03	56 40.2	164 0.5	39	332	249	581	83	0	83	664
F08	06/14/03	56 39.9	163 23.0	39	486	324	891	0	243	243	1133
F09	06/10/03	56 40.1	162 46.9	38	156	312	781	0	0	0	781
F10	06/10/03	56 40.7	162 11.3	37	329	658	986	164	164	329	1315
F11	06/05/03	56 41.1	161 33.1	48	498	830	1661	332	0	332	1993
F12	06/05/03	56 39.9	160 59.1	36	497	414	994	580	0	580	1574
F13	06/04/03	56 41.3	160 23.2	32	484	969	1453	888	0	888	2341
F18	06/27/03	56 39.8	168 16.9	57	240	85461	85701	1857	83581	85439	171140
F19	06/27/03	56 40.4	168 54.6	53	192	1154	1346	96	1250	1346	2692



**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL		
				Large	Medium	Small	Large	Small	Total			
F20	06/27/03	56 39.9	169 30.7	42	0	477	1430	1906	0	477	477	2383
F21	06/27/03	56 40.1	170 7.4	51	0	1092	13413	14505	312	1950	2262	16766
F22	06/27/03	56 40.3	170 42.5	59	0	849	19325	20174	216	21353	21568	41742
F23	07/06/03	56 40.0	171 21.5	64	79	79	14967	15125	79	15759	15838	30963
F24	07/08/03	56 39.7	171 58.2	68	0	0	498	498	0	498	498	995
F25	07/08/03	56 40.6	172 33.9	72	0	0	2260	2260	0	2180	2180	4440
G01	06/25/03	56 59.9	167 41.8	37	0	0	1939	1939	0	1051	1051	2990
G02	06/25/03	57 0.2	167 4.9	39	0	160	1201	1362	0	320	320	1682
G03	06/21/03	57 0.1	166 27.8	39	0	234	703	937	0	0	0	937
G04	06/21/03	56 60.0	165 50.8	38	0	480	80	560	0	80	80	640
G05	06/16/03	56 60.0	165 12.9	37	0	84	0	84	0	0	0	84
G06	06/16/03	57 0.2	164 36.2	37	0	414	165	579	0	83	83	662
G07	06/14/03	57 2.5	164 1.9	34	0	414	414	827	83	83	165	993
G08	06/14/03	56 59.9	163 22.5	34	0	0	326	326	0	0	0	326
G09	06/11/03	57 0.5	162 46.1	32	0	0	635	635	0	79	79	714
G10	06/10/03	56 60.0	162 10.3	31	0	237	316	552	79	0	79	631
G11	06/05/03	56 59.9	161 34.8	37	82	0	0	82	0	0	0	82
G12	06/05/03	57 0.1	160 57.1	33	0	328	164	492	0	0	0	492
G13	06/04/03	57 0.2	160 20.5	33	0	0	82	82	494	0	494	577
G14	06/04/03	56 59.9	159 42.0	29	0	163	1140	1302	407	0	407	1709
G15	06/02/03	56 59.7	159 8.2	16	0	80	0	80	0	0	0	80
G18	07/02/03	57 0.1	168 19.2	44	0	157	2121	2278	0	1100	1100	3378
G19	06/28/03	56 50.3	168 36.7	51	0	148	75375	75524	74	79547	79621	155145
G19	06/28/03	57 0.4	168 57.2	42	0	0	803	803	0	883	883	1686
G20	06/29/03	56 59.8	169 32.9	32	0	724	32979	33703	2654	11181	13835	47538
G20	06/28/03	56 50.1	169 17.8	42	0	237	10251	10488	0	7334	7334	17822
G20	06/28/03	57 9.9	169 19.0	38	0	824	2322	3146	225	1049	1273	4419
G21	06/29/03	56 50.2	169 54.0	38	0	244	20930	21174	0	14919	14919	36093
G21	06/29/03	57 9.7	169 53.7	25	0	0	793	793	0	79	79	872
G21	06/29/03	57 0.0	170 9.3	36	0	162	38236	38398	971	38722	39694	78091
G22	07/06/03	56 58.2	170 47.4	53	0	402	19064	19466	486	18621	19107	38573
G22	06/29/03	56 50.0	170 28.9	54	0	1126	10292	11418	322	7558	7880	19298
G22	06/29/03	57 6.7	170 34.0	36	0	0	328	328	0	109	109	437

