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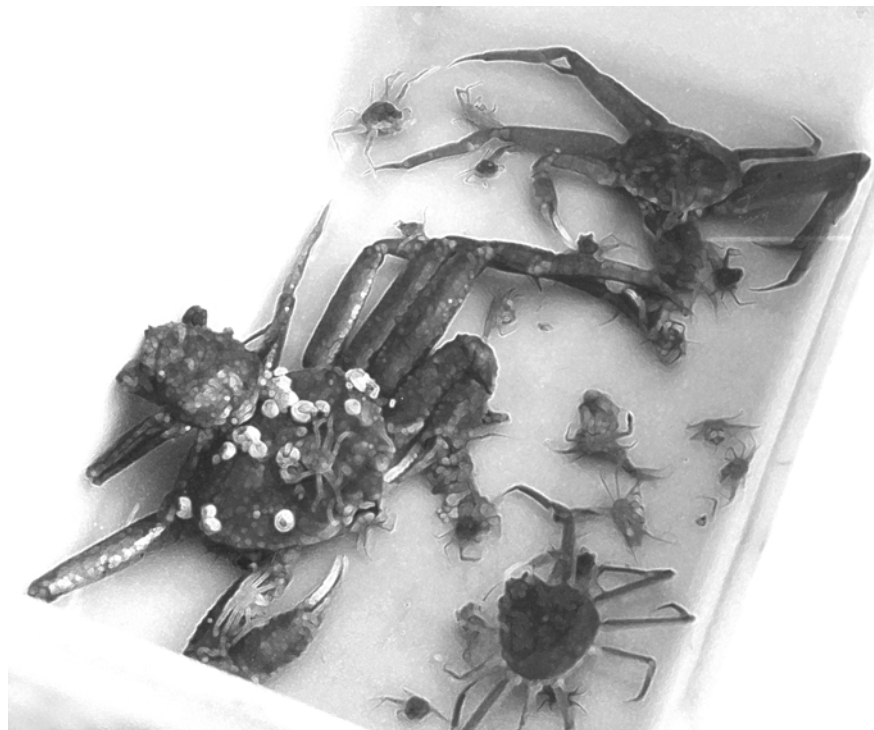
National Marine
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U.S. DEPARTMENT OF COMMERCE

AFSC PROCESSED REPORT 98-07

Report to Industry on the 1998 Eastern Bering Sea Crab Survey

November 1998



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



Cover Photo: Tanner and snow crab caught in a beam trawl towed directly behind an experimental double-bag trawl. This experiment took place near the Pribilof Islands after the standard survey was completed.

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Alaska Fisheries Science Center
Processed Report 98-07

REPORT TO INDUSTRY ON THE
1998
EASTERN BERING SEA
CRAB SURVEY

by
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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) 481-1700. (GHL = Guideline Harvest Level.)

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

Legal males: 7.4 million crabs; 21% decrease.
Pre-recruits: 16.5 million crabs; 85% increase.
Large Females: 35.3 million crabs; 42% increase.
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% decrease.
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. platypus*) Pribilof District.

Legal males: 0.8 million crabs; no change.
Pre-recruits: 0.4 million crabs; 17% increase.
Large Females: 2.0 million crabs; 20% decrease.
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. platypus*) Northern District.

Legal males: 3.1 million crabs; 21% decrease.
Pre-recruits: 1.8 million crabs; 21% decrease.
Large Females: Not well estimated.
Outlook: Population is above average levels. Annual abundance estimates are affected by the portion of the stock occupying untrawable grounds.
GHL: 4.1 million lbs (1,861 mt). Fishery opened September 15.

Tanner crab (*Chionoecetes bairdi*) Eastern District.

Legal males: 2.2 million crabs; 36% decrease.

Pre-recruits: 12.1 million crabs; 22% increase.

Large Females: 6.5 million crabs; 35% decrease.

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% decrease.

Small males: 1,015 million crabs; 32% decrease.

Large Females: 1,161 million crabs; 16% decrease.

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% decrease.

Large Females: Not well estimated.

Outlook: Population is declining and recruitment trends are not apparent.

GHL: 0.4 million lbs (182 mt) Pribilof District only. Fishery opens November 1.

THE 1998 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, BIN C15700, Seattle, Washington 98115.

Landing statistics for 1998 are preliminary data obtained from the Alaska Department of Fish and Game (Skip Gish, ADF&G, Dutch Harbor, personal communication). Those needing final statistics should contact ADF&G directly.

Survey Area and Methods

The 1998 EBS crab survey consisted of 380 bottom trawl tows and covered an area of approximately 139,200 square nautical miles (nmi). The survey area (Fig. 1) has been standardized since 1990. The survey was conducted aboard two chartered vessels, the F/V *Aldebaran* and F/V *Arcturus*, between June 9 and August 5. 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 Pribilofs, additional tows were made at the corners of squares.

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 1.50 nmi (2.80km). 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 and snow crabs, and carapace length (cl) for all others. Procedures for estimating abundance were similar to previous years (Appendix A). Note that population estimates are indexes and are most precise for large crabs; however, they may not represent absolute abundance and are least precise for females and small crab due to variance in crab behavior and net performance. GHL refers to Guideline Harvest Levels.

In 1998, additional tows were made at numerous locations to assess the effects of tow length and gear performance. Those data will be analyzed separately and are not presented in this report.

Because of differences in the length of each tow, 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 each 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, (°C) degrees Celsius, (nmi) nautical miles, (cl) carapace length, and (cw) carapace width. Terminology for shell condition categories is explained in Appendix B.

Distribution and Abundance of Crab Stocks

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

Legal-sized (≥ 6.5 in cw or 135 mm cl) male

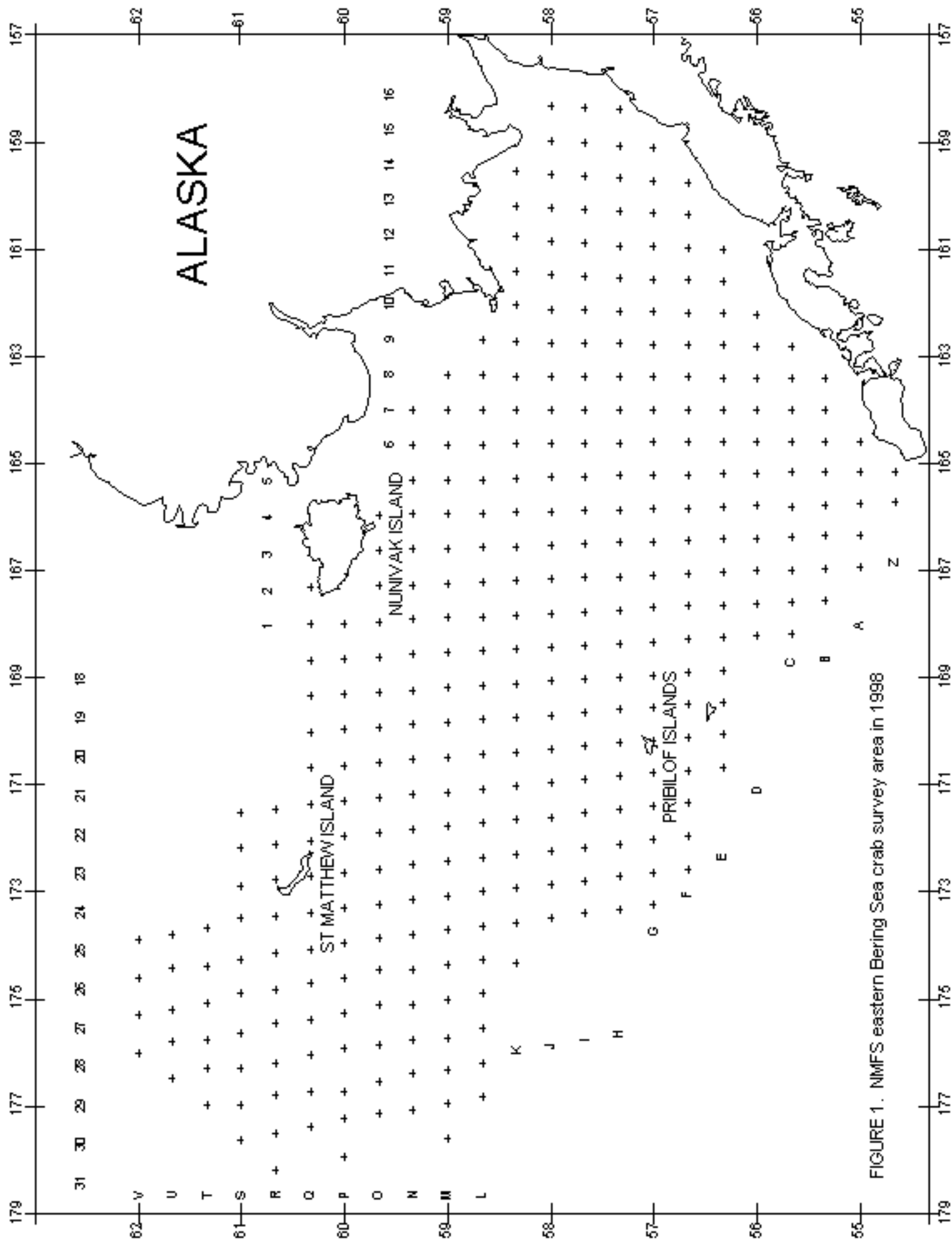


FIGURE 1. NMFS eastern Bering Sea crab survey area in 1998

Red King Crab Bristol Bay Statistical Area

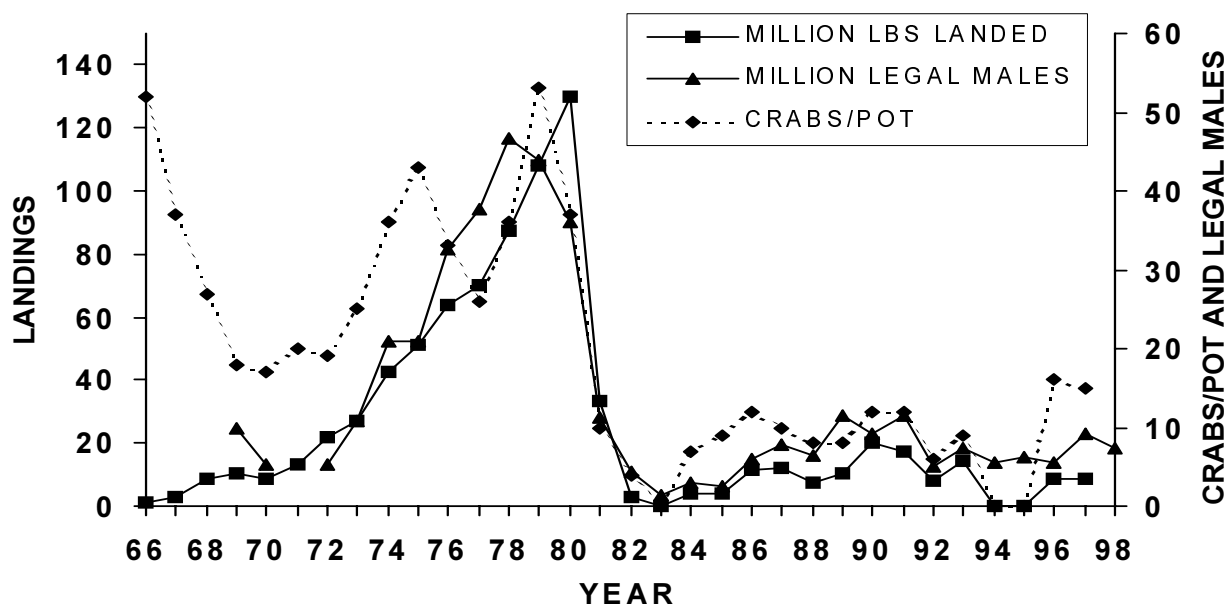


FIGURE 2. U.S. landings in millions of pounds, CPUE as crabs/pot, and abundance of legal red king crab (*P. camtschaticus*) in millions in Bristol Bay, estimated from NMFS trawl surveys (abundance data include the Pribilof District prior to 1983).

crabs were concentrated in central Bristol Bay (Chart 1 and Table 7). The abundance index of legal male red king crabs in the Bristol Bay District (south of 58°39'N and east of 168°W) was 7.4 million crabs (Table 1 and Fig. 2). The estimate represents a 21% decrease from last year and is well below the long-term average (14.1 million). Pre-recruit crab (110-134 mm cl) showed an increase of 85% to 16.5 million. Abundance of small males decreased by 60%. A recruiting cohort with a modal size of 88 mm in 1996 (Fig. 3) grew to about 102 mm in 1997 and 120 mm in 1998. The fishable stock of mature males has increased in 1998 as a result. Fewer than 1% of legal male crabs were in molting or softshell condition, and 28% were new-hardshell crabs (Appendix B).

The abundance index for large (≥ 90 mm cl) females in Bristol Bay was 35.3 million crabs, an increase of 42%. The size-frequency of females showed a recruitment pattern simi-

lar to males but almost all are now mature. In June, 2% of sampled mature females were molting or softshell (vs. 14% last year). Among sampled mature females, the proportion which had molted and extruded new, uneyed eggs was 99%. 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 in order to provide independent estimates of the abundance of mature males and females and to establish a GHIL (ADF&G Regional Information Report 5596-12). As a result of the increased number of mature females, a harvest rate of 15% of mature males (> 119 mm cw) was selected, which resulted in a GHIL of 16.4 million lbs (7,446 mt) or approximately 2.45 million crabs at an average weight of 6.7 lbs.

Red King Crab Length Frequency Bristol Bay

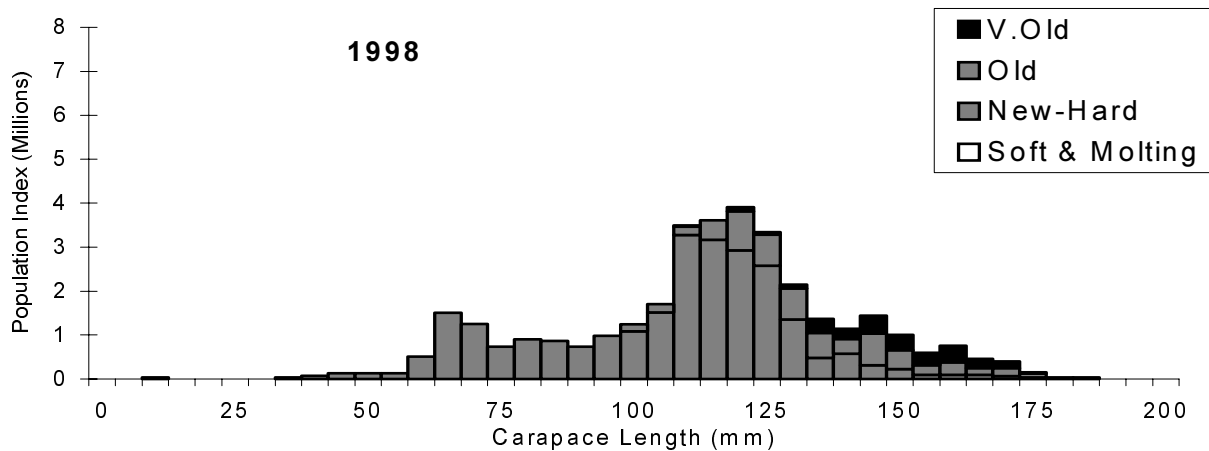
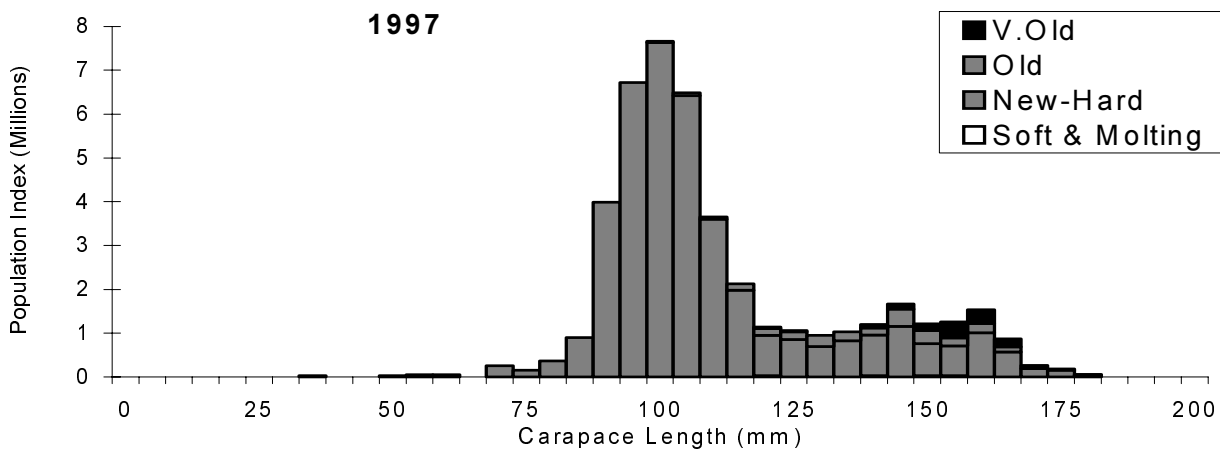
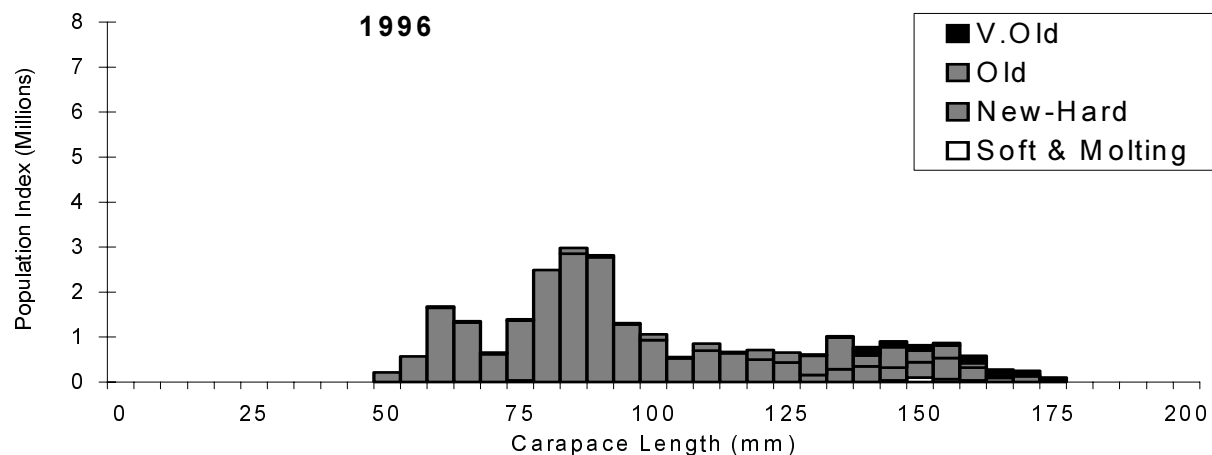