**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Large	Small	Total		
G23 07/06/03	57 0.7	171 24.1	58	0	606	10303	10910	0	10303	10303	21213
G24 07/08/03	56 60.0	171 58.7	62	0	167	750	917	0	1167	1167	2085
G25 07/08/03	57 0.5	172 38.4	65	0	0	3646	3646	0	4806	4806	8452
G26 07/22/03	57 0.2	173 15.2	76	0	0	1296	1296	0	81	81	1377
H01 06/25/03	57 20.0	167 43.9	38	0	240	1678	1917	80	160	240	2157
H02 06/25/03	57 20.4	167 7.1	37	0	0	333	333	0	167	167	500
H03 06/22/03	57 19.8	166 28.9	36	0	0	733	733	163	81	244	977
H04 06/22/03	57 20.0	165 52.0	36	0	83	167	250	0	83	83	334
H05 06/16/03	57 20.0	165 14.2	35	0	490	82	571	0	0	0	571
H06 06/16/03	57 20.2	164 37.2	34	0	164	327	491	0	82	82	572
H07 06/14/03	57 20.0	164 0.5	32	0	458	153	610	0	76	76	687
H08 06/14/03	57 20.2	163 23.3	27	0	0	80	80	0	0	0	80
H09 06/10/03	57 19.7	162 48.8	25	82	0	82	163	82	0	82	245
H09 06/10/03	57 14.1	162 48.2	27	0	245	0	245	82	0	82	327
H09 06/10/03	57 20.3	162 56.1	26	0	165	165	329	0	0	0	329
H09 06/10/03	57 24.8	162 46.7	25	81	323	81	485	0	0	0	485
H09 06/10/03	57 19.5	162 37.8	26	0	162	162	324	0	0	0	324
H10 06/10/03	57 20.0	162 9.5	26	0	160	239	399	0	0	0	399
H11 06/06/03	57 19.8	161 33.1	28	0	81	650	731	81	0	81	812
H12 06/05/03	57 19.7	160 56.0	33	0	83	83	165	83	0	83	248
H13 06/04/03	57 19.9	160 18.7	32	0	82	164	246	82	0	82	327
H14 06/04/03	57 20.2	159 41.1	30	0	86	343	429	0	0	0	429
H15 06/02/03	57 20.6	159 4.2	25	0	0	81	81	0	0	0	81
H16 06/02/03	57 19.9	158 24.4	15	0	0	82	82	0	82	82	165
H18 07/02/03	57 19.9	168 22.0	39	0	79	316	395	0	158	158	553
H19 07/02/03	57 10.4	168 37.4	40	0	80	1591	1671	0	875	875	2546
H19 07/02/03	57 30.0	168 45.4	37	0	0	406	406	0	243	243	649
H19 06/28/03	57 20.1	168 59.7	37	0	0	233	233	0	0	0	233
H20 07/05/03	57 19.8	169 34.7	34	0	399	1754	2153	0	239	239	2392
H22 07/06/03	57 21.1	170 50.9	44	0	0	636	636	0	636	636	1273
H22 07/05/03	57 29.9	170 35.5	39	0	0	232	232	0	232	232	464
H23 07/06/03	57 20.1	171 28.0	54	0	475	11015	11491	79	7608	7687	19178
H24 07/08/03	57 19.9	172 5.9	58	0	246	1966	2211	0	573	573	2785

**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
H25	57 20.9	172 49.3	63	0	0	3431	0	3899	3899	7330
H26	57 20.0	173 19.8	65	0	0	2561	0	2809	2809	5370
I01	57 40.0	167 46.1	36	0	162	811	0	0	0	973
I02	57 39.9	167 7.2	36	0	0	326	82	82	163	490
I03	57 40.1	166 30.4	34	0	0	160	0	0	0	160
I04	57 40.1	165 52.8	33	0	163	245	0	0	0	408
I05	57 40.0	165 15.2	32	0	0	80	0	0	0	80
I06	57 40.3	164 37.0	28	0	0	84	0	0	0	84
I07	57 40.5	164 0.1	26	0	84	84	0	0	0	168
I11	57 39.8	161 31.7	27	0	0	81	0	0	0	81
I12	57 40.4	160 52.7	30	0	0	395	79	0	79	474
I13	57 40.1	160 16.2	28	0	0	247	0	0	0	247
I18	57 40.2	168 23.9	37	0	78	467	0	389	389	934
I19	57 49.7	168 44.1	37	0	0	723	0	80	80	803
I19	57 39.5	169 2.5	36	0	0	1439	169	1101	1270	2710
I20	57 39.7	169 38.4	37	0	0	305	0	305	305	610
I20	57 30.3	169 22.3	37	74	0	1330	0	2217	2217	3622
I21	57 30.1	169 59.1	36	0	124	1237	0	371	371	1731
I21	57 40.0	170 16.3	38	0	0	237	0	158	158	394
I22	57 39.9	170 53.2	45	0	79	635	0	238	238	953
I22	57 49.9	170 36.7	41	0	0	236	0	472	472	708
I23	57 40.3	171 31.7	53	0	0	1082	77	541	619	1701
I24	57 40.0	172 10.8	57	0	0	3583	156	3661	3817	7401
I25	57 40.0	172 48.5	64	0	0	1864	0	2253	2253	4117
I26	57 40.1	173 23.7	79	0	0	11668	81	18443	18524	30192
J01	58 0.1	167 48.0	35	0	0	320	0	0	0	320
J04	58 0.4	165 54.4	28	0	0	232	0	0	0	232
J12	57 59.7	160 50.6	24	0	82	0	0	0	0	82
J18	58 0.2	168 25.8	37	0	237	552	0	79	79	868
J19	58 0.1	169 3.6	37	0	0	0	0	81	81	81
J20	57 59.8	169 41.6	37	0	0	246	0	164	164	410
J20	57 50.0	169 21.7	35	0	325	2191	0	1947	1947	4462
J21	57 50.2	169 59.3	38	0	0	2359	0	1952	1952	4311

Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.

(*Chionoecetes bairdi*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Large	Small	Total		
J21	07/05/03	58 0.1	170 19.7	39	0	924	0	231	924	231	1155
J22	07/06/03	58 0.0	170 58.1	46	79	318	0	715	397	715	1112
J23	07/06/03	58 0.0	171 35.8	52	0	395	0	553	395	632	1026
J24	07/07/03	57 59.5	172 15.2	56	81	1538	0	324	1619	405	2023
J25	07/07/03	57 60.0	172 52.1	58	0	77	0	77	77	77	154
J26	07/22/03	58 0.1	173 26.9	62	0	1119	0	879	1119	1039	2159
K01	06/25/03	58 20.0	167 49.1	31	0	318	0	0	318	0	318
K02	06/25/03	58 20.4	167 10.5	27	0	82	0	0	82	0	82
K04	06/22/03	58 20.4	165 55.5	22	0	79	0	0	79	0	79
K21	07/05/03	58 19.9	170 22.9	39	0	237	0	317	237	317	554
K22	07/12/03	58 20.6	171 0.6	44	0	83	0	165	83	165	248
K23	07/12/03	58 20.4	171 39.3	51	79	6708	0	395	6787	395	7181
K24	07/07/03	58 19.9	172 18.3	55	0	84	0	0	84	0	84
K25	07/07/03	58 20.0	172 56.2	59	79	1260	0	1733	1339	1733	3072
K26	07/22/03	58 19.7	173 34.2	62	0	639	0	959	639	959	1598
K27	07/21/03	58 20.2	174 19.2	92	0	11122	0	17796	11122	17796	28918
L18	07/03/03	58 40.0	168 29.9	28	0	0	0	165	0	165	165
L22	07/12/03	58 40.2	171 5.2	44	0	251	0	0	251	0	251
L23	07/12/03	58 40.2	171 43.0	49	159	0	0	0	159	0	159
L24	07/07/03	58 40.0	172 22.2	54	0	967	0	3705	967	3705	4672
L25	07/07/03	58 40.1	173 0.2	60	157	3083	235	941	3240	1176	4416
L26	07/22/03	58 39.4	173 36.9	67	0	1267	0	1980	1267	1980	3248
L27	07/21/03	58 38.9	174 16.8	84	0	54655	0	48813	54655	48813	103468
L28	07/21/03	58 44.1	174 58.6	78	0	3895	0	4888	3895	4888	8782
L29	07/21/03	58 40.2	175 32.7	72	0	2191	0	1174	2191	1174	3365
L30	07/21/03	58 40.1	176 11.6	75	0	4116	0	2850	4116	2850	6966
L31	07/21/03	58 40.3	176 50.2	73	0	2934	0	1930	2934	1930	4864
M24	07/07/03	58 59.6	172 25.4	53	0	234	0	156	234	156	390
M25	07/07/03	59 0.1	173 5.4	57	0	308	231	462	308	692	1000
M26	07/19/03	58 59.8	173 43.4	63	0	3103	301	602	3103	904	4006
M27	07/19/03	59 0.0	174 21.7	68	0	7027	740	4623	7027	5363	12390
M28	07/21/03	59 0.8	174 59.6	69	0	1569	83	908	1569	991	2559
M29	07/21/03	59 0.2	175 43.5	71	0	430	172	516	430	688	1118

**Table 9. Summary of crab density by tow (# per square nmi) for Tanner Crab.**

*(Chionoecetes bairdi)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
M30	58 59.9	176 18.6	72	0	0	0	0	0	174	174
M32	58 60.0	177 35.0	72	0	0	1155	1155	0	539	1694
N23	59 20.3	171 50.7	43	0	0	78	78	0	0	78
N25	59 20.1	173 10.4	53	0	0	320	320	80	160	240
N26	59 20.1	173 48.2	59	0	83	1083	1166	0	1166	1166
N26	59 29.9	173 30.3	55	0	0	1481	1481	0	780	780
N27	59 20.5	174 27.0	65	0	0	952	952	0	952	952
N28	59 20.1	175 6.1	71	0	76	531	606	76	303	379
N29	59 20.1	175 44.5	73	0	0	198	198	0	988	988
N30	59 20.4	176 22.4	73	0	0	647	647	0	0	647
O24	59 39.9	172 34.4	45	0	0	0	0	79	0	79
O26	59 40.1	173 52.8	56	81	0	3305	3386	0	3869	3869
O27	59 40.1	174 27.1	61	0	0	318	318	0	318	318
O29	59 40.1	175 53.4	74	0	0	173	173	87	173	260
O30	59 40.2	176 33.1	73	0	86	0	86	0	86	86
O31	59 40.1	177 8.4	91	0	195	0	195	0	0	195
P26	60 0.5	173 57.7	51	0	0	875	875	0	477	1352
P27	59 50.0	174 14.5	57	0	0	162	162	0	406	569
P27	60 0.1	174 36.4	57	0	0	154	154	0	0	154
P28	60 0.1	175 14.8	62	0	0	242	242	0	81	323
P29	59 59.8	175 55.4	69	0	0	241	241	0	80	322
P31	59 59.7	177 11.2	74	0	0	0	0	0	82	82
P32	59 59.9	177 55.5	77	0	0	85	85	0	0	85
R29	60 40.5	176 12.6	63	0	0	237	237	0	0	237
R32	60 40.3	178 11.1	86	0	0	503	503	0	503	1005
S31	61 0.1	177 38.8	72	0	0	82	82	0	0	82
T28	61 19.7	175 40.7	52	0	0	225	225	0	0	225

NOTE: Minimum carapace sizes used are: Large Males > 5.5 in; Medium Males = 4.3 to 5.5 in; Large Females > 3.4 in.