FIGURE 3. Size-frequency of male red king crab (*P. camtschaticus*) by 5 mm length classes, 1996-1998.

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.

	Males				Females			Grand Total
	Small	Pre-rec	Legal	Total	Small	Large	Total	
Size ¹ (mm)	<110	110-134	≥135		<90	≥90		
Width(in)	<5.2	5.2-6.5	≥6.5		<4.3	≥4.3		
1975	84.9	31.7	21.0	137.6	70.8	58.9	129.7	267.3
1976	70.2	49.3	32.7	152.2	35.9	71.8	107.7	259.9
1977	80.2	63.9	37.6	181.7	33.5	150.1	183.6	365.3
1978	62.9	47.9	46.6	157.4	38.2	128.4	166.6	324.0
1979	48.1	37.2	43.9	129.2	45.1	110.9	156.0	285.2
1980	56.8	23.9	36.1	116.8	44.8	67.6	112.5	229.3
1981	56.6	18.4	11.3	86.3	36.3	67.3	103.6	189.9
1982	107.2	17.4	4.7	129.3	77.2	54.8	132.0	261.3
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	27.5	9.6	10.4	47.4	1.8	25.9	27.7	75.1
1998 (B) ²	10.9	16.5	7.4	34.8	5.5	35.3	40.8	75.6
(P)	0.2	0.5	0.4	1.1	0.0	1.0	1.0	2.2
<u>Limits³</u>								
Lower	5.5	9.7	4.9	23.0	1.5	15.2	19.6	42.5
Upper	16.4	23.3	9.9	46.6	9.6	55.4	62.0	108.6
±%	50	41	34	34	73	57	52	44

¹ Carapace length (mm).

² Separate estimates given for Bristol Bay (B) and Pribilof (P) Districts.

³ Mean ± 2 standard errors for most recent year; Bristol Bay only.

Blue King Crab
Pribilof District

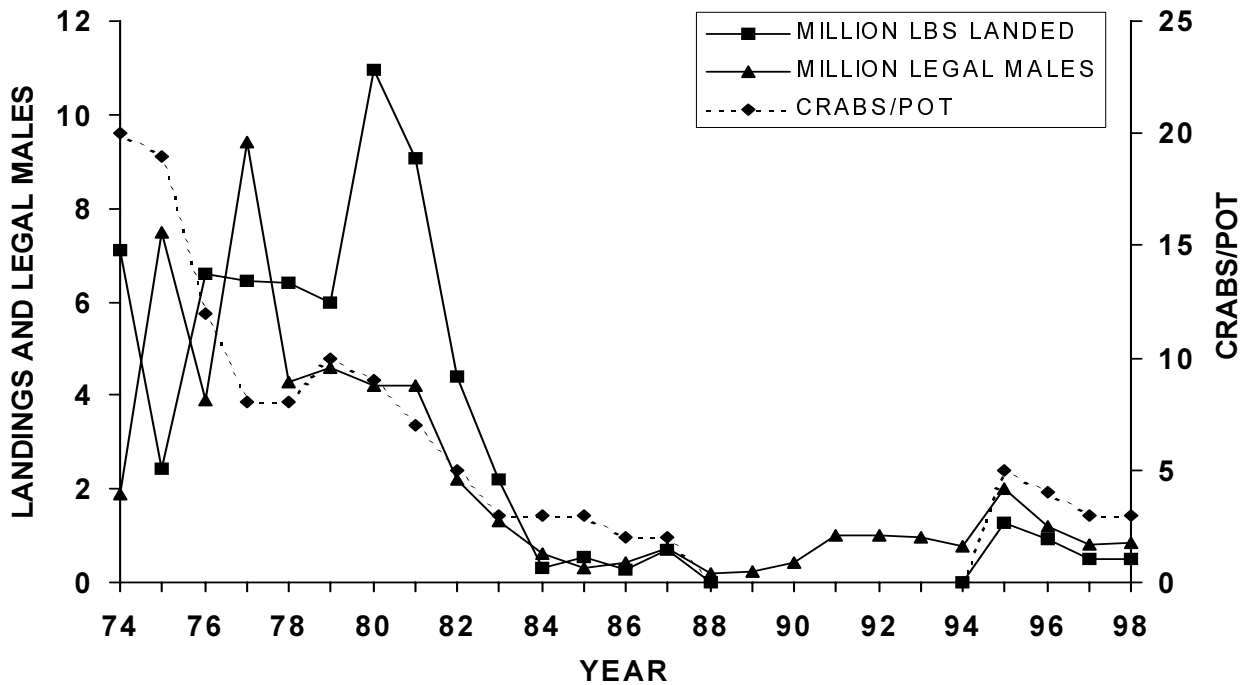


FIGURE 4. U.S. landings in millions of pounds, CPUE as crabs/pot, and abundance of legal blue king crab (*P. platypus*) in millions in the Pribilof District, estimated from NMFS trawl surveys.

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 0.4 million crabs (Table 1), a decrease of 63% from last year's estimate. The index for large females showed no change. Often male crab are highly concentrated at one station (G21), but in 1998, no such "hot spot" was found. A combined fishery for red and blue king crab in the Pribilof District opened September 15 with a GHL of 1.3 million lbs of both species. Landings in 1998 were 0.5 million lbs of red king crab with a CPUE of 3.1 crab/potlift. Historically, red king crab have not been abundant in the Pribilof Islands and landings were taken incidentally during the blue king crab fishery. Red king crab were relatively abundant from 1992 to 1995 but are apparently returning to historical levels.

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

Legal (≥ 6.5 in cw or 135 mm cl) males were found primarily north and east of St. Paul Island (Chart 2 and Table 8A). The abundance index for legal males was 0.84 million crabs (Table 2 and Fig. 4), showing little change from last year, and is well below the long-term average (2.3 million). The index of pre-recruits (110-134 mm cl) increased 17%. The abundance of small males (< 110 mm cl), is very difficult to determine. Overall, this population shows little change. Size-frequency data (Fig. 5) are similar to last year. Shell conditions among legal males were 3% softshell or molting, 27% new-hardshells, and 70% oldshells.

The abundance index for large (≥ 90 mm cl) females showed a 20% decrease from last year. However, estimates of female abundance are usually very imprecise due to the preference of such crab for rocky habitat

Blue King Crab
Northern District

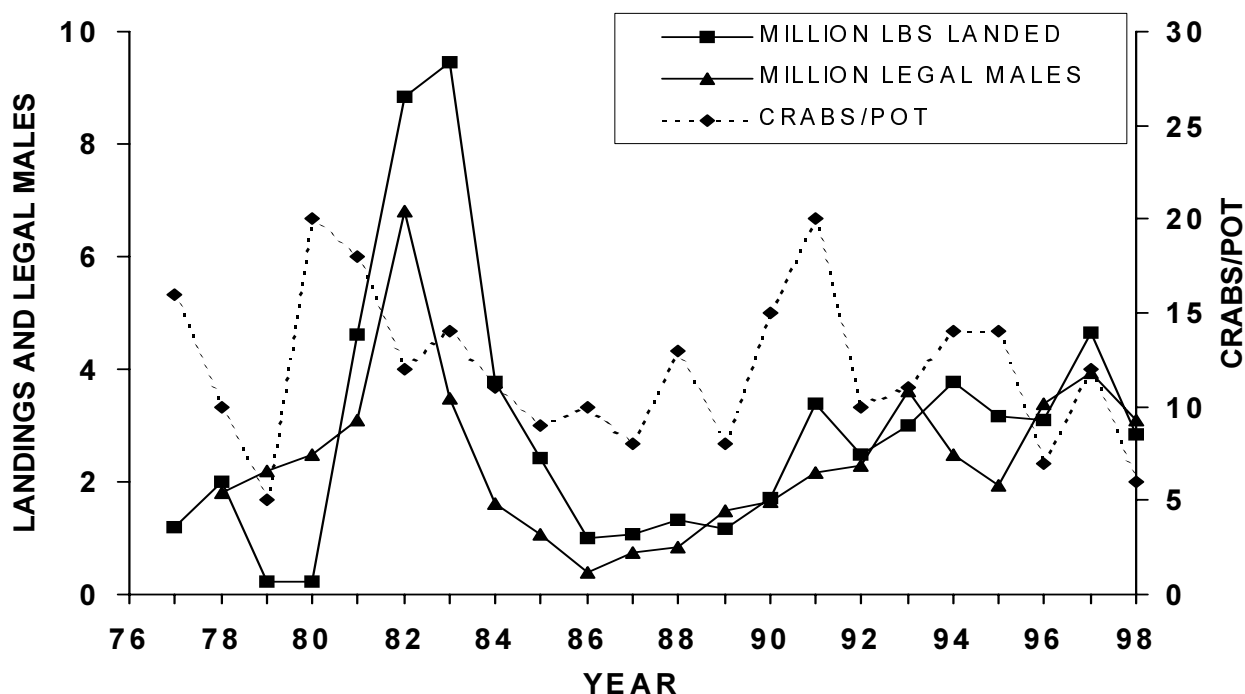


FIGURE 6. U.S. landings in millions of pounds, CPUE as crabs/pot, and the abundance of legal blue king crabs (*P. platypus*) in millions in the Northern District (St. Matthew Island), estimated from NMFS trawl surveys.

which is not sampled well by trawls. Among sampled mature females, 38% were new hardshells, of which 93% carried new eggs, and 58% were oldshells, of which 84% carried empty embryo cases. Four percent of mature females were softshell. Blue king crab are predominantly biennial spawners. Only a portion of the female population spawns in a given year, while the remainder is in the non-embryo-bearing phase.

This fishery was closed from 1988 through 1994 due to low stock abundance but was reopened in 1995 with a combined GHL for red and blue king crab. In 1998, the combined GHL was 1.3 million lbs. Landings in 1998 were 0.5 million lbs of red king crab with a CPUE of 2.8 crab/potlift. Declining GHLs reflect declining trends in stock abundance for both species.

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

Legal (≥ 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 3.1 million crabs (Table 3 and Fig. 6), representing a 21% decrease from last year. The abundance of pre-recruits (105-119 mm cl) also showed a 21% decrease. The distribution of size-frequencies was similar to last year, although there is evidence of small crabs in the range of 50-75 mm cl (Fig. 7).

The index of legal males (3.11 million) is well above the long-term average of 2.37 million. Among legal males, none were softshell, 79% were new-hardshells, and 21% oldshells. The index for large females (≥ 80 mm cl) is poorly determined due to a habitat preference for inshore, rocky and untrawlable grounds. Only 26 mature females were captured. The 1998 fishery opened on September 15 with

Blue King Crab Length Frequency Pribilof District

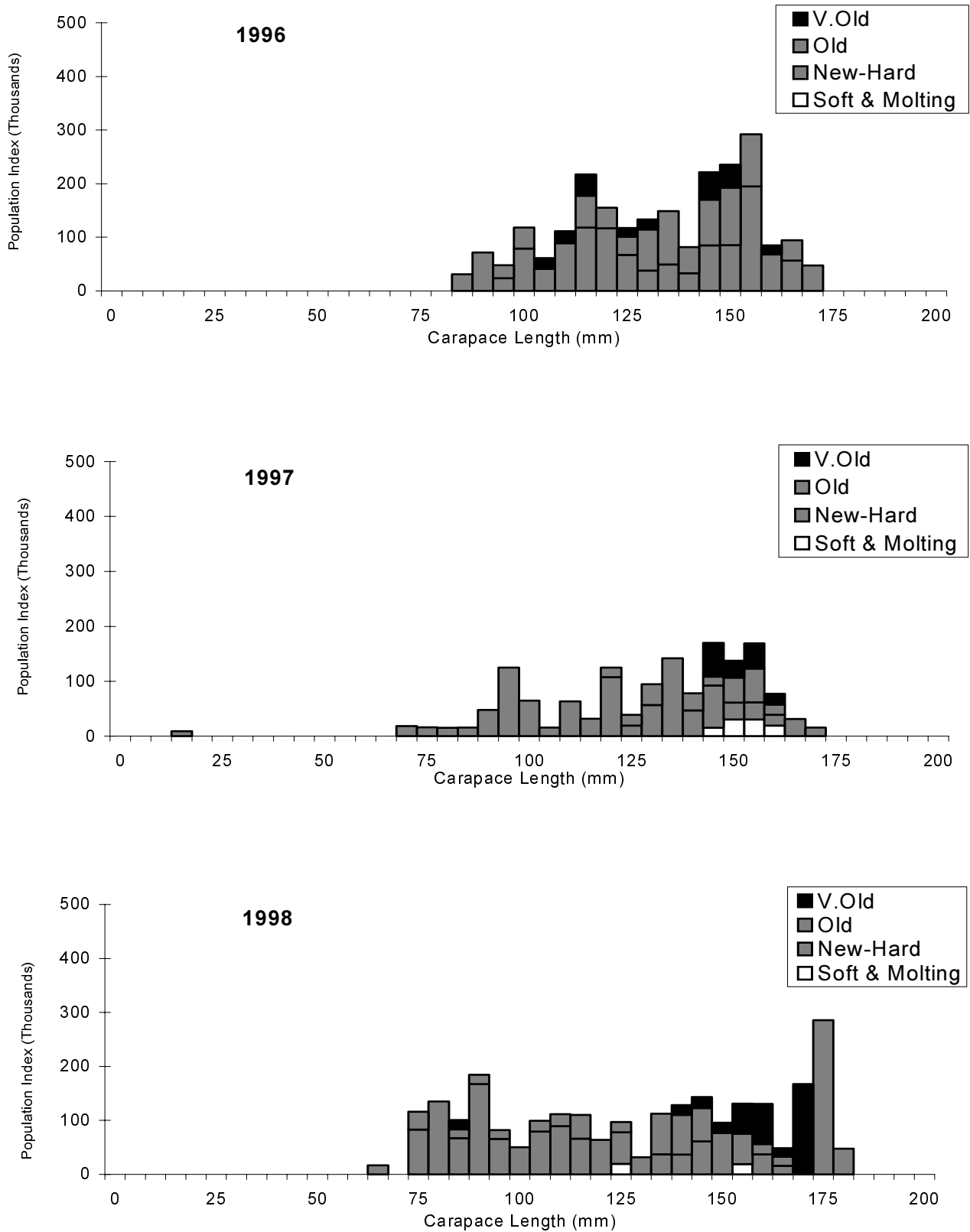


FIGURE 5. Size-frequency of Pribilof District male blue king crab (*P. platypus*), by 5 mm length classes, 1996-1998.

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

Size ¹ (mm) Width(in)	Pribilof District							Grand Total
	Males				Females			
	Small <110 <5.2	Pre-rec 110-134 5.2-6.5	Legal ≥135 ≥6.5	Total	Small <90 <4.3	Large ≥90 ≥4.3	Total	
1974	4.4	3.1	1.9	9.4	0.6	10.9	11.5	20.9
1975	4.1	8.0	7.5	19.6	0.0	8.8	8.8	28.4
1976	10.3	2.1	3.9	16.3	0.4	17.7	18.1	34.4
1977	3.2	2.2	9.4	14.8	2.2	17.5	19.7	34.5
1978	1.2	5.8	4.3	11.3	0.3	35.5	35.8	47.1
1979	6.4	1.5	4.6	12.5	5.2	2.9	8.1	20.6
1980	1.9	1.4	4.2	7.5	0.8	101.9	102.7 ²	110.2
1981	4.8	1.4	4.2	10.4	3.4	11.6	15.0	25.4
1982	1.2	0.7	2.2	4.1	0.7	8.6	9.3	13.4
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	0.06	0.16	0.32	0.54	0.18	0.52	0.70	1.24
1986	0.02	0.02	0.43	0.46	0.04	1.86	1.89	2.35
1987	0.57	0.08	0.73	1.38	0.39	0.58	0.97	2.35
1988	1.10	0.0	0.20	1.29	0.77	0.43	1.20	2.49
1989	3.22	0.10	0.22	3.54	2.29	1.28	3.57	7.11
1990	1.84	1.24	0.41	3.48	1.82	2.66	4.48	7.96
1991	1.32	1.03	1.01	3.36	0.56	2.81	3.37	6.73
1992	1.57	1.17	1.02	3.76	1.31	2.05	3.36	7.11
1993	0.97	0.83	0.98	2.78	0.33	2.17	2.50	5.28
1994	0.30	0.51	0.76	1.57	0.06	4.28	4.34	5.90
1995	0.79	1.16	2.00	3.95	0.44	4.02	4.47	8.42
1996	0.33	0.74	1.21	2.28	0.08	4.63	4.71	6.99
1997	0.33	0.35	0.82	1.50	0.08	2.48	2.55	4.05
1998	0.78	0.41	0.84	2.04	0.29	1.98	2.27	4.31
<u>Limits³</u>								
Lower	0.0	0.1	0.4	0.8	0.0	0.5	0.7	1.5
Upper	1.6	0.7	1.3	3.3	0.5	3.5	3.9	7.1
±%	103	65	54	61	87	77	70	66

¹ Carapace length (mm).

² Female estimates considered unreliable in 1980.

³ Mean ± 2 standard errors for most recent year.

Blue King Crab Length Frequency Northern District

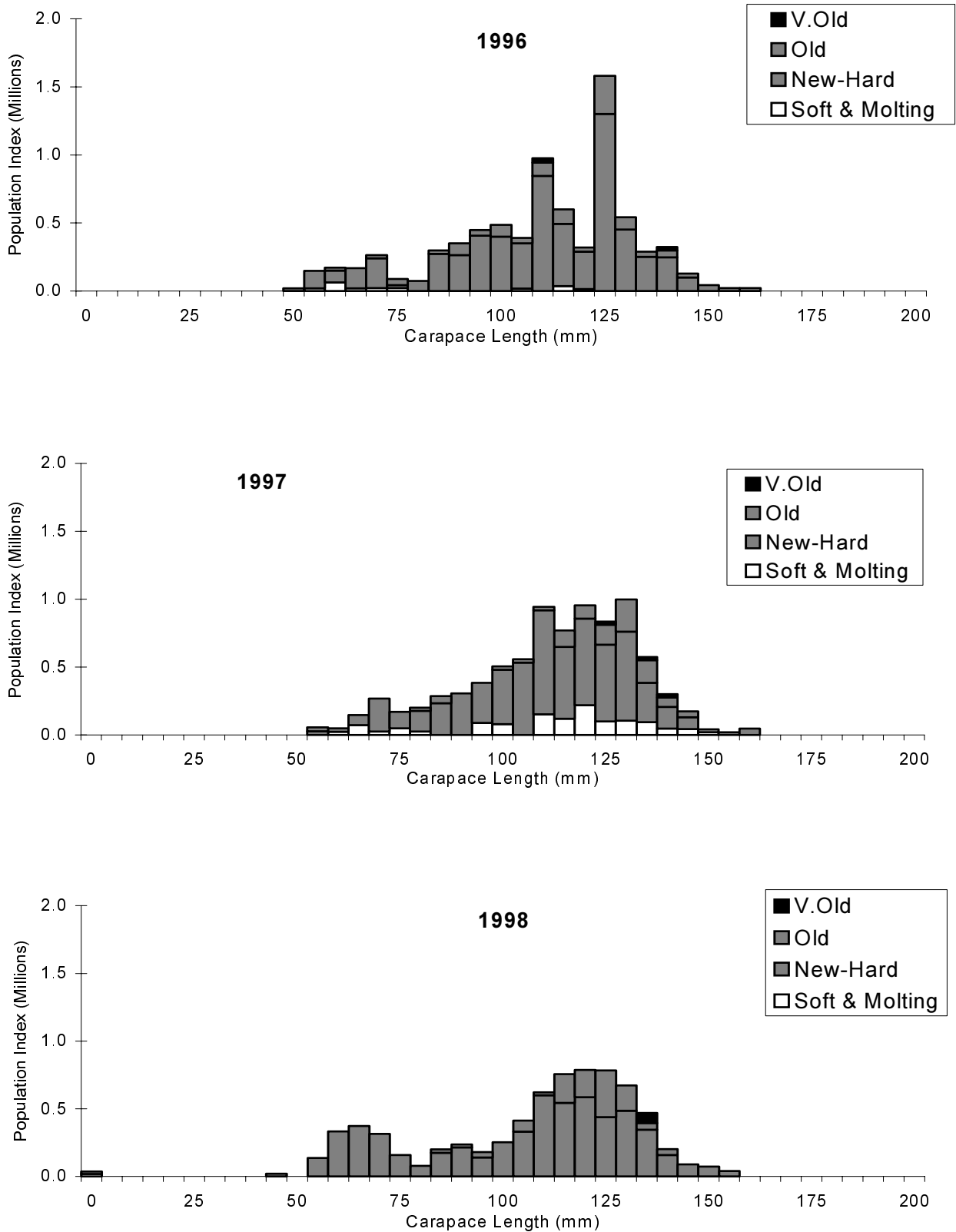


FIGURE 7. Size-frequency of Northern District (St. Matthew Island) male blue king crab (*P. platypus*), by 5 mm length classes, 1996-1998.

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

Size ¹ (mm) Width(in)	Northern District							Grand Total
	Males				Females			
	Small <105 <4.3	Pre-rec 105-119 4.3-5.5	Legal ≥120 ≥5.5	Total	Small <80 <3.8	Large ≥80 ≥3.8	Total	
1978	5.6	2.4	1.8	9.8	0.8	0.4	1.2	11.0
1979	4.9	2.3	2.2	9.4	1.7	0.9	2.6	12.0
1980	3.4	2.2	2.5	8.1	0.8	2.2	3.0	11.1
1981	1.2	1.8	3.1	6.3	0.0	0.5	0.5	6.8
1982	3.2	2.6	6.8	12.5	0.4	0.7	1.1	13.6
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	0.46	0.35	1.08	1.90	0.08	0.13	0.21	2.11
1986	0.56	0.40	0.38	1.35	0.25	0.06	0.32	1.67
1987	1.08	0.73	0.74	2.54	0.47	0.22	0.68	3.22
1988	1.44	0.65	0.83	2.92	0.90	0.79	1.70	4.62
1989	4.80	0.97	1.48	7.25	1.58	1.68	3.27	10.52
1990	1.44	0.75	1.66	3.85	0.45	0.20	0.65	4.50
1991	2.92	1.52	2.17	6.61	0.84	0.69	1.53	8.14
1992	2.27	1.47	2.30	6.03	0.94	0.38	1.32	7.36
1993	4.62	1.99	3.60	10.22	1.35	3.03	4.38	14.60
1994	1.55	1.42	2.47	5.44	0.11	0.40	0.51	5.95
1995	1.88	1.11	1.93	4.92	0.57	0.13 ²	0.70	5.62
1996	2.59	1.97	3.40	7.96	1.13	0.86	1.99	9.96
1997	2.37	2.27	3.94	8.59	0.60	0.84	1.44	10.03
1998	2.32	1.79	3.11	7.22	0.61	0.53	1.14	8.36
<u>Limits³</u>								
Lower	0.0	0.1	0.9	2.2	0.0	0.0	0.0	2.0
Upper	4.7	3.5	5.4	12.3	1.6	1.0	2.5	14.7
±%	102	93	72	70	155	97	116	76

¹ Carapace length (mm); categories reflect smaller average size in the Northern District; 80 mm is the median size at maturity for females.

² This estimate considered unreliable because few crabs caught.

³ Mean ± 2 standard errors for most recent year.

Tanner Crab Eastern District

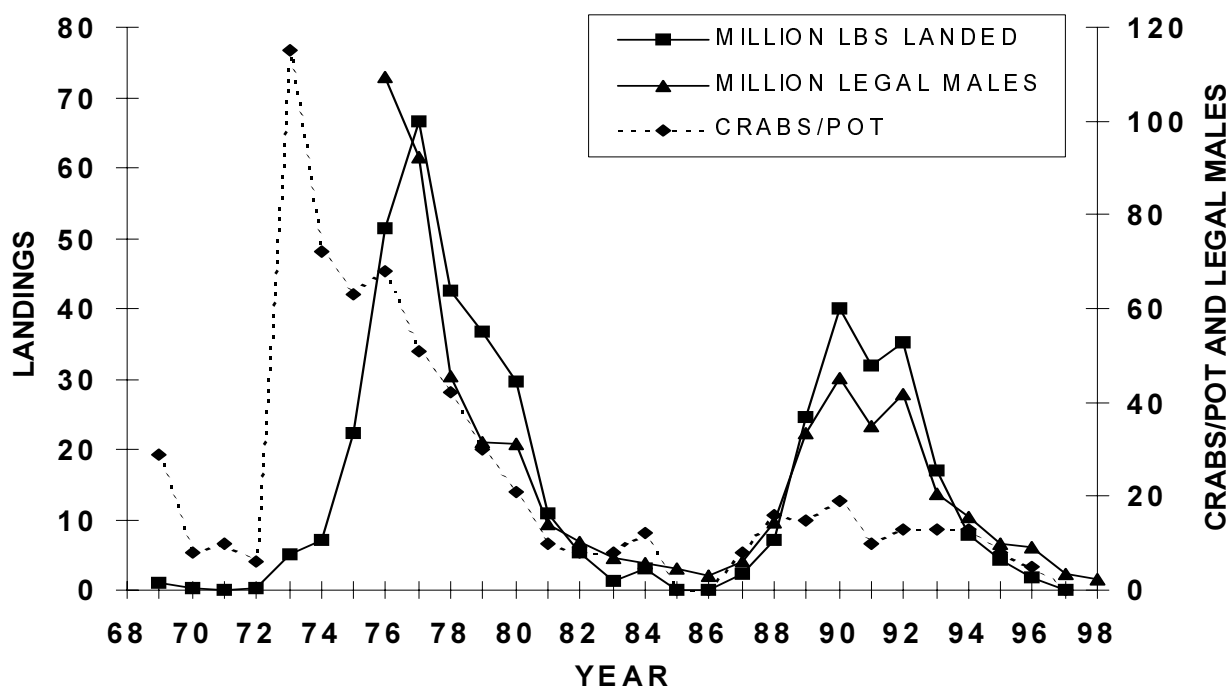


FIGURE 8. U.S. landings in millions of pounds, CPUE as crabs/pot, and the abundance of legal male Tanner crab (*C. bairdi*) in millions in the Bristol Bay and Pribilof Districts (prior to 1989) or the Eastern District (since 1989), estimated from NMFS trawl surveys.

GHL of 4.1 million lbs. Landings were 2.8 million lbs and CPUE was 6.2 crab/potlift.

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 central and outer Bristol Bay (Chart 3 and Table 9). The abundance index for legal male *C. bairdi* in the Eastern District (east of 173°W) is 2.2 million crabs (Table 4 and Fig. 8), a decrease of 36% from last year. This is the lowest abundance of legal Tanner crabs in the history of the survey. Virtually all the legal males occurred in the Eastern District. The abundance index for pre-recruits (110-137 mm cw) showed a 22% increase and the index for small male (<110 mm cw) showed a 13% increase. Increased abundance of males in the 30-60 mm

cw range (Fig. 9) suggests that this population may be showing signs of recruitment.

Among legal males, 5% were molting or softshell, 18% were new-hardshells, and 78% were oldshells. Most oldshell crab will not molt again in their lifespans. Since a large proportion of prerecruit-size males are also oldshell crabs, growth to the legal size range will decrease and abundance of legal males will continue to decline over the next few years.

The abundance index of large (≥ 85 mm cw) females (all districts) showed a 35% decrease and is now at the lowest level in the history of the survey. Among sampled mature females, 6% were softshells; 25% were new-hardshells, of which 96% carried new eggs; and 69% were oldshell or older, of which 76% carried new eggs. About 2% of mature females sampled had not completed hatching by the time of the survey.

The fishery was not opened in 1997 due to

Tanner Crab Width Frequency Eastern District

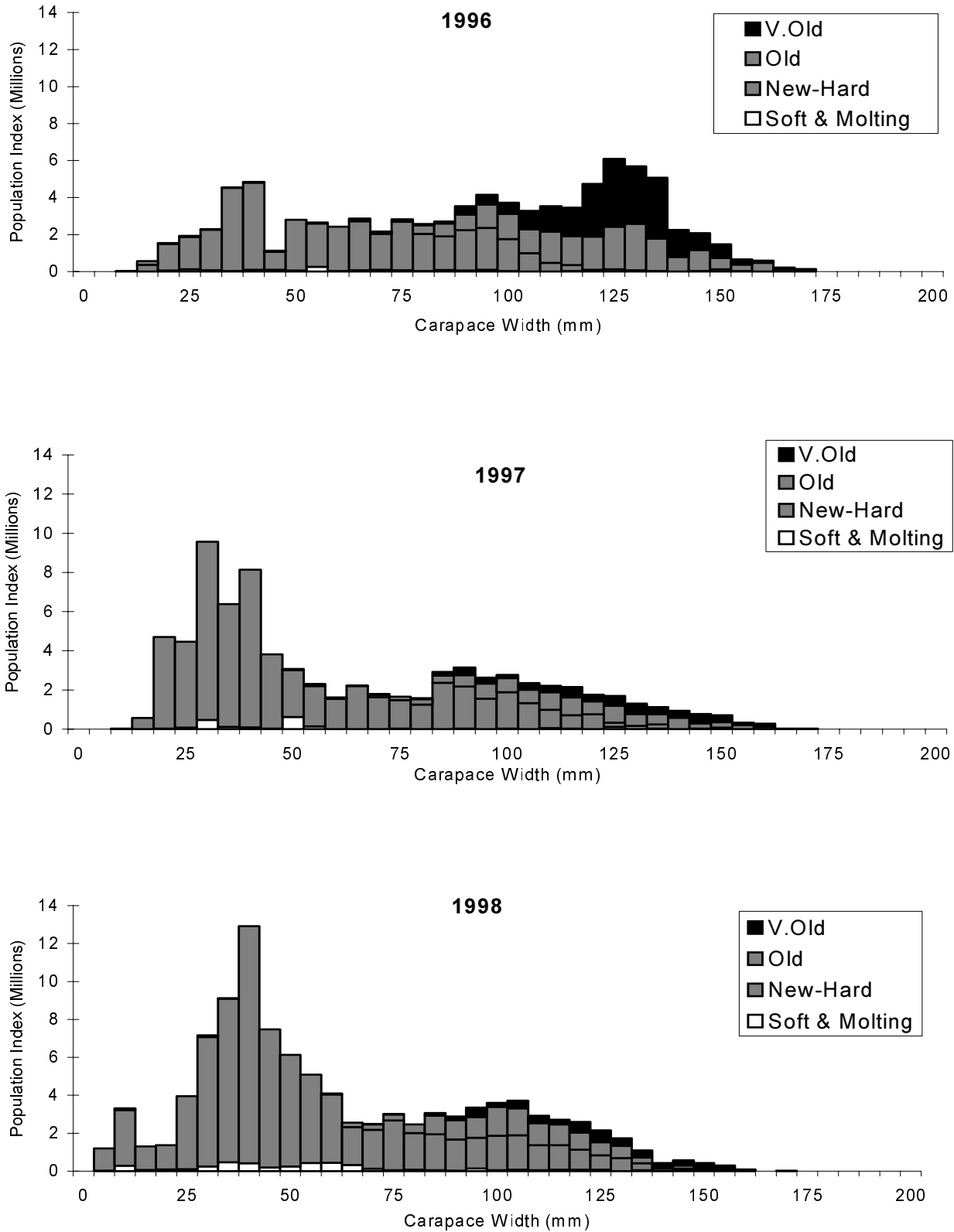


FIGURE 9. Size-frequency of male Tanner crab (*C. bairdi*) in the Eastern District, by 5 mm width classes, 1996-1998.