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

(*Chionoecetes opilio*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
A02	06/20/03	55 0.2	166 56.6	83	81	81	0	0	0	162
A03	06/20/03	55 0.9	166 22.2	77	249	83	83	0	0	416
A04	06/20/03	55 0.1	165 44.8	70	0	165	0	0	0	165
B01	06/20/03	55 20.9	167 32.4	79	157	0	0	0	0	157
B02	06/20/03	55 19.9	166 56.7	74	81	162	0	0	0	242
B03	06/20/03	55 19.9	166 20.9	71	257	171	171	0	0	685
B04	06/20/03	55 19.9	165 46.7	65	167	84	84	0	0	418
B05	06/20/03	55 20.1	165 9.8	60	409	82	82	0	0	491
B06	06/13/03	55 21.0	164 32.4	54	322	161	80	0	0	563
C01	06/26/03	55 40.1	167 34.5	73	0	80	0	0	0	80
C02	06/26/03	55 40.1	166 58.7	72	0	83	165	0	0	248
C03	06/21/03	55 40.6	166 23.3	68	158	79	79	0	0	316
C04	06/21/03	55 39.8	165 48.0	63	0	84	168	0	0	252
C05	06/17/03	55 40.3	165 10.2	57	0	166	166	0	0	333
C06	06/17/03	55 40.6	164 35.7	51	246	1108	492	0	0	1847
C07	06/13/03	55 41.8	164 0.4	50	0	244	0	0	0	244
C09	06/11/03	55 40.5	162 50.2	26	83	0	0	0	0	83
C18	06/26/03	55 40.2	168 10.6	72	83	0	0	0	0	83
D02	06/26/03	56 0.0	167 0.5	72	82	247	82	0	0	411
D03	06/21/03	56 0.5	166 24.2	66	160	0	160	80	80	401
D04	06/21/03	56 0.1	165 46.8	57	0	247	82	0	0	330
D05	06/17/03	55 59.6	165 11.1	50	321	642	401	0	0	1364
D06	06/17/03	55 60.0	164 35.2	49	237	237	237	0	0	711
D07	06/14/03	55 58.5	163 56.2	49	165	165	0	0	0	330
D08	06/14/03	55 59.5	163 24.1	47	155	155	155	0	0	464
D09	06/11/03	55 59.6	162 49.7	40	80	0	0	0	0	80
D10	06/11/03	55 59.8	162 14.3	37	80	0	0	0	0	80
E01	06/26/03	56 19.5	167 39.1	69	83	165	496	0	0	744
E02	06/26/03	56 19.9	167 2.6	61	243	81	162	81	0	566
E03	06/21/03	56 20.3	166 24.8	55	474	632	474	0	0	1579
E04	06/21/03	56 20.1	165 48.1	49	322	322	81	81	0	806
E05	06/17/03	56 19.9	165 12.2	45	0	465	232	0	0	697
E06	06/17/03	56 20.2	164 35.7	46	85	339	169	0	0	592

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

(*Chionoecetes opilio*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
E07	56 20.4	163 57.9	45	256	171	0	0	0	0	427
E08	56 20.1	163 25.0	45	83	165	0	0	0	0	248
E10	56 20.2	162 11.7	42	80	0	0	0	0	0	80
E18	56 19.9	168 14.4	82	83	166	83	0	0	0	331
E21	56 20.0	170 3.5	59	234	313	391	0	0	0	938
F01	56 39.8	167 40.4	54	0	173	433	0	0	0	607
F02	56 40.0	167 3.5	51	87	260	173	0	0	0	520
F03	56 40.2	166 25.8	44	485	727	727	0	0	0	1939
F04	56 40.1	165 51.0	42	164	164	0	0	0	0	327
F06	56 40.3	164 36.2	39	319	160	0	0	0	0	479
F07	56 40.2	164 0.5	39	0	83	0	0	0	0	83
F18	56 39.8	168 16.9	57	882	561	641	0	0	0	2084
F19	56 40.4	168 54.6	53	96	0	288	0	0	0	385
F21	56 40.1	170 7.4	51	156	1014	624	0	0	0	1794
F22	56 40.3	170 42.5	59	232	309	232	0	0	0	772
F23	56 40.0	171 21.5	64	0	158	158	0	0	0	317
G01	56 59.9	167 41.8	37	242	485	242	81	0	81	970
G02	57 0.2	167 4.9	39	0	240	240	0	0	0	481
G03	57 0.1	166 27.8	39	156	312	0	0	0	0	469
G04	56 60.0	165 50.8	38	320	160	0	0	0	0	480
G05	56 60.0	165 12.9	37	252	0	84	0	0	0	336
G06	57 0.2	164 36.2	37	745	83	331	0	0	0	1158
G07	57 2.5	164 1.9	34	414	165	165	0	0	0	744
G08	56 59.9	163 22.5	34	82	82	0	0	0	0	163
G11	56 59.9	161 34.8	37	0	82	0	0	0	0	82
G15	56 59.7	159 8.2	16	0	160	0	0	0	0	160
G18	57 0.1	168 19.2	44	236	157	550	0	0	0	943
G19	56 50.3	168 36.7	51	742	964	1632	0	0	0	3338
G19	57 0.4	168 57.2	42	0	482	0	0	0	0	482
G20	56 59.8	169 32.9	32	80	0	322	0	80	80	483
G20	56 50.1	169 17.8	42	0	237	394	0	0	0	631
G20	57 9.9	169 19.0	38	0	824	899	75	0	75	1797
G21	56 50.2	169 54.0	38	81	0	325	0	0	0	407