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.

Size ¹ (mm) Width(in)	Males				Females			Grand Total
	Small	Pre-rec	Legal	Total	Small	Large	Total	
	<110 <4.3	110-137 4.3-5.5	≥138 ² ≥5.5		<85 <3.4	≥85 ≥3.4		
1976	180.2	136.6	109.5	426.3	174.7	220.4	395.1	821.4
1977	255.0	116.3	92.1	463.4	328.4	215.8	544.2	1,007.6
1978	124.2	81.2	45.6	251.0	116.1	73.3	189.4	440.4
1979	133.1	47.7	31.5	212.3	122.6	42.1	164.7	377.0
1980	453.3	65.0	31.0	549.3	326.9	106.8	433.7	983.0
1981	303.8	24.0	14.0	341.8	324.2	79.1	403.3	745.1
1982	88.8	46.9	10.1	145.8	126.4	83.6	210.0	355.8
1983	146.3	32.0	6.7	185.0	180.1	45.4	225.5	410.5
1984	85.1	21.2	5.8	112.1	107.0	33.4	140.4	252.5
1985	31.1	9.4	4.4	45.0	24.2	15.6	39.8	84.8
1986	110.4	12.9	3.1	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	65.6	9.9	3.4	78.9	70.1	10.0	80.1	159.0
1998	74.2	12.1	2.2	88.5	61.4	6.5	67.9	156.5
<u>Limits³</u>								
Lower	54.9	9.1	1.4	68.2	40.5	4.4	46.2	114.4
Upper	93.5	15.1	3.0	108.9	82.3	8.7	89.7	198.6
±%	26	25	37	23	34	33	32	27

¹ Carapace width (mm).

² ≥ 135mm (5.3 in) prior to 1987

³ Mean ± 2 standard errors for most recent year.

Snow Crab
All Districts

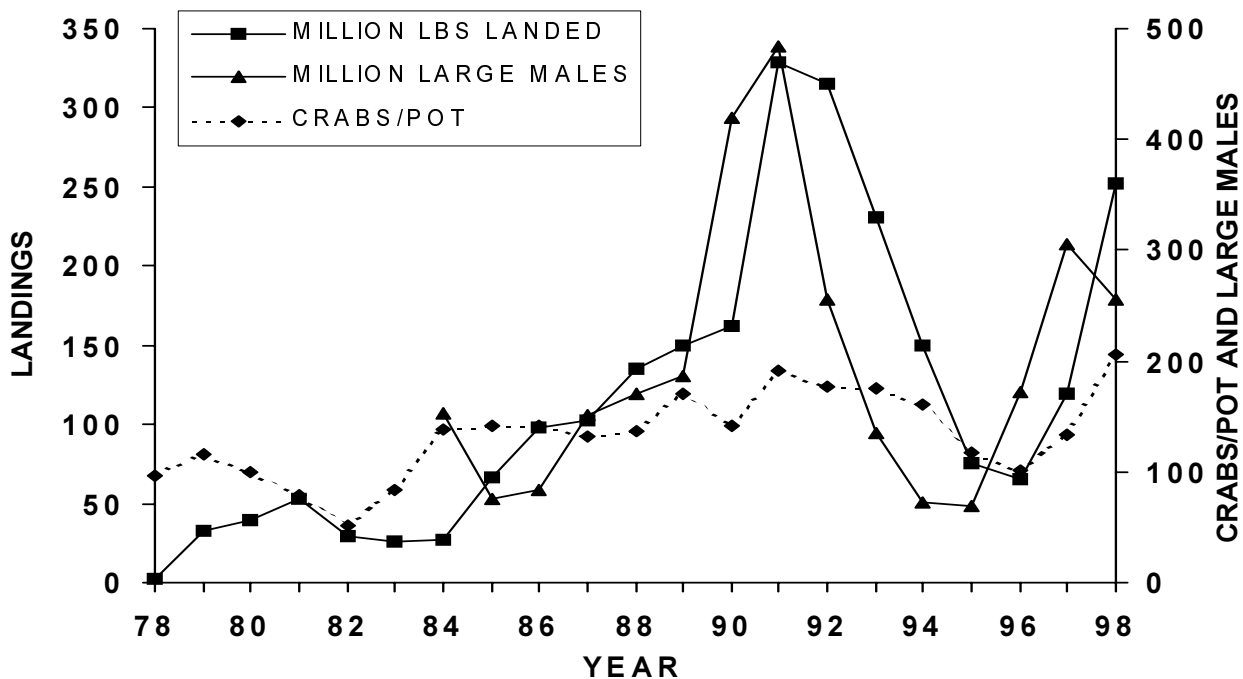


FIGURE 10. U.S. landings in million of pounds, CPUE as crabs/pot, and the abundance of large male snow crab (*C. opilio*) in millions (all districts combined), estimated from NMFS trawl surveys.

low abundance and poor performance of the 1996 fishery and it will not be opened again in 1998, due to record low stock abundance.

Snow Crab (*C. opilio*)

Although the legal minimum size limit for *C. opilio* is 3.1 in cw (78 mm), processors currently prefer a minimum size of 4.0 in cw (102 mm). Therefore, the size ranges for male *C. opilio* used in this report are defined as follows: small, <4 in (102 mm); large, ≥ 4.0 in cw (102 mm); and very large ≥ 4.3 in cw (110 mm). Estimates of abundance of large males (≥ 4.0 in) are not shown prior to 1984 (Table 5 and Fig. 10) due to differences in area surveyed and minimum size landed.

The distribution of large males showed several areas of high concentration, north and east of the Pribilof Islands (Chart 4 and Table 10). The abundance index for large (≥ 102 mm cw) males (Eastern and Western Districts combined) is 255 million crabs (Table 5 and Fig.

10), and represents a 17% decrease from last year. This is slightly above the 1984-1997 average of 195 million. Approximately 83% of these were in the Eastern District as compared to 91% in 1997. Small males (<102 mm cw) showed a 32% decrease due to growth into the large size category and apparent lack of recruitment into the smallest size groups. The abundance index for large females (≥ 50 mm cw) showed a 16% decrease.

The abundance of large males decreased from 1991-1995 due to natural mortality and fishery removals. However, good recruitment has occurred in the last few years and a large mode in the size-distribution entered the fishery in 1996 (Fig. 11), the result of a strong year class that probably hatched in the period 1988-1990. Continued recruitment to the large size category has offset losses due to fishing and mortality in 1998. Small declines this year indicate that the population has reached its peak and will start to decline rapidly next

Hair Crab
All Districts

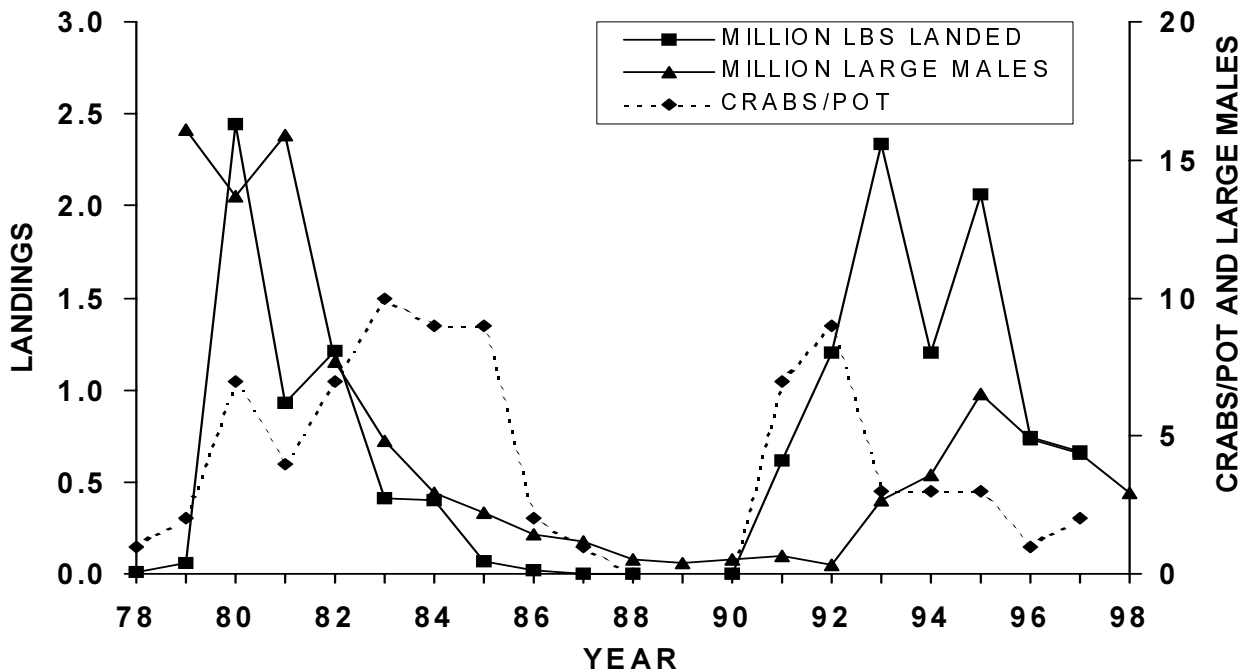


FIGURE 12. U.S. landings in millions of pounds, CPUE as crabs/pot, and the abundance of large male hair crab (*E. isenbeckii*) in millions (all districts combined), estimated from NMFS trawl surveys.

year. This conclusion is also supported by the increased prevalence of oldshell crab in the 75-100 mm cw range. However, continued presence of small crab in the range of 40-65 mm cw suggests that the decline may be less severe than previous ones.

Among large male crabs, 34% were in molting or softshell condition, 52% were new-hardshells indicating a recent molt, and 14% were oldshells. Among sampled mature females, 9% were new-hardshells, of which 99% carried new eggs and 91% were oldshells, of which 82% carried new eggs and 14% had released their larvae but not yet produced a new clutch.

The GHL for 1999 has been set at 196 million lbs of large crab (≥ 4.0 in cw). The fishery will open at noon on January 15. In 1998, the GHL was 234 million lbs, landings were 252 million lbs and the average CPUE was 206 crab/pot-lift (Fig. 10).

Hair Crab (*Erimacrus isenbeckii*)

Hair crab are present in two areas of the EBS (Chart 5 and Table 11). Historically, areas of concentration have existed just north of the Alaska Peninsula and near the Pribilof Islands. We have never found many female or small male crab during the survey and hence, have little understanding of their distribution.

The abundance index for large male hair crabs declined from 1981-1992 but increased from 1992 to 1996 (Table 6 and Fig. 12). The abundance index of 2.9 million large (≥ 3.25 in cw) males is 32% lower than last year. The abundance index of total females shows an increase of 68% from last year, but is usually unreliable. Size-frequency data (Fig. 13) indicate that the large cohort first seen in 1989-90 has matured and is now decreasing.

Changes in abundance indexes of hair crab are difficult to interpret due to patchy distribution, burying habits, inshore distribution,

Snow Crab Width Frequency All Districts

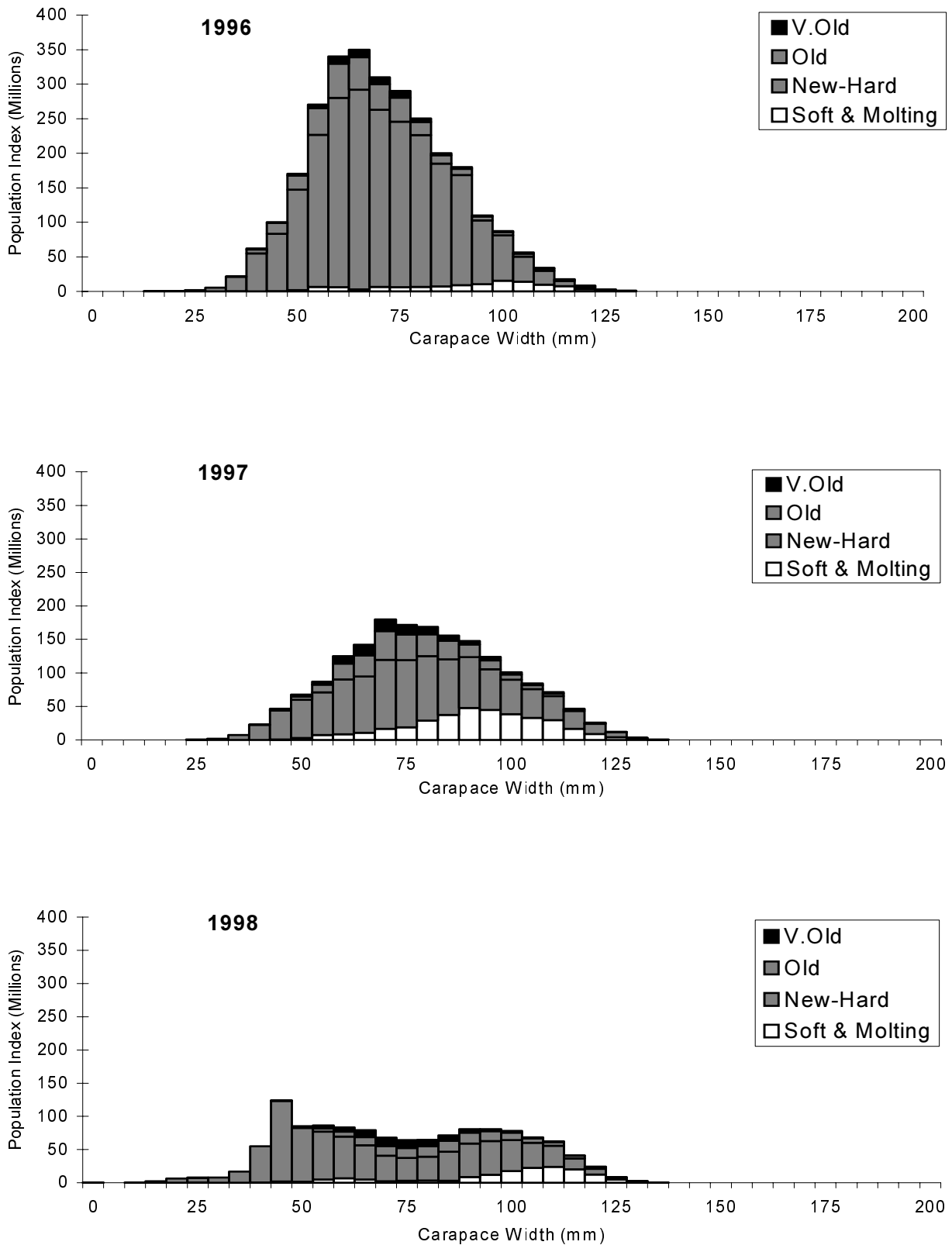


FIGURE 11. Size-frequency of male snow crab (*C. opilio*), all districts combined, by 5 mm width classes, 1996-1998.

TABLE 5. Annual abundance estimates (millions of crabs) for eastern Bering Sea snow crabs (*C. opilio*) from NMFS surveys (all districts combined).

Size ¹ (mm) Width(in)	Males				Females			Grand Total
	Small <102 <4.0	Large ≥102 ≥4.0	V. Large ≥110 ≥4.3	Total	Small <50 <2.0	Large ≥50 ≥2.0	Total	
1982	*	*	21.7	2073	403	2256	2658	4732
1983	*	*	22.1	1858	673	1228	1913	3771
1984	1237	153	73.9	1391	611	582	1192	2583
1985	548	75	40.7	623	258	123	382	1004
1986	1179	83	45.9	1262	791	422	1213	2475
1987	4439	151	70.0	4590	2919	2929	5849	10439
1988	3467	171	90.1	3638	1235	2323	3558	7194
1989	3646	187	81.2	3833	1923	3791	5713	9547
1990	2860	420	188.7	3281	1463	2798	4261	7542
1991	3971	484	323.0	4455	3289	3575	6864	11319
1992	3158	256	163.8	3415	2434	1914	4348	7763
1993	5597	135	77.9	5732	3990	1983	5972	11704
1994	4282	72	39.9	4354	3418	1674	5092	9446
1995	4087	69	30.9	4156	2090	2409	4500	8655
1996	2700	172	64.8	2872	1189	1364	2553	5425
1997	1491	306	160.9	1797	928	1383	2311	4108
1998	1015	255	139.2	1269	803	1161	1964	3233
East (%) ²	57.2	83	87.6	62.4	20.5	35.6	29.4	42.4
<u>Limits³</u>								
Lower	710	199	104.4	965	377	557	962	1927
Upper	1319	311	174.0	1574	1229	1764	2966	4540
±%	30	22	25	24	53	52	51	40

¹ Carapace width (mm).

² Proportion of size group in Eastern District.

³ Mean ± 2 standard errors for most recent year.

* Estimates not available at present time.

Hair Crab Length Frequency All Districts

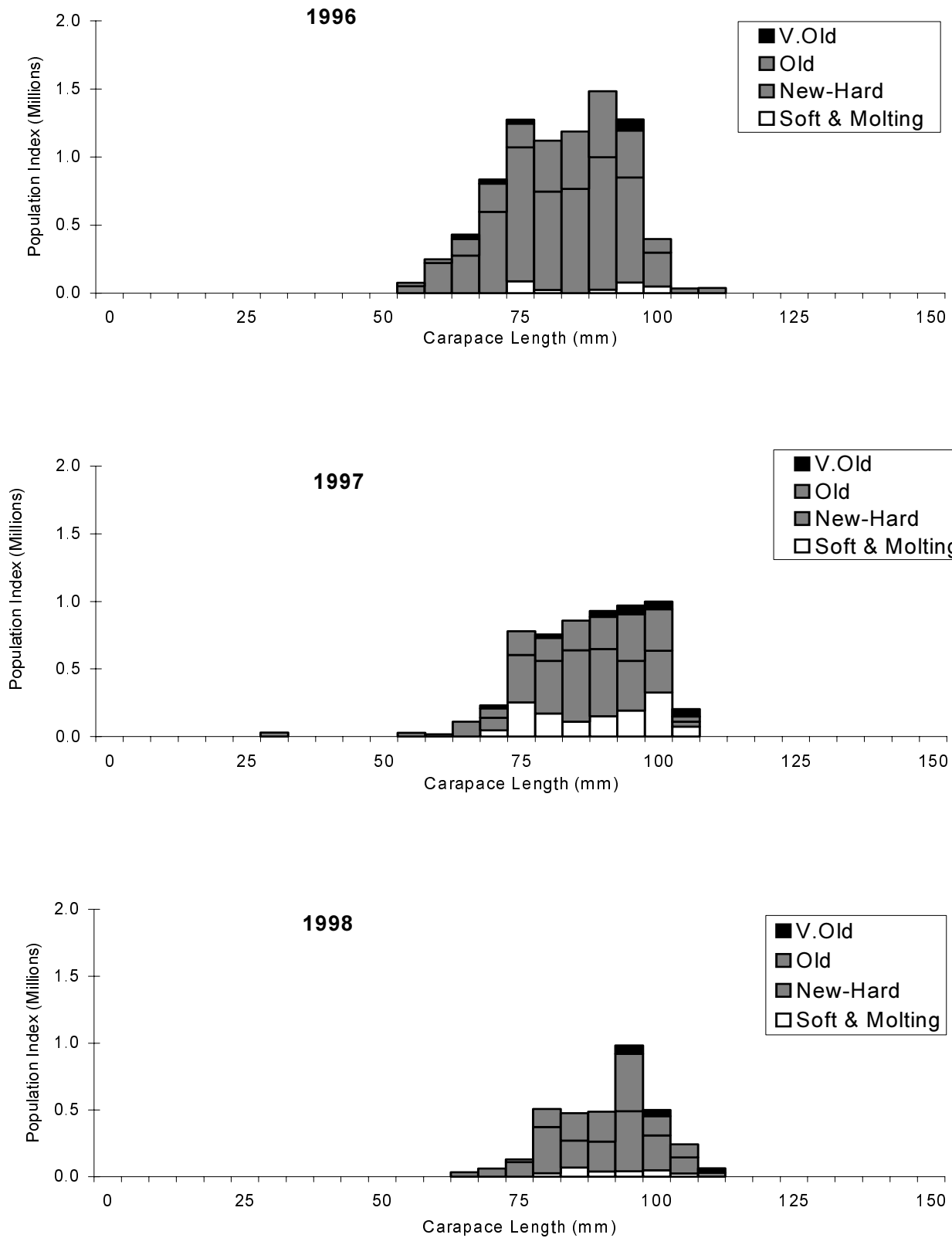


FIGURE 13. Size-frequency of male hair crab (*E. isenbeckii*), by 5 mm length classes, 1996-1998.

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

Size ¹ (mm) Width (in)	Males		Total	Females	Grand Total
	Small <83 <3.25	Large ≥83 ≥3.25		Total	
1980	2.03	14.86	16.89	2.62	19.52
1981	2.84	14.32	17.16	0.87	18.03
1982	0.54	8.07	8.61	0.42	9.03
1983	0.24	4.39	4.63	0.83	5.46
1984	0.73	3.32	4.06	0.51	4.56
1985	0.30	2.56	2.86	0.26	3.12
1986	0.68	1.82	2.49	0.38	2.87
1987	1.59	1.35	2.93	0.89	3.83
1988	3.01	0.87	3.88	0.86	4.74
1989	11.38	1.46	12.84	0.67	13.51
1990	12.99	1.09	14.08	0.92	15.00
1991	4.45	1.27	5.72	1.18	6.90
1992	2.48	1.17	3.65	0.55	4.20
1993	9.14	2.64	11.77	1.50	13.28
1994	4.65	3.56	8.21	1.26	9.46
1995	4.56	6.54	11.10	0.69	11.79
1996	3.56	4.87	8.43	1.05	9.48
1997	1.57	4.34	5.91	0.34	6.25
1998	0.54	2.94	3.48	1.38	4.86
<u>Limits²</u>					
Lower	0.24	1.74	2.13	0.51	2.64
Upper	0.84	4.15	4.84	2.25	7.09
±%	55	41	39	63	46

¹ Carapace length (mm).

² Mean ± 2 standard errors for most recent year.

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 (Fig. 12). Forty percent of males and 68% of females were new-hardshell crabs.

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. Currently, there are an estimated 2.0 million lbs of large male crab in the Pribilof District. A GHL of 0.4 million lbs was set for the Pribilof District in 1998. In 1997, 0.7 million lbs were taken by 16 vessels with CPUE of 2 crab/pot-lift.

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 Glenn Sullivan and Kurt Vedoy of the *F/V Arcturus* and Arthur Kuhl and Norman Bakken of the *F/V Aldebaran* and their crews.

We also wish to thank all of the "crabologists" who participated in this survey, including C. Armistead, P. Cumiskey, J. E. Munk, R. S. Otto, J. Reisenweber, L. Roberson, and F. Stewart. This document was produced by J. Corlew.

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 the trawl. Area fished (= area swept by the trawl) was calculated by multiplying the distance 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 categorizes 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:

Molting¹: Joints swollen and/or well developed second exoskeleton present. Crab will molt within days or is actively molting.

Softshell¹: Carapace is still soft and pliable from recent molt. Crab has molted within weeks.

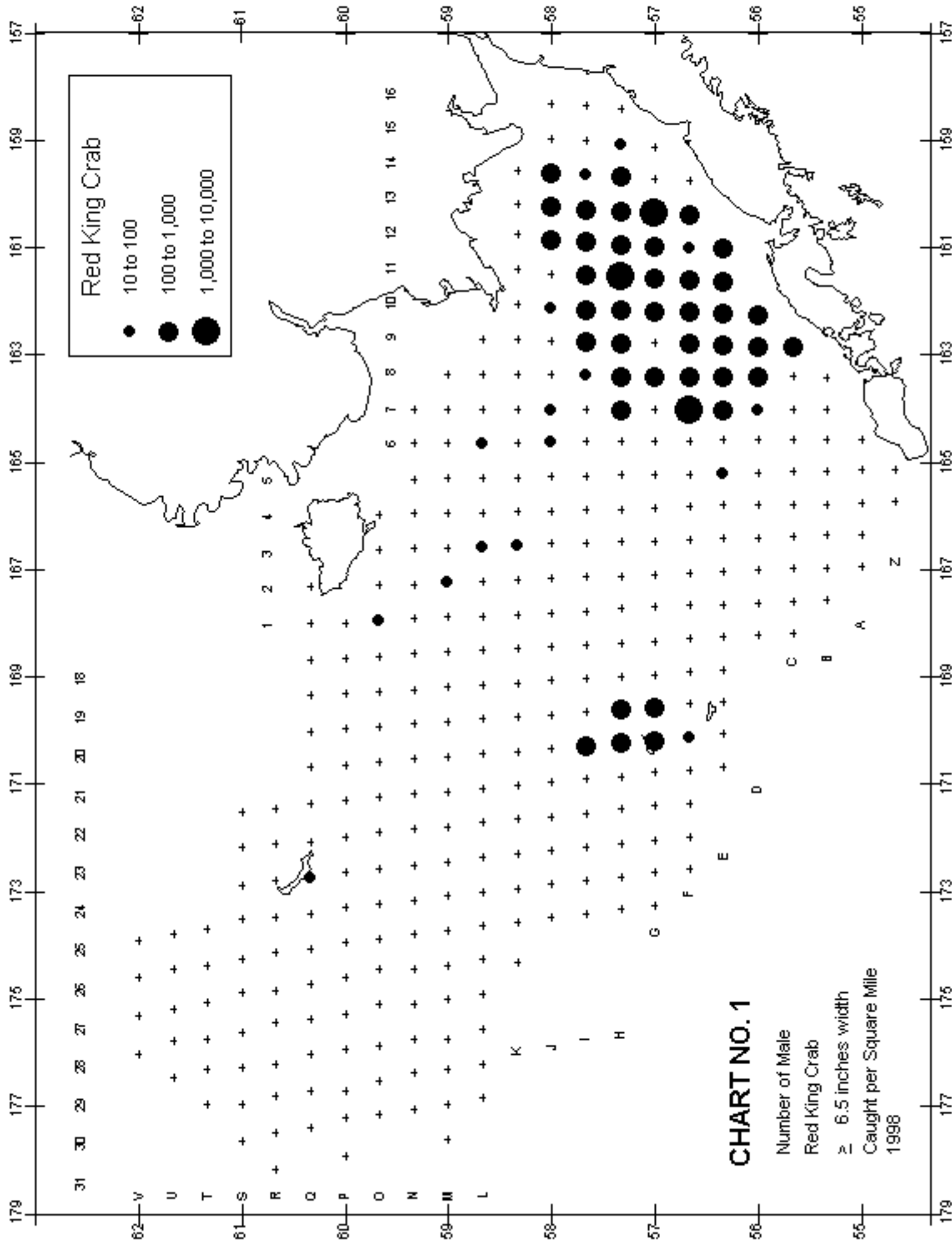
New-hardshell: Carapace firm to hard and lacking scratches, wear, discoloration, and encrusting organisms. Crab has probably molted within the last year.

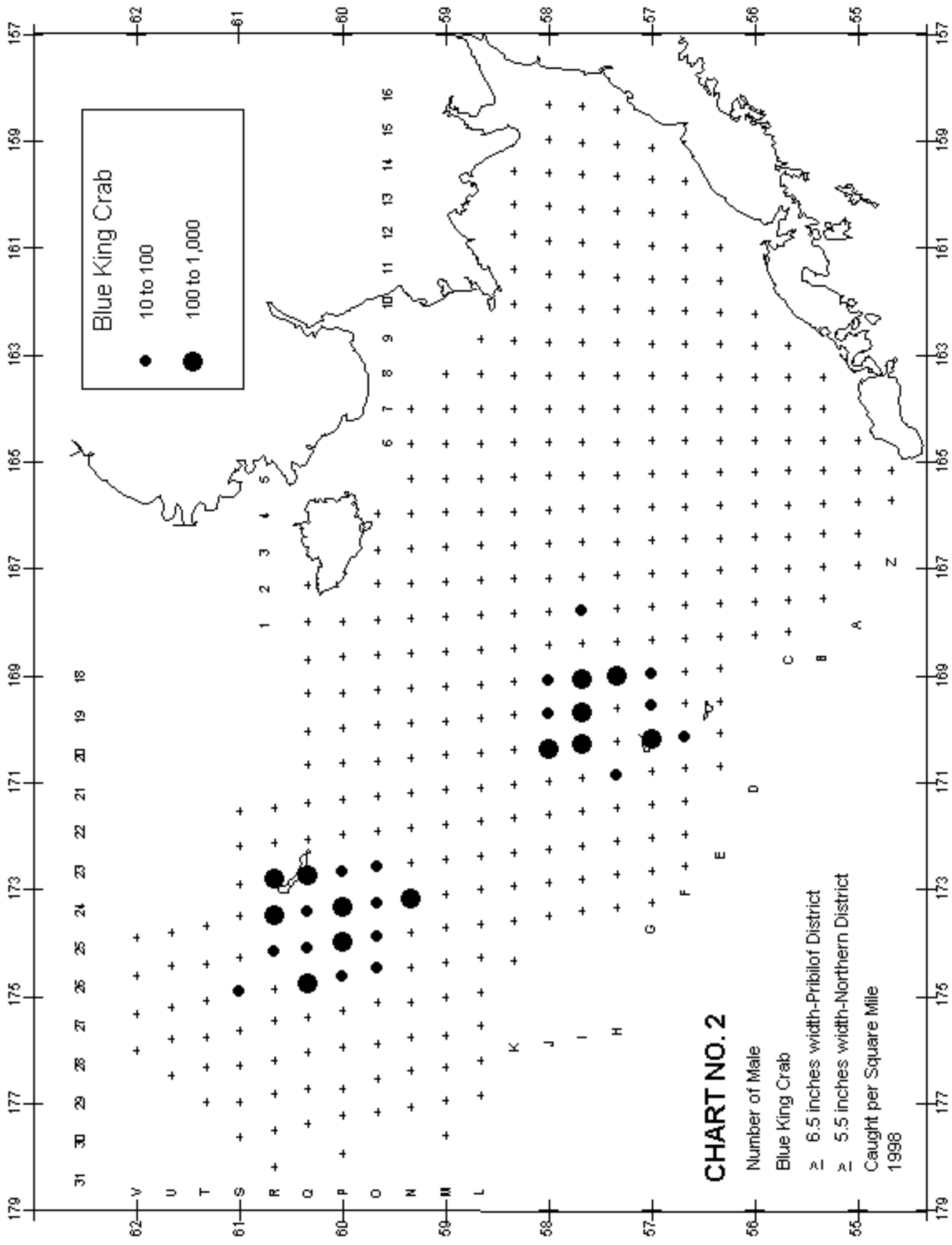
Oldshell: Usually has at least some scratching, spine wear. Crab may have darker coloration, and encrusting organisms are frequently present. Crab has probably not molted within the last year.

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.

¹ 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.