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab. (Chionoecetes opilio)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
G21 06/29/03	57 0.0	170 9.3	36	0	0	81	0	0	0	81
G22 07/06/03	56 58.2	170 47.4	53	161	1447	563	161	0	161	2331
G22 06/29/03	56 50.0	170 28.9	54	161	322	482	80	0	80	1045
G23 07/06/03	57 0.7	171 24.1	58	606	101	0	0	0	0	707
G24 07/08/03	56 60.0	171 58.7	62	83	83	167	0	0	0	334
G25 07/08/03	57 0.5	172 38.4	65	0	0	83	0	0	0	83
G26 07/22/03	57 0.2	173 15.2	76	81	0	0	0	0	0	81
H01 06/25/03	57 20.0	167 43.9	38	0	240	160	0	0	0	399
H02 06/25/03	57 20.4	167 7.1	37	0	417	250	0	0	0	667
H03 06/22/03	57 19.8	166 28.9	36	163	244	407	0	0	0	814
H04 06/22/03	57 20.0	165 52.0	36	334	83	0	0	0	0	417
H05 06/16/03	57 20.0	165 14.2	35	1061	326	326	0	0	0	1714
H06 06/16/03	57 20.2	164 37.2	34	1472	491	491	0	164	164	2616
H09 06/10/03	57 20.3	162 56.1	26	82	0	0	0	0	0	82
H09 06/10/03	57 24.8	162 46.7	25	81	0	0	0	0	0	81
H18 07/02/03	57 19.9	168 22.0	39	79	395	79	0	0	0	553
H19 07/02/03	57 10.4	168 37.4	40	239	80	477	0	0	0	796
H19 07/02/03	57 30.0	168 45.4	37	81	406	568	0	0	0	1055
H19 06/28/03	57 20.1	168 59.7	37	78	78	155	0	0	0	310
H20 07/05/03	57 19.8	169 34.7	34	2232	2153	319	0	0	0	4704
H22 07/06/03	57 21.1	170 50.9	44	0	0	0	239	80	318	318
H22 07/05/03	57 29.9	170 35.5	39	0	0	0	77	155	232	232
H23 07/06/03	57 20.1	171 28.0	54	872	1347	238	79	0	79	2536
H24 07/08/03	57 19.9	172 5.9	58	246	409	0	164	246	409	1065
H25 07/07/03	57 20.9	172 49.3	63	78	78	0	78	78	156	312
I01 06/25/03	57 40.0	167 46.1	36	81	162	405	81	0	81	730
I02 06/25/03	57 39.9	167 7.2	36	0	326	898	82	163	245	1469
I03 06/22/03	57 40.1	166 30.4	34	240	0	481	80	0	80	801
I04 06/22/03	57 40.1	165 52.8	33	245	245	571	82	0	82	1142
I05 06/16/03	57 40.0	165 15.2	32	160	0	320	0	0	0	480
I06 06/16/03	57 40.3	164 37.0	28	0	0	168	0	84	84	251
I18 07/02/03	57 40.2	168 23.9	37	0	156	156	0	0	0	311
I19 07/03/03	57 49.7	168 44.1	37	723	241	1044	80	0	80	2088



Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

(*Chionoecetes opilio*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Large	Small	Total		
I19	07/02/03	169 2.5	36	339	1524	1947	3810	339	169	508	4318
I20	07/05/03	169 38.4	37	102	102	1119	1323	0	4477	4477	5799
I20	06/28/03	169 22.3	37	0	370	370	739	148	148	296	1035
I21	07/01/03	169 30.1	36	371	742	618	1731	0	0	0	1731
I21	07/01/03	170 16.3	38	79	315	1025	1419	0	631	631	2050
I22	07/06/03	170 53.2	45	79	238	0	318	0	0	0	318
I22	07/05/03	170 36.7	41	79	0	236	315	79	472	550	865
I23	07/06/03	171 31.7	53	619	541	387	1546	232	0	232	1778
I24	07/07/03	172 10.8	57	234	779	0	1013	545	234	779	1792
I25	07/07/03	172 48.5	64	78	233	0	311	777	0	777	1088
I26	07/22/03	173 23.7	79	81	0	0	81	0	0	0	81
J01	06/25/03	167 48.0	35	0	80	401	481	0	80	80	561
J02	06/25/03	167 10.1	33	81	0	323	404	81	0	81	484
J03	06/22/03	166 31.4	32	0	0	702	702	0	0	0	702
J04	06/22/03	165 54.4	28	155	0	77	232	0	0	0	232
J05	06/16/03	165 15.1	25	0	0	254	254	0	0	0	254
J18	07/03/03	168 25.8	37	158	316	316	789	0	0	0	789
J19	07/02/03	169 3.6	37	323	403	726	1452	0	81	81	1533
J20	07/05/03	169 41.6	37	328	492	67844	68664	246	209797	210043	278708
J20	07/02/03	169 21.7	35	81	1136	9191	10408	406	24997	25403	35811
J21	07/01/03	169 59.3	38	81	407	2684	3172	325	4962	5287	8459
J21	07/05/03	170 19.7	39	616	2617	1770	5003	462	1308	1770	6773
J22	07/06/03	170 58.1	46	556	794	318	1668	159	79	238	1906
J23	07/06/03	171 35.8	52	1184	2921	632	4736	1105	316	1421	6157
J24	07/07/03	172 15.2	56	566	809	81	1457	1619	647	2266	3723
J25	07/07/03	172 52.1	58	2308	5230	2846	10384	248329	0	248329	258713
J26	07/22/03	173 26.9	62	2718	879	0	3598	879	80	959	4557
K01	06/25/03	167 49.1	31	80	159	716	954	0	239	239	1193
K02	06/25/03	167 10.5	27	0	0	410	410	0	164	164	574
K03	06/22/03	166 33.2	24	0	0	157	157	0	0	0	157
K18	07/03/03	168 28.0	34	78	0	545	623	0	0	0	623
K19	07/02/03	169 7.2	36	164	82	572	818	0	0	0	818
K20	07/05/03	169 43.8	37	589	1430	757	2775	505	252	757	3532