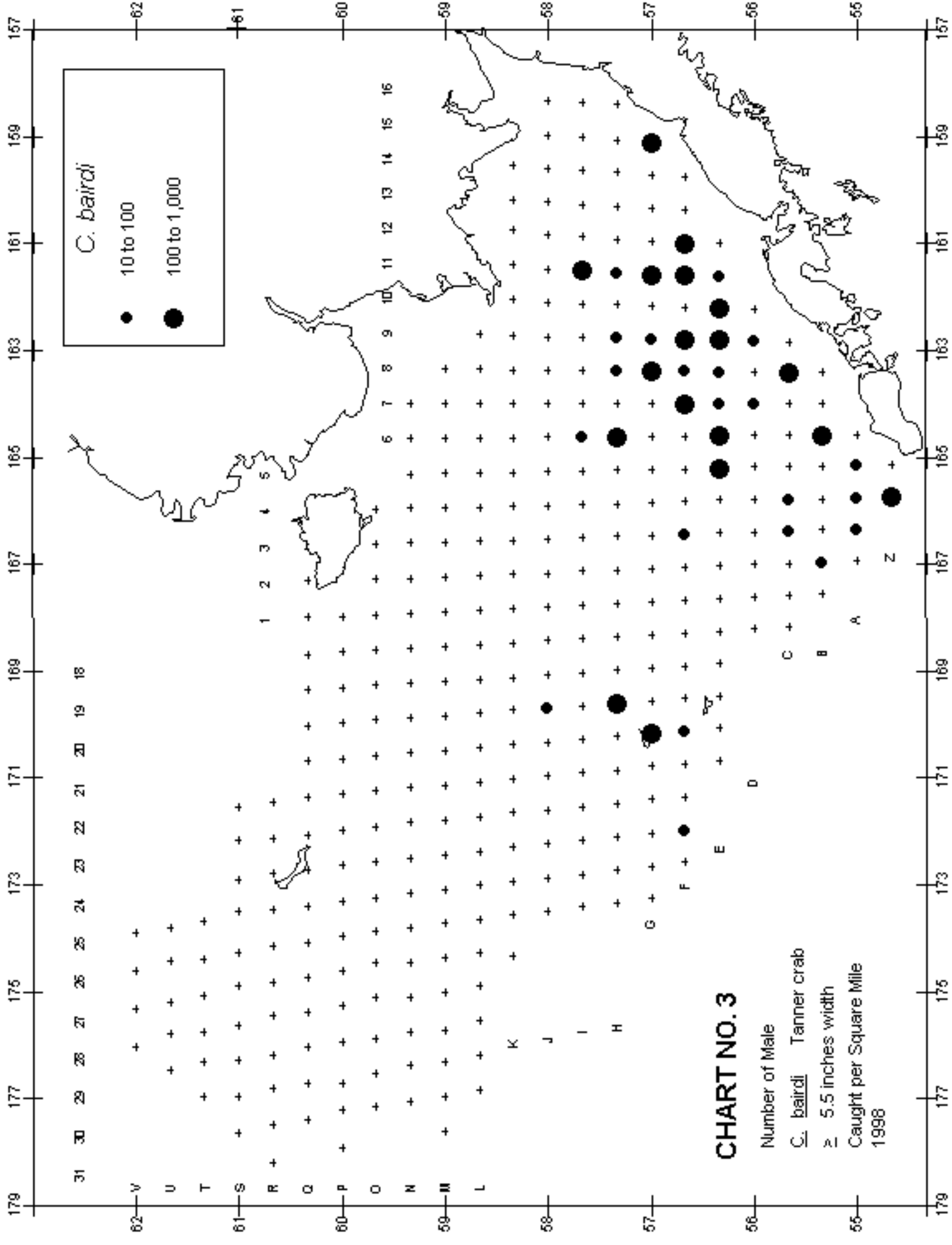


CHART NO. 3

Number of Male

C. bairdi Tanner crab

≥ 5.5 inches width

Caught per Square Mile
1998

C. bairdi

- 10 to 100
- 100 to 1,000

1 2 3 4 5

6 7 8 9 10 11 12 13 14 15 16

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

62—V

U

T

61—S

R

Q

60—P

O

N

59—M

L

K

58—J

I

H

57—G

F

E

56—D

C

B

A

Z

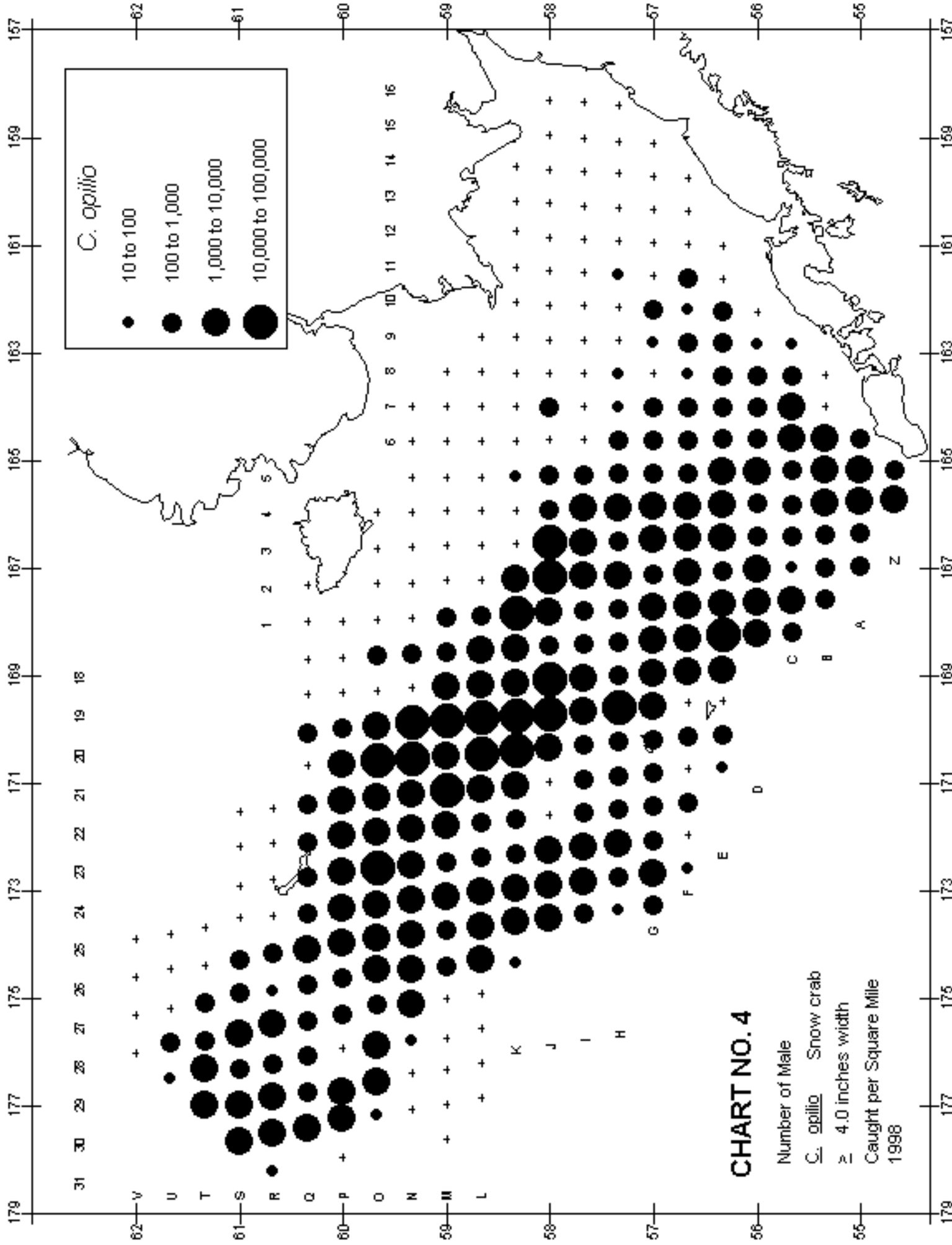
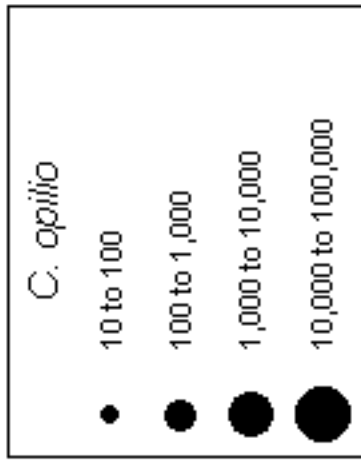


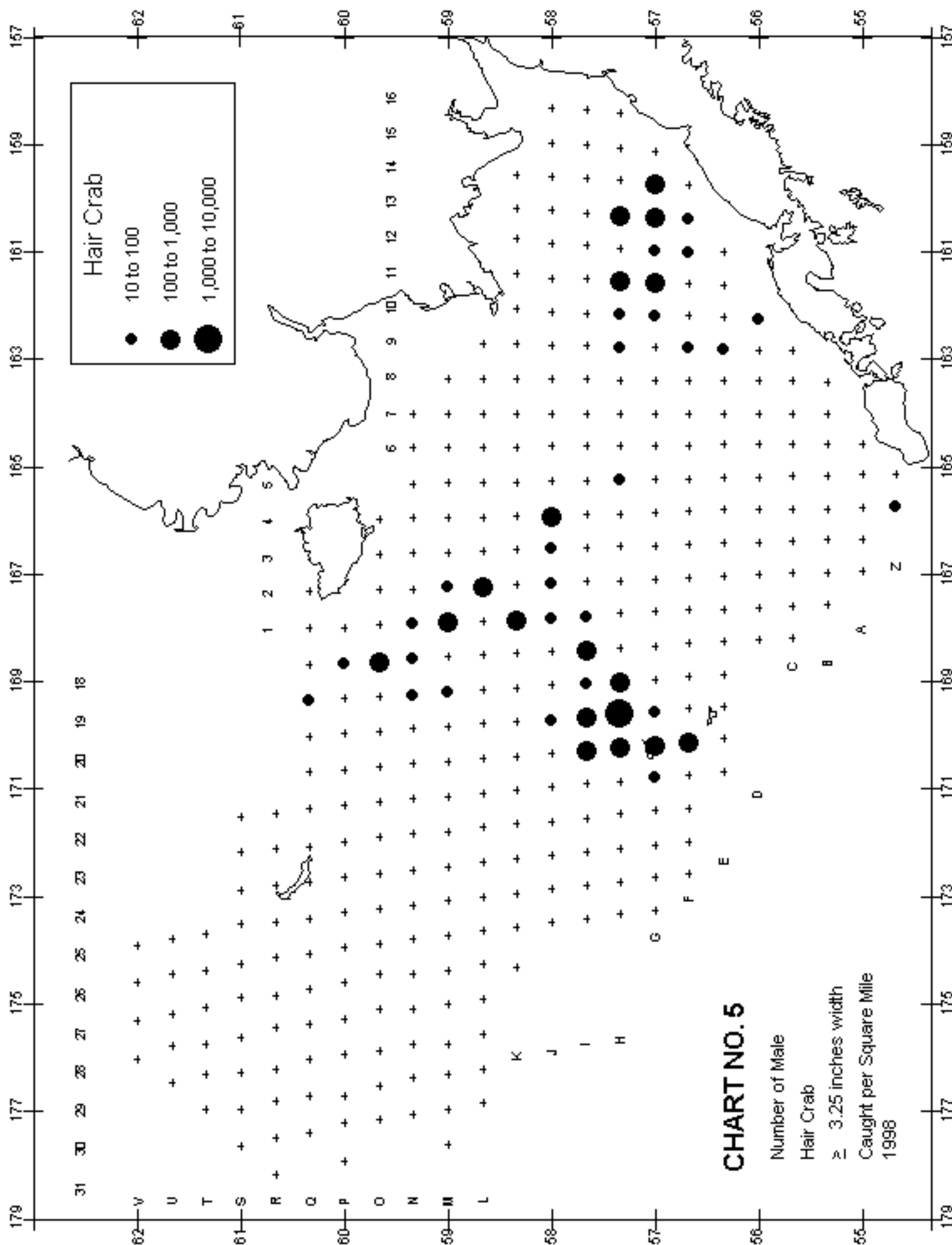
CHART NO. 4

Number of Male
C. opilio Snow crab
 ≥ 4.0 inches width
 Caught per Square Mile
 1998



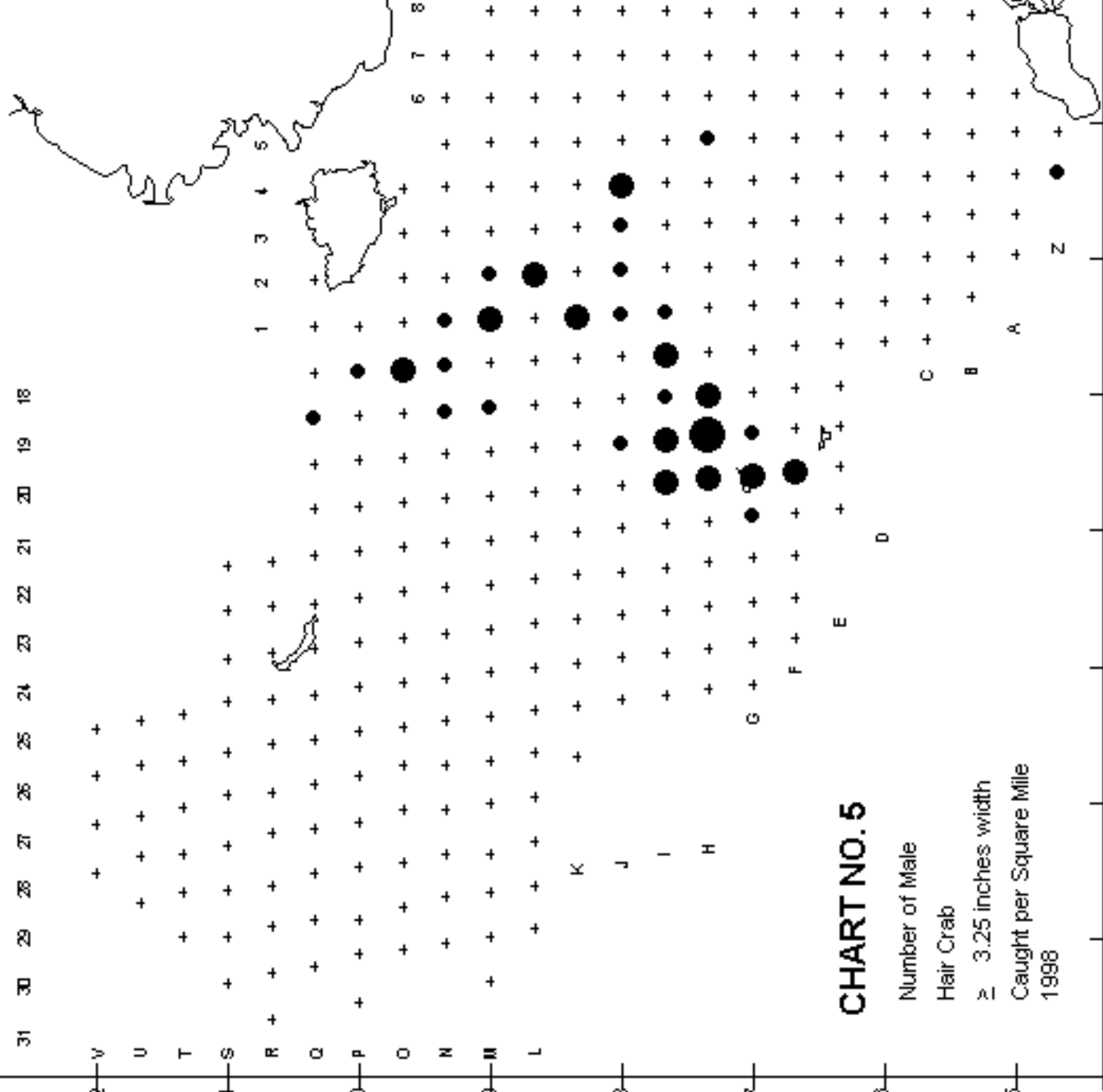
C. opilio

- 10 to 100
- 100 to 1,000
- 1,000 to 10,000
- 10,000 to 100,000



179 177 175 173 171 169 167 165 163 161 159 157

62
61
60
59
58
57
56
55



179 177 175 173 171 169 167 165 163 161 159 157

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	
C09	6/16/98	55 40.5	162 50.6	26	165	0	0	165	0	0	0	165
D07	6/19/98	56 0.1	163 59.0	48	75	0	0	75	0	0	0	75
D08	6/18/98	55 59.9	163 23.6	45	450	1170	0	1620	90	0	90	1710
D09	6/17/98	55 59.7	162 49.0	42	469	938	0	1407	5626	0	5626	7033
D10	6/16/98	55 59.6	162 15.8	37	729	2186	1214	4129	1376	81	1457	5586
E05	6/23/98	56 19.8	165 12.3	38	78	0	0	78	0	0	0	78
E07	6/19/98	56 22.0	163 59.6	45	651	72	0	724	0	0	0	724
E08	6/18/98	56 20.1	163 23.5	45	330	1814	0	2143	824	0	824	2968
E09	6/17/98	56 19.8	162 48.2	41	713	3804	1109	5626	3011	0	3011	8638
E10	6/16/98	56 18.8	162 12.7	39	575	904	164	1643	3286	0	3286	4928
E11	6/12/98	56 20.0	161 37.0	34	395	1106	316	1816	4817	79	4896	6712
E12	6/11/98	56 20.7	160 59.5	27	411	1068	0	1478	82	0	82	1561
F07	6/19/98	56 39.2	163 58.3	40	1505	342	0	1847	0	0	0	1847
F08	6/19/98	56 41.1	163 24.1	39	588	2939	168	3695	0	0	0	3695
F09	6/16/98	56 39.8	162 47.2	38	396	2457	1426	4279	1347	0	1347	5626
F10	6/15/98	56 39.9	162 11.3	33	409	1228	327	1964	1637	0	1637	3601
F11	6/12/98	56 40.3	161 35.0	48	551	1023	315	1889	2046	315	2361	4249
F12	6/12/98	56 40.2	160 59.2	35	84	590	1012	1686	4720	1096	5816	7502
F13	6/11/98	56 39.8	160 22.2	31	230	1920	307	2458	461	0	461	2919
F21	7/6/98	56 49.9	169 54.3	38	71	71	0	142	0	0	0	142
G08	6/19/98	57 0.7	163 23.1	33	164	82	0	246	82	0	82	327
G09	6/16/98	56 59.8	162 47.2	32	0	948	395	1342	711	0	711	2053
G10	6/15/98	56 59.5	162 10.5	32	573	1391	491	2455	1473	82	1555	4010
G11	6/13/98	57 0.2	161 33.9	37	318	716	636	1670	1750	0	1750	3420
G12	6/12/98	56 59.6	160 56.8	35	246	246	1478	1971	6407	739	7146	9117
G13	6/11/98	56 59.8	160 19.8	33	1338	1338	1102	3777	17860	884	18744	22521
G14	6/11/98	56 59.7	159 41.9	28	0	172	687	859	2319	86	2405	3264
G15	6/9/98	57 0.1	159 7.0	16	0	0	0	0	245	0	245	245
G20	7/5/98	57 9.6	169 20.0	37	156	0	0	156	0	0	0	156
G20	7/5/98	56 59.7	169 32.8	31	309	464	155	928	541	0	541	1469
G21	7/5/98	57 8.7	169 51.3	28	496	496	662	1655	3392	83	3475	5130
H07	6/20/98	57 20.1	163 59.1	32	549	235	0	784	0	0	0	784
H08	6/20/98	57 19.9	163 20.8	28	320	80	0	400	0	0	0	400

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	
H09	6/16/98	57 19.9	162 45.5	26	234	4673	467	5373	701	0	701	6074
H10	6/15/98	57 18.8	162 9.2	26	674	590	0	1264	2192	0	2192	3456
H11	6/13/98	57 20.1	161 32.3	29	1291	1210	2420	4921	13229	484	13713	18634
H12	6/12/98	57 20.3	160 56.0	32	412	165	165	742	2308	82	2391	3133
H13	6/10/98	57 19.6	160 18.5	32	229	305	76	610	1450	0	1450	2060
H14	6/10/98	57 20.0	159 42.7	28	165	331	83	579	0	165	165	745
H15	6/9/98	57 20.1	159 3.6	26	79	79	158	316	0	237	237	553
H19	7/7/98	57 20.8	168 59.1	37	0	78	0	78	0	0	0	78
H20	7/11/98	57 19.9	169 36.7	32	312	78	0	389	78	0	78	467
H21	7/11/98	57 19.7	170 12.7	27	158	475	0	634	555	0	555	1189
H22	7/11/98	57 19.2	170 51.3	44	0	0	0	0	77	0	77	77
I07	6/20/98	57 40.0	163 59.3	26	0	0	0	0	78	0	78	78
I08	6/20/98	57 39.5	163 21.9	24	79	0	0	79	0	0	0	79
I09	6/15/98	57 39.8	162 45.2	22	153	77	0	230	77	0	77	306
I10	6/14/98	57 40.1	162 7.6	24	162	162	81	406	406	0	406	812
I11	6/14/98	57 40.0	161 29.7	28	641	2403	1281	4325	3684	240	3925	8250
I12	6/13/98	57 39.9	160 54.2	29	489	815	1794	3099	3262	1305	4566	7665
I13	6/10/98	57 39.9	160 16.5	28	402	322	241	965	402	884	1286	2251
I14	6/10/98	57 39.8	159 39.1	25	79	0	4817	4896	0	4106	4106	9002
I15	6/9/98	57 40.2	159 0.7	25	0	0	156	156	0	0	0	156
I16	6/9/98	57 40.4	158 20.8	18	0	0	0	0	0	97	97	97
I21	7/11/98	57 40.1	170 17.0	38	297	743	0	1040	0	0	0	1040
I21	7/11/98	57 30.1	169 58.1	36	163	82	0	245	82	0	82	326
J06	6/22/98	57 59.7	164 37.9	22	75	0	0	75	0	0	0	75
J07	6/20/98	57 60.0	163 59.6	24	79	0	157	236	0	0	0	236
J10	6/14/98	57 59.6	162 8.7	19	77	77	0	155	77	0	77	232
J11	6/14/98	58 0.1	161 29.4	29	0	493	575	1068	411	164	575	1643
J12	6/13/98	57 59.9	160 50.6	23	319	479	160	958	638	0	638	1596
J13	6/10/98	58 0.8	160 13.9	26	418	167	2845	3430	84	2092	2175	5606
J14	6/10/98	58 0.3	159 37.7	21	166	83	166	415	83	83	166	581
J15	6/9/98	57 60.0	158 57.9	21	0	0	498	498	0	415	415	914
J16	6/9/98	58 0.4	158 18.3	18	0	0	409	409	0	246	246	655
K03	6/29/98	58 20.1	166 32.7	25	78	0	0	78	0	0	0	78

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	
K04	6/29/98	58 19.5	165 55.7	22	0	75	0	75	0	0	0	75
K10	6/14/98	58 18.8	162 2.9	24	0	326	0	326	0	0	0	326
K11	6/14/98	58 12.9	161 33.2	20	0	144	0	144	0	0	0	144
L02	7/1/98	58 40.4	167 13.4	22	0	0	0	0	82	0	82	82
L03	6/29/98	58 40.0	166 33.5	21	80	0	0	80	0	0	0	80
L06	6/22/98	58 40.1	164 39.8	19	80	0	0	80	0	0	0	80
M01	7/1/98	59 0.0	167 53.6	21	0	0	0	0	79	0	79	79
M02	7/1/98	58 60.0	167 15.0	20	82	0	82	164	164	0	164	327
M03	6/30/98	59 0.6	166 34.1	17	0	0	0	0	82	82	164	164
M18	7/8/98	59 0.1	168 32.5	24	0	0	0	0	79	0	79	79
N01	7/1/98	59 20.0	167 55.0	20	0	78	0	78	0	0	0	78
N18	7/8/98	59 19.6	168 34.6	21	0	0	82	82	0	0	0	82
N19	7/8/98	59 20.0	169 14.0	26	0	0	78	78	0	0	0	78
O01	6/30/98	59 40.7	167 57.2	17	80	0	80	160	160	0	160	319
O18	7/8/98	59 39.6	168 37.0	20	0	163	0	163	0	82	82	245
P18	7/9/98	59 59.3	168 39.3	20	0	0	0	0	78	0	78	78
Q24	7/21/98	60 10.2	172 21.1	30	78	0	0	78	0	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 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	Total	Large	Small	Total	
F20	7/6/98	56 40.3	169 30.2	41	0	0	0	0	256	0	256	256
F21	7/6/98	56 49.9	169 54.3	38	71	0	0	71	570	0	570	641
G19	7/5/98	57 9.9	168 38.7	39	82	0	0	82	163	0	163	245
G19	7/5/98	56 57.7	168 56.8	42	0	80	0	80	80	0	80	160
G20	7/5/98	57 9.6	169 20.0	37	156	78	78	312	545	0	545	857
G20	7/5/98	56 59.7	169 32.8	31	77	0	77	155	3326	0	3326	3480
G20	7/6/98	56 50.1	169 18.0	43	0	0	0	0	551	0	551	551
G21	7/5/98	57 8.7	169 51.3	28	248	0	83	331	745	0	745	1076
H18	7/7/98	57 19.6	168 21.0	38	0	79	0	79	0	0	0	79
H19	7/7/98	57 29.8	168 44.7	37	234	0	0	234	0	0	0	234
H19	7/7/98	57 20.8	168 59.1	37	78	157	235	471	1098	157	1255	1725
H20	7/11/98	57 19.9	169 36.7	32	0	78	389	467	389	312	701	1168
H22	7/11/98	57 29.5	170 34.9	39	77	0	0	77	0	0	0	77
I01	7/2/98	57 39.8	167 46.3	36	80	0	0	80	0	0	0	80
I19	7/7/98	57 49.8	168 43.7	37	393	0	79	472	79	0	79	551
I19	7/7/98	57 40.2	169 2.5	36	472	79	0	551	79	79	157	708
I20	7/11/98	57 40.1	169 39.3	37	0	0	0	0	0	80	80	80
I20	7/7/98	57 30.2	169 21.9	37	536	230	1684	2450	1072	383	1454	3904
I21	7/11/98	57 40.1	170 17.0	38	371	297	0	668	0	0	0	668
I21	7/11/98	57 30.1	169 58.1	36	163	82	897	1142	326	326	652	1794
J18	7/7/98	58 0.1	168 26.6	35	0	82	0	82	0	0	0	82
J19	7/7/98	58 0.4	169 4.4	37	81	242	81	403	0	0	0	403
J20	7/7/98	57 50.2	169 22.4	34	151	75	0	226	0	0	0	226
J21	7/10/98	57 50.2	169 58.4	37	308	0	0	308	0	0	0	308

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	Total	Large	Small	Total	
N24	7/22/98	59 20.1	172 30.3	46	107	0	0	107	0	0	0	107
N25	7/23/98	59 19.7	173 9.5	53	163	0	0	163	0	0	0	163
N25	7/22/98	59 30.0	172 53.4	49	220	0	0	220	0	0	0	220
O03	6/30/98	59 39.8	166 37.8	14	0	0	76	76	0	0	0	76
O24	7/22/98	59 39.9	172 34.6	44	388	0	0	388	0	0	0	388
O25	7/22/98	59 40.2	173 14.2	50	392	0	0	392	0	0	0	392
O26	7/23/98	59 40.2	173 52.3	56	72	72	216	361	0	0	0	361
O26	7/23/98	59 30.2	173 30.3	55	237	158	0	395	0	0	0	395
O27	7/24/98	59 49.8	174 14.6	57	154	0	0	154	0	0	0	154
P23	7/20/98	59 60.0	171 57.8	35	0	0	81	81	0	0	0	81
P24	7/21/98	60 0.3	172 38.8	34	116	116	0	232	0	0	0	232
P24	7/22/98	59 50.0	172 52.2	42	312	0	78	389	0	0	0	389
P25	7/22/98	59 59.8	173 19.8	39	553	395	158	1106	79	0	79	1185
P26	7/22/98	60 9.5	173 47.0	45	1381	812	569	2762	0	0	0	2762
P26	7/22/98	60 0.0	173 56.4	50	77	0	0	77	0	0	0	77
P26	7/22/98	59 50.2	173 35.4	50	240	0	0	240	0	0	0	240
P27	7/24/98	59 59.8	174 35.7	57	77	0	0	77	0	0	0	77
P27	7/25/98	60 9.8	174 21.1	54	0	79	0	79	0	0	0	79
Q02	6/30/98	60 20.2	167 16.6	16	0	0	0	0	0	150	150	150
Q23	7/20/98	60 19.9	172 4.1	31	233	78	621	931	78	233	310	1242
Q24	7/21/98	60 10.2	172 21.1	30	2025	1480	1090	4595	701	78	779	5373
Q25	7/21/98	60 19.6	173 25.3	33	475	634	1268	2377	475	0	475	2853
Q25	7/21/98	60 10.5	173 0.8	31	155	387	4486	5027	619	1856	2475	7502
Q26	7/21/98	60 20.3	174 4.9	48	160	80	0	240	0	0	0	240
Q27	7/25/98	60 20.0	174 41.3	55	164	0	0	164	0	0	0	164
R24	7/20/98	60 40.5	172 46.5	23	2373	1761	306	4440	0	0	0	4440
R25	7/21/98	60 40.3	173 28.2	35	405	0	81	486	81	162	243	729
R26	7/21/98	60 40.2	174 8.2	45	78	0	0	78	0	0	0	78
S26	7/21/98	60 59.8	174 10.8	43	0	78	78	156	0	0	0	156
S27	7/25/98	61 0.1	174 52.8	49	81	0	0	81	0	0	0	81

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	Total	Large	Small	Total	
A02	7/3/98	54	59.4	166	56.8	85	0	177	8826	9002	88	14820	14909	23911
A03	6/27/98	55	0.2	166	20.8	77	79	396	1981	2457	1030	3091	4121	6577
A04	6/27/98	55	0.4	165	45.1	69	82	82	734	897	245	815	1060	1957
A05	6/24/98	54	59.7	165	9.7	57	75	450	750	1275	75	1275	1350	2626
A06	6/24/98	55	1.9	164	36.3	33	0	0	88	88	0	0	0	88
B01	7/3/98	55	19.6	167	33.2	80	0	111	4345	4457	111	6685	6796	11253
B02	7/3/98	55	19.9	166	58.7	74	89	266	975	1329	89	532	620	1949
B03	6/27/98	55	20.3	166	21.5	71	0	617	1542	2158	848	2312	3160	5318
B04	6/27/98	55	19.6	165	46.7	64	0	508	3554	4061	85	4400	4484	8545
B05	6/24/98	55	19.8	165	12.0	58	0	78	391	469	0	391	391	860
B06	6/24/98	55	18.9	164	35.6	54	545	935	545	2025	779	701	1480	3504
B07	6/19/98	55	20.1	164	0.2	40	0	79	555	634	0	317	317	951
B08	6/18/98	55	20.2	163	25.3	27	0	0	1428	1428	0	420	420	1848
C01	7/3/98	55	40.0	167	34.6	72	0	0	721	721	0	240	240	961
C02	7/3/98	55	39.2	166	57.8	71	0	171	86	257	0	171	171	428
C03	6/27/98	55	40.1	166	23.2	67	74	520	2823	3417	223	2154	2377	5794
C04	6/27/98	55	39.5	165	48.5	62	82	739	4928	5750	986	4600	5585	11335
C05	6/24/98	55	40.0	165	12.2	57	0	0	79	79	79	393	472	551
C06	6/24/98	55	38.2	164	34.6	51	0	82	1237	1319	495	1731	2226	3545
C07	6/19/98	55	41.7	164	0.1	50	0	471	2666	3137	157	2666	2823	5960
C08	6/18/98	55	39.6	163	24.9	42	253	843	1433	2529	84	1264	1349	3877
C09	6/16/98	55	40.5	162	50.6	26	0	248	1076	1324	248	331	579	1903
C18	7/3/98	55	40.3	168	10.8	72	0	77	461	538	77	384	461	999
D01	7/3/98	55	59.6	167	36.4	71	0	0	579	579	0	414	414	993
D02	7/3/98	55	58.6	167	1.9	72	0	0	1546	1546	0	859	859	2405
D03	6/28/98	55	59.8	166	23.9	66	0	320	3524	3844	320	2243	2563	6407
D04	6/28/98	56	1.0	165	47.8	56	0	81	403	484	81	565	645	1129
D05	6/23/98	55	59.9	165	11.2	49	0	160	1121	1281	80	320	400	1682
D06	6/23/98	56	0.2	164	33.9	49	0	230	1378	1608	383	1225	1608	3215
D07	6/19/98	56	0.1	163	59.0	48	75	0	2032	2108	0	1505	1505	3613
D08	6/18/98	55	59.9	163	23.6	45	0	90	6662	6752	0	4861	4861	11613
D09	6/17/98	55	59.7	162	49.0	42	78	313	1485	1875	156	234	391	2266
D10	6/16/98	55	59.6	162	15.8	37	0	0	324	324	0	162	162	486