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab. (Chionoecetes opilio)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL			
				Large	Medium	Small	Large	Small	Total				
K21	07/05/03	58 19.9	170	22.9	39	396	1266	870	2532	475	1899	2374	4906
K22	07/12/03	58 20.6	171	0.6	44	1323	9098	1075	11497	8850	1241	10091	21588
K23	07/12/03	58 20.4	171	39.3	51	2288	5366	710	8365	79	0	79	8444
K24	07/07/03	58 19.9	172	18.3	55	4463	14332	9062	27857	450584	342981	793565	821422
K25	07/07/03	58 20.0	172	56.2	59	788	3387	788	4963	1969	473	2442	7405
K26	07/22/03	58 19.7	173	34.2	62	959	3356	2477	6791	63343	737	64080	70871
L19	07/02/03	58 39.7	169	9.3	33	0	237	237	474	79	0	79	553
L20	07/05/03	58 40.2	169	47.1	35	407	244	570	1221	0	570	570	1791
L21	07/05/03	58 40.1	170	26.0	39	464	774	619	1857	77	77	155	2012
L22	07/12/03	58 40.2	171	5.2	44	3176	16631	1839	21645	669	84	752	22397
L23	07/12/03	58 40.2	171	43.0	49	6448	6448	1274	14171	80	80	159	14330
L24	07/07/03	58 40.0	172	22.2	54	3786	4833	161	8780	0	0	0	8780
L25	07/07/03	58 40.1	173	0.2	60	2352	3920	2979	9250	142462	17194	159655	168905
L26	07/22/03	58 39.4	173	36.9	67	0	79	158	238	158	0	158	396
L27	07/21/03	58 38.9	174	16.8	84	81	0	0	81	0	0	0	81
L31	07/21/03	58 40.3	176	50.2	73	0	0	77	77	0	0	0	77
M18	07/03/03	58 59.6	168	31.9	24	0	0	155	155	0	0	0	155
M19	07/03/03	58 59.7	169	11.5	28	0	125	500	625	125	0	125	750
M20	07/04/03	59 0.1	169	50.0	33	0	553	553	1106	0	632	632	1737
M21	07/04/03	59 0.1	170	28.8	37	496	11832	6371	18700	496	165	662	19362
M22	07/12/03	58 59.9	171	8.3	40	5935	10525	1741	18201	79	79	158	18359
M23	07/12/03	59 0.1	171	47.5	46	7790	16748	1818	26356	1882	0	1882	28238
M24	07/07/03	58 59.6	172	25.4	53	78	859	234	1171	78	0	78	1249
M25	07/07/03	59 0.1	173	5.4	57	1693	7387	6694	15773	182570	36514	219084	234857
M26	07/19/03	58 59.8	173	43.4	63	1566	1331	458	3354	15363	602	15966	19320
M27	07/19/03	59 0.0	174	21.7	68	185	370	0	555	740	0	740	1295
M31	07/20/03	59 0.5	176	55.8	74	0	0	137	137	0	137	137	275
M32	07/20/03	58 60.0	177	35.0	72	0	0	77	77	0	0	0	77
N20	07/04/03	59 20.1	169	51.6	32	158	317	554	1029	158	79	237	1267
N21	07/04/03	59 20.1	170	31.9	36	82	734	571	1387	82	163	245	1631
N22	07/12/03	59 20.5	171	11.0	39	2816	18305	3129	24250	391	78	469	24720
N23	07/12/03	59 20.3	171	50.7	43	4406	11652	979	17038	233	0	233	17271
N24	07/18/03	59 20.3	172	30.6	46	1207	2867	302	4376	75	75	151	4527

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

(*Chionoecetes opilio*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
N25	59 20.1	173 10.4	53	160	640	320	1120	3359	3519	6878
N26	59 20.1	173 48.2	59	1416	1416	250	3082	0	83	83
N26	59 29.9	173 30.3	55	1169	1013	234	2417	234	1169	1403
N27	59 20.5	174 27.0	65	0	0	0	0	159	79	238
N28	59 20.1	175 6.1	71	76	0	76	152	0	0	0
N29	59 20.1	175 44.5	73	0	0	198	198	0	0	0
N30	59 20.4	176 22.4	73	0	0	0	0	0	324	324
O18	59 39.9	168 36.9	20	82	0	0	82	0	0	82
O19	59 39.9	169 15.7	25	0	0	81	81	0	81	81
O20	59 40.1	169 54.6	30	0	79	317	397	0	0	397
O21	59 40.1	170 35.0	35	0	241	402	644	0	0	644
O22	59 40.3	171 14.5	38	940	16143	6112	23196	627	0	627
O23	59 40.2	171 54.0	41	3180	7314	4293	14787	159	0	159
O24	59 39.9	172 34.4	45	1024	4646	2914	8583	394	236	630
O24	59 49.9	172 14.8	40	601	2045	1083	3729	0	120	120
O25	59 30.1	172 53.0	48	2348	3521	470	6339	0	78	78
O25	59 40.5	173 15.3	51	557	875	477	1910	0	0	0
O26	59 40.1	173 52.8	56	2499	4917	1451	8867	967	1370	2338
O27	59 40.1	174 27.1	61	875	3268	1439	5582	5471	909	6380
O28	59 40.0	175 6.2	67	5157	6986	832	12975	40027	4003	44030
O29	59 40.1	175 53.4	74	520	260	260	1040	520	0	520
O30	59 40.2	176 33.1	73	0	770	86	856	0	0	856
P20	60 0.0	169 57.1	28	0	0	647	647	0	81	81
P21	59 60.0	170 38.1	34	82	2372	33507	35962	13818	6302	20121
P22	60 0.6	171 18.1	36	385	11179	66302	77866	17539	4048	21587
P23	60 0.2	171 57.4	35	80	401	161	642	0	0	0
P24	59 60.0	172 38.7	35	79	79	79	238	79	0	79
P24	60 9.7	172 19.4	30	0	0	839	839	152	229	381
P25	59 50.1	172 55.5	42	884	8362	1930	11177	161	884	1045
P25	60 0.1	173 18.5	40	0	155	310	465	232	465	697
P26	60 0.5	173 57.7	51	716	3976	1431	6124	636	954	1591
P26	60 7.3	173 46.3	47	321	2087	1926	4334	1284	562	1846
P26	59 50.2	173 35.1	50	859	1405	703	2966	390	390	781

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

(*Chionoecetes opilio*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Total	Large	Small		Total
P27 07/19/03	59 50.0	174 14.5	57	487	975	975	2437	0	325	325	2761
P27 07/19/03	60 0.1	174 36.4	57	539	1078	539	2155	1232	847	2078	4233
P28 07/17/03	60 0.1	175 14.8	62	807	1453	161	2421	5487	1049	6536	8957
P29 07/17/03	59 59.8	175 55.4	69	966	1127	161	2253	1046	80	1127	3380
P30 07/17/03	59 59.7	176 41.9	75	83	249	83	415	0	83	83	498
P31 07/17/03	59 59.7	177 11.2	74	326	571	326	1223	408	0	408	1630
P32 07/17/03	59 59.9	177 55.5	77	0	0	171	171	0	0	0	171
Q19 07/03/03	60 20.0	169 20.1	22	0	0	0	0	0	157	157	157
Q20 07/04/03	60 19.9	170 2.4	27	0	161	33468	33629	9225	17053	26279	59908
Q21 07/04/03	60 19.7	170 40.4	32	80	1116	226187	227383	27599	120487	148086	375468
Q22 07/13/03	60 20.2	171 22.1	35	0	8461	87096	95557	25382	32848	58230	153787
Q23 07/13/03	60 20.0	172 3.9	31	0	546	1248	1794	156	0	156	1950
Q25 07/18/03	60 10.9	173 2.7	31	77	231	694	1002	0	694	694	1696
Q26 07/14/03	60 20.2	174 3.9	49	2095	7683	4967	14745	12184	2251	14435	29180
Q27 07/19/03	60 10.2	174 21.7	53	990	1320	247	2557	0	0	0	2557
Q27 07/17/03	60 19.7	174 43.1	55	1765	1605	642	4012	0	0	0	4012
Q28 07/17/03	60 19.8	175 21.8	59	4539	2071	398	7008	0	0	0	7008
Q29 07/17/03	60 20.0	176 1.6	65	3773	2050	246	6069	902	82	984	7054
Q30 07/17/03	60 20.1	176 42.4	73	2912	3560	971	7443	30032	8898	38931	46373
Q31 07/17/03	60 19.7	177 22.2	79	241	322	0	563	0	0	0	563
R22 07/13/03	60 39.9	171 25.7	33	0	1391	81608	82999	7419	45905	53324	136323
R23 07/13/03	60 40.1	172 7.7	32	77	4149	76985	81211	17396	17396	34792	116003
R24 07/13/03	60 40.6	172 46.3	23	0	352	469	821	0	235	235	1056
R25 07/14/03	60 40.2	173 28.1	34	0	0	250	250	0	0	0	250
R26 07/14/03	60 40.6	174 8.5	46	1196	11358	93850	106403	114174	29291	143465	249868
R27 07/15/03	60 39.9	174 50.3	52	3252	7155	3252	13660	1301	976	2277	15936
R28 07/15/03	60 39.5	175 27.5	57	2141	1507	0	3648	0	0	0	3648
R29 07/16/03	60 40.5	176 12.6	63	2844	2291	869	6004	474	790	1264	7268
R30 07/16/03	60 40.2	176 48.3	69	1349	635	476	2460	0	317	317	2778
R31 07/16/03	60 39.3	177 30.3	79	537	230	77	843	0	0	0	843
R32 07/16/03	60 40.3	178 11.1	86	1089	168	587	1843	168	1676	1843	3687
S22 07/13/03	61 0.0	171 28.9	31	0	652	65230	65882	10437	40769	51205	117087
S23 07/13/03	61 0.1	172 10.3	33	0	318	14146	14464	4450	10331	14781	29245

Table 10. Summary of crab density by tow (# per square nmi) for Snow Crab.

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL		
				Large	Medium	Small	Total	Large	Small		Total	
S24	07/13/03	61 0.1	172 48.6	35	0	8338	216793	225131	45026	51697	96723	321853
S25	07/14/03	61 0.1	173 30.3	40	356	4623	44094	49072	9957	13157	23114	72186
S26	07/14/03	61 0.3	174 10.6	44	1117	1862	30167	33147	24208	3724	27933	61080
S27	07/15/03	60 59.5	174 53.7	49	5204	12142	38160	55506	65913	3469	69382	124888
S28	07/15/03	60 59.6	175 33.3	54	3338	1168	584	5090	167	250	417	5508
S29	07/16/03	61 0.3	176 17.1	60	1804	1255	471	3529	0	549	549	4078
S30	07/16/03	60 60.0	176 58.8	65	1570	661	2562	4794	2232	1653	3885	8678
S31	07/16/03	61 0.1	177 38.8	72	1800	818	1146	3765	491	327	818	4583
T25	07/14/03	61 20.2	173 35.3	39	740	2959	152391	156090	20713	112444	133157	289247
T26	07/14/03	61 20.0	174 19.9	41	374	2992	91886	95252	37223	54506	91729	186981
T27	07/15/03	61 19.9	175 0.2	46	3066	9446	61320	73832	11790	2046	13836	87668
T28	07/15/03	61 19.7	175 40.7	52	4510	13529	16460	34498	16685	1804	18489	52987
T29	07/16/03	61 20.3	176 18.4	57	2607	7171	1222	11000	0	81	81	11082
T30	07/16/03	61 20.3	176 58.3	62	4697	3956	989	9642	412	82	494	10136
U25	07/14/03	61 40.2	173 40.0	37	0	0	122432	122432	20542	64913	85456	207887
U26	07/14/03	61 40.2	174 26.2	41	81	406	90852	91339	8306	94454	102760	194099
U27	07/15/03	61 39.8	175 5.2	45	0	0	168642	168642	54907	78438	133345	301987
U28	07/15/03	61 40.1	175 48.8	51	4786	22865	176539	204190	51047	38286	89333	293523
U29	07/16/03	61 40.1	176 28.5	56	1999	10592	5996	18586	8594	1199	9793	28379
V25	07/14/03	61 59.6	173 44.9	33	0	4486	403726	408212	22429	107660	130090	538302
V26	07/14/03	62 0.3	174 29.9	39	80	80	82335	82494	10195	33820	44015	126509
V27	07/15/03	61 59.4	175 10.1	43	0	0	304972	304972	13033	218954	231987	536960
V28	07/15/03	62 0.2	175 49.6	49	813	3195	52332	56340	9673	6046	15718	72058