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	Total	Large	Small	Total	
D18	7/3/98	55 59.2	168 12.8	79	0	0	852	852	85	1193	1279	2131
E01	7/2/98	56 20.0	167 38.9	68	0	0	475	475	0	713	713	1189
E02	7/2/98	56 19.2	167 2.4	60	0	170	1953	2123	85	1189	1274	3397
E03	6/28/98	56 20.2	166 24.7	55	0	0	2745	2745	0	1804	1804	4548
E04	6/28/98	56 20.2	165 47.9	48	0	0	2603	2603	0	2297	2297	4899
E05	6/23/98	56 19.8	165 12.3	38	157	706	3372	4235	157	3842	3999	8234
E06	6/23/98	56 18.7	164 36.0	45	336	840	2939	4115	1260	4115	5375	9489
E07	6/19/98	56 22.0	163 59.6	45	72	507	2460	3039	217	1230	1447	4487
E08	6/18/98	56 20.1	163 23.5	45	82	247	412	742	165	165	330	1072
E09	6/17/98	56 19.8	162 48.2	41	158	317	1268	1743	79	396	475	2219
E10	6/16/98	56 18.8	162 12.7	39	246	164	575	986	82	82	164	1150
E11	6/12/98	56 20.0	161 37.0	34	79	0	237	316	79	79	158	474
E12	6/11/98	56 20.7	160 59.5	27	0	164	82	246	82	0	82	329
E18	7/3/98	56 19.0	168 14.3	83	0	935	3271	4205	78	3660	3738	7943
E19	7/6/98	56 19.9	168 52.4	68	0	224	8374	8599	0	10655	10655	19253
E20	7/6/98	56 20.8	169 29.8	74	0	0	162	162	0	324	324	486
E21	7/12/98	56 20.1	170 4.2	57	0	464	2243	2707	232	2243	2475	5182
E22	7/12/98	56 19.7	170 40.7	63	0	559	638	1197	0	718	718	1915
F01	7/2/98	56 39.9	167 41.3	54	0	0	0	0	0	162	162	162
F02	7/2/98	56 40.9	167 4.6	50	0	246	982	1228	246	655	900	2128
F03	6/28/98	56 40.1	166 25.6	45	78	157	1647	1882	235	1176	1412	3294
F04	6/28/98	56 39.1	165 49.1	41	0	383	1761	2143	306	1837	2143	4287
F05	6/23/98	56 39.7	165 13.1	38	0	78	2095	2173	78	1086	1164	3337
F06	6/23/98	56 39.3	164 36.2	39	0	158	1189	1347	79	713	792	2140
F07	6/19/98	56 39.2	163 58.3	40	274	479	1231	1984	821	410	1231	3215
F08	6/19/98	56 41.1	163 24.1	39	84	420	252	756	84	0	84	840
F09	6/16/98	56 39.8	162 47.2	38	317	555	634	1506	238	0	238	1743
F10	6/15/98	56 39.9	162 11.3	33	0	246	491	737	0	0	0	737
F11	6/12/98	56 40.3	161 35.0	48	315	315	79	708	0	0	0	708
F12	6/12/98	56 40.2	160 59.2	35	169	0	0	169	0	84	84	253
F13	6/11/98	56 39.8	160 22.2	31	0	77	77	154	77	154	230	384
F18	7/5/98	56 40.2	168 16.6	56	0	0	79	79	0	0	0	79
F19	7/5/98	56 40.3	168 53.6	54	0	0	740	740	0	423	423	1162

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	Total	Large	Small	Total	
F20	7/6/98	56 40.3	169 30.2	41	0	0	85	85	0	85	85	170
F21	7/12/98	56 40.8	170 8.4	51	0	158	4042	4200	238	2615	2853	7053
F21	7/6/98	56 49.9	169 54.3	38	71	285	214	570	71	71	142	712
F22	7/12/98	56 39.7	170 44.3	60	0	553	632	1185	0	474	474	1658
F23	7/12/98	56 39.6	171 20.9	63	0	77	536	612	0	230	230	842
F24	7/12/98	56 40.2	171 58.4	67	78	78	310	466	0	543	543	1009
F25	7/14/98	56 39.7	172 34.6	73	0	0	561	561	0	240	240	801
G01	7/2/98	56 59.7	167 42.6	40	0	0	2492	2492	0	1713	1713	4205
G02	7/2/98	57 0.2	167 6.2	38	0	0	399	399	0	559	559	958
G03	6/28/98	57 0.2	166 27.6	39	0	152	303	455	0	152	152	606
G04	6/28/98	56 59.7	165 51.8	38	0	0	2483	2483	80	1362	1442	3925
G05	6/23/98	56 59.8	165 12.8	36	0	326	2772	3099	489	652	1142	4240
G06	6/23/98	56 59.9	164 36.3	36	0	251	418	669	84	84	167	837
G07	6/20/98	56 60.0	163 57.8	36	0	860	781	1641	625	234	860	2501
G08	6/19/98	57 0.7	163 23.1	33	164	409	82	655	246	0	246	900
G09	6/16/98	56 59.8	162 47.2	32	79	474	395	948	237	0	237	1185
G10	6/15/98	56 59.5	162 10.5	32	0	409	0	409	0	0	0	409
G11	6/13/98	57 0.2	161 33.9	37	239	0	0	239	0	0	0	239
G13	6/11/98	56 59.8	160 19.8	33	0	79	0	79	0	0	0	79
G14	6/11/98	56 59.7	159 41.9	28	0	86	0	86	0	0	0	86
G15	6/9/98	57 0.1	159 7.0	16	163	0	163	326	82	82	163	489
G18	7/5/98	56 59.7	168 20.2	42	0	0	332	332	0	249	249	581
G19	7/5/98	57 9.9	168 38.7	39	0	0	82	82	0	0	0	82
G19	7/5/98	56 57.7	168 56.8	42	0	160	80	239	0	239	239	479
G19	7/5/98	56 50.3	168 36.7	51	0	80	80	161	80	80	161	322
G20	7/5/98	57 9.6	169 20.0	37	0	0	701	701	0	312	312	1012
G20	7/5/98	56 59.7	169 32.8	31	0	77	3558	3635	77	3016	3094	6729
G20	7/6/98	56 50.1	169 18.0	43	0	157	2125	2282	157	1259	1416	3699
G21	7/5/98	57 8.7	169 51.3	28	0	83	1076	1158	165	496	662	1820
G21	7/5/98	57 0.0	170 9.3	36	236	1889	12512	14637	1408	8603	10011	24648
G22	7/12/98	56 50.2	170 29.0	54	0	162	21522	21684	406	17571	17978	39662
G22	7/11/98	57 7.8	170 32.7	33	0	0	441	441	0	0	0	441
G22	7/12/98	56 59.8	170 46.6	50	0	237	15802	16039	237	12635	12872	28911

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	Total	Large	Small	Total	
G23	7/12/98	57	0.1	171	23.0	58	0	154	2543	2698	77	2235	2312	5010
G24	7/12/98	57	0.3	172	2.3	62	0	0	492	492	0	123	123	615
G25	7/14/98	56	60.0	172	39.5	65	0	234	938	1172	156	703	860	2032
G26	7/14/98	57	0.4	173	14.7	74	0	81	242	323	0	161	161	484
H01	7/2/98	57	19.9	167	44.6	38	0	0	474	474	0	316	316	790
H02	7/2/98	57	20.2	167	6.5	37	0	0	2334	2334	0	1917	1917	4251
H03	6/29/98	57	20.2	166	29.0	37	0	79	396	475	0	396	396	872
H04	6/28/98	57	19.5	165	52.4	36	0	165	1489	1655	0	165	165	1820
H05	6/23/98	57	19.8	165	15.3	34	0	320	721	1041	0	80	80	1121
H06	6/23/98	57	19.7	164	37.2	34	163	571	979	1712	82	326	408	2120
H07	6/20/98	57	20.1	163	59.1	32	0	706	706	1412	78	235	314	1725
H08	6/20/98	57	19.9	163	20.8	28	80	320	400	801	0	80	80	881
H09	6/16/98	57	19.9	162	45.5	26	78	2181	78	2336	78	0	78	2414
H10	6/15/98	57	18.8	162	9.2	26	0	169	0	169	0	0	0	169
H11	6/13/98	57	20.1	161	32.3	29	81	81	0	161	81	0	81	242
H18	7/7/98	57	19.6	168	21.0	38	0	0	0	0	0	79	79	79
H19	7/7/98	57	29.8	168	44.7	37	0	78	156	234	0	0	0	234
H19	7/7/98	57	20.8	168	59.1	37	0	235	235	471	0	0	0	471
H20	7/11/98	57	19.9	169	36.7	32	156	1791	1012	2959	78	156	234	3193
H22	7/11/98	57	29.5	170	34.9	39	0	154	154	307	0	307	307	614
H22	7/11/98	57	19.2	170	51.3	44	0	77	0	77	0	77	77	154
H23	7/13/98	57	20.4	171	28.3	54	0	78	466	543	0	155	155	698
H24	7/13/98	57	19.9	172	5.6	57	0	78	779	857	156	312	467	1324
H25	7/14/98	57	20.6	172	48.9	62	0	0	776	776	78	310	388	1164
H26	7/14/98	57	20.1	173	20.0	63	0	82	737	818	82	246	327	1146
I01	7/2/98	57	39.8	167	46.3	36	0	0	561	561	0	400	400	961
I02	7/2/98	57	38.9	167	8.3	35	0	0	248	248	0	83	83	331
I03	6/29/98	57	40.2	166	30.1	35	0	77	614	691	0	154	154	845
I04	6/29/98	57	40.3	165	54.1	33	0	0	165	165	0	165	165	330
I05	6/22/98	57	39.9	165	15.6	30	0	538	538	1075	384	154	538	1613
I06	6/22/98	57	40.4	164	38.0	27	84	84	418	586	84	0	84	669
I07	6/20/98	57	40.0	163	59.3	26	0	313	625	938	0	0	0	938
I08	6/20/98	57	39.5	163	21.9	24	0	0	79	79	0	0	0	79

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	Total	Large	Small	Total	
I11	6/14/98	57 40.0	161 29.7	28	160	160	0	320	0	0	0	320
I12	6/13/98	57 39.9	160 54.2	29	0	163	0	163	0	0	0	163
I18	7/7/98	57 39.8	168 24.8	36	0	0	319	319	0	80	80	399
I19	7/7/98	57 49.8	168 43.7	37	0	0	157	157	0	79	79	236
I19	7/7/98	57 40.2	169 2.5	36	0	0	472	472	0	236	236	708
I20	7/7/98	57 30.2	169 21.9	37	0	0	0	0	0	153	153	153
I21	7/11/98	57 40.1	170 17.0	38	0	0	1263	1263	0	668	668	1931
I21	7/11/98	57 30.1	169 58.1	36	0	0	82	82	0	0	0	82
I22	7/11/98	57 49.8	170 36.3	42	0	80	0	80	0	0	0	80
I22	7/11/98	57 39.9	170 54.1	45	0	0	405	405	81	162	243	648
I23	7/13/98	57 40.3	171 32.2	53	0	74	222	296	0	222	222	518
I24	7/13/98	57 40.0	172 9.7	57	0	0	307	307	0	691	691	999
I25	7/14/98	57 40.0	172 48.5	64	0	0	731	731	0	325	325	1056
I26	7/14/98	57 40.6	173 24.0	78	0	0	1160	1160	77	1083	1160	2320
J02	7/1/98	58 1.1	167 10.5	34	0	0	81	81	0	0	0	81
J03	6/29/98	58 0.2	166 30.7	32	0	309	0	309	77	0	77	387
J04	6/29/98	58 0.2	165 54.8	28	0	0	337	337	0	0	0	337
J05	6/22/98	58 0.0	165 16.1	24	0	0	232	232	0	0	0	232
J06	6/22/98	57 59.7	164 37.9	22	0	75	452	527	0	0	0	527
J07	6/20/98	57 60.0	163 59.6	24	0	157	157	315	0	0	0	315
J18	7/7/98	58 0.1	168 26.6	35	0	0	0	0	82	0	82	82
J19	7/7/98	58 0.4	169 4.4	37	0	81	0	81	0	0	0	81
J20	7/7/98	57 50.2	169 22.4	34	75	75	452	602	0	226	226	828
J21	7/10/98	57 50.2	169 58.4	37	0	154	0	154	0	77	77	231
J21	7/11/98	57 59.9	170 19.7	39	0	0	237	237	0	0	0	237
J23	7/13/98	58 0.3	171 35.5	52	0	0	78	78	0	78	78	157
J24	7/13/98	57 59.7	172 13.7	55	0	0	573	573	0	164	164	737
J25	7/14/98	57 60.0	172 52.9	58	0	80	80	159	0	159	159	318
J26	7/14/98	57 58.8	173 29.0	62	0	0	0	0	80	239	319	319
K02	7/1/98	58 20.1	167 12.9	27	0	85	0	85	0	0	0	85
K03	6/29/98	58 20.1	166 32.7	25	0	0	0	0	78	0	78	78
K18	7/8/98	58 18.8	168 28.2	34	0	0	0	0	76	0	76	76
K21	7/10/98	58 19.9	170 23.2	39	0	0	0	0	0	78	78	78

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	Total	Large	Small	Total	
K23	7/19/98	58 20.0	171 39.3	51	0	0	79	79	0	0	0	79
K25	7/13/98	58 20.2	172 55.4	57	0	70	141	211	0	211	211	422
K26	7/14/98	58 19.3	173 34.1	60	0	159	318	477	477	2227	2704	3181
K27	7/23/98	58 20.8	174 17.9	86	0	0	1122	1122	0	1421	1421	2542
L22	7/19/98	58 39.8	171 5.1	43	0	0	80	80	0	0	0	80
L24	7/23/98	58 39.7	172 21.9	54	0	0	155	155	0	0	0	155
L25	7/23/98	58 40.1	173 0.5	60	0	77	536	612	0	689	689	1301
L26	7/23/98	58 40.0	173 38.1	67	0	152	606	758	0	227	227	985
L27	7/24/98	58 40.4	174 16.5	84	0	0	12721	12721	0	15631	15631	28352
L28	7/24/98	58 44.3	174 58.9	77	0	0	5001	5001	0	7578	7578	12579
L30	7/29/98	58 40.1	176 11.9	75	0	0	768	768	0	1152	1152	1920
L31	7/29/98	58 40.1	176 49.9	72	0	0	151	151	0	151	151	301
M25	7/23/98	59 0.2	173 5.3	56	0	80	718	798	0	319	319	1117
M26	7/24/98	59 0.2	173 42.8	62	0	405	567	971	0	81	81	1052
M27	7/24/98	58 59.9	174 22.0	68	0	0	2297	2297	0	1454	1454	3751
M28	7/24/98	59 0.3	175 0.4	69	0	0	1658	1658	0	1500	1500	3159
M29	7/29/98	59 0.2	175 44.3	73	0	0	1160	1160	0	928	928	2088
M30	7/29/98	59 0.0	176 19.2	73	0	0	1516	1516	0	1836	1836	3352
M31	7/29/98	58 59.9	176 56.6	72	0	0	224	224	0	299	299	523
M32	7/29/98	58 59.5	177 35.3	71	0	160	1201	1362	0	721	721	2082
N24	7/22/98	59 20.1	172 30.3	46	0	0	107	107	0	0	0	107
N27	7/24/98	59 19.9	174 26.4	64	0	79	158	238	0	0	0	238
N28	7/24/98	59 20.1	175 5.8	71	0	0	159	159	0	159	159	317
N29	7/28/98	59 20.1	175 44.8	73	0	0	284	284	0	355	355	639
N30	7/29/98	59 20.0	176 22.3	73	0	82	7392	7475	575	3286	3861	11335
N31	7/29/98	59 19.9	177 3.4	44	0	0	745	745	0	1416	1416	2161
O29	7/28/98	59 40.1	175 51.7	74	0	81	161	242	0	403	403	645
O30	7/28/98	59 40.3	176 31.7	74	0	489	1142	1631	163	163	326	1957
O31	7/28/98	59 40.0	177 8.7	92	0	0	148	148	0	222	222	370
P26	7/22/98	60 0.0	173 56.4	50	0	0	77	77	0	0	0	77
P26	7/22/98	59 50.2	173 35.4	50	0	0	160	160	0	0	0	160
P30	7/28/98	60 0.1	176 42.9	75	0	0	78	78	0	0	0	78
P31	7/28/98	60 0.1	177 13.3	73	0	111	111	223	0	0	0	223

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	Total	Large	Small	Total	
P32	7/28/98	59	59.9	177	56.0	76	0	0	154	154	0	0	0	154
Q