NOTE: Minimum carapace sizes used are: Large Males > 4.0 in; Medium Males = 3.1 to 4.0 in; Large Females > 2.0 in.

Table 11. Summary of crab density by tow (# per square nmi) for Hair Crab.

(*Erimacrus isenbeckii*)

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL	
				Large	Medium	Small	Total	Large	Small		Total
B01	55 20.9	167 32.4	79	0	0	0	0	78	0	78	
C06	55 40.6	164 35.7	51	0	0	123	123	0	0	123	
E10	56 20.2	162 11.7	42	0	0	0	0	80	0	80	
F12	56 39.9	160 59.1	36	83	249	0	331	0	0	331	
F13	56 41.3	160 23.2	32	81	1211	0	1292	0	242	1534	
G02	57 0.2	167 4.9	39	80	0	0	80	0	0	80	
G14	56 59.9	159 42.0	29	0	326	0	326	0	81	407	
G20	56 59.8	169 32.9	32	0	80	0	80	0	241	322	
G21	56 50.2	169 54.0	38	81	0	81	163	0	163	325	
G21	57 0.0	170 9.3	36	162	0	0	162	0	0	162	
H09	57 20.3	162 56.1	26	165	0	0	165	0	0	165	
H09	57 19.5	162 37.8	26	81	0	0	81	0	0	81	
H12	57 19.7	160 56.0	33	165	0	0	165	0	0	165	
H13	57 19.9	160 18.7	32	0	82	0	82	0	0	82	
H19	57 20.1	168 59.7	37	78	0	0	78	0	0	78	
I05	57 40.0	165 15.2	32	80	0	0	80	0	0	80	
I07	57 40.5	164 0.1	26	84	0	0	84	0	0	84	
I11	57 39.8	161 31.7	27	0	0	0	0	81	0	81	
I13	57 40.1	160 16.2	28	0	494	0	494	0	165	659	
I15	57 40.7	159 1.1	24	0	80	0	80	0	0	80	
I19	57 49.7	168 44.1	37	80	0	0	80	0	0	80	
J05	58 0.3	165 15.1	25	85	0	0	85	0	0	85	
J12	57 59.7	160 50.6	24	0	82	0	82	0	0	82	
J13	57 59.9	160 13.2	26	0	83	0	83	0	0	83	
K03	58 20.7	166 33.2	24	78	0	0	78	0	0	78	
K04	58 20.4	165 55.5	22	79	0	0	79	0	0	79	
K18	58 20.6	168 28.0	34	78	0	0	78	0	0	78	
L01	58 40.4	167 52.2	24	243	0	0	243	0	0	243	
L23	58 40.2	171 43.0	49	80	0	0	80	0	0	80	
M01	59 0.6	167 52.8	20	338	169	0	507	0	0	507	
M18	58 59.6	168 31.9	24	311	0	0	311	0	0	311	
N18	59 20.1	168 34.5	21	0	0	79	79	79	0	158	
N19	59 20.0	169 14.0	26	80	0	0	80	0	0	80	

**Table 11. Summary of crab density by tow (# per square nmi) for Hair Crab.**

*(Erimacrus isenbeckii)*

Station Date	N. Lat.	W. Long	Fathoms	Males			Females			GRAND TOTAL
				Large	Medium	Small	Large	Small	Total	
O01	59 39.9	167 57.7	18	81	81	0	0	0	0	162
O18	59 39.9	168 36.9	20	82	82	0	164	0	164	327
P18	60 0.1	168 38.9	19	0	82	0	0	0	0	82
P19	59 60.0	169 18.6	24	79	0	0	0	0	0	79
Q19	60 20.0	169 20.1	22	79	0	0	0	0	0	79
Q20	60 19.9	170 2.4	27	0	0	0	0	0	0	80
Q25	60 10.9	173 2.7	31	0	0	0	77	0	77	77
S24	61 0.1	172 48.6	35	0	82	0	0	0	0	82

NOTE: Minimum carapace sizes used are: Large Males > 3.25 in; Medium Males = 2.0 to 3.25 in; Large Females > 2.6 in.





EXIT... STAGE LEFT!

Richard MacIntosh enjoys table sledding at the end of a long day in January 2002 on board the FV *Fierce Allegiance*. Rich will retire from the National Marine Fisheries Service in 2003 after more than 31 years of dedicated service as a Research Fisheries Biologist. Great job, Rich!! Kirsten Gravel, Fisheries Biologist with the ADF&G, and member of the research team, enjoys the fun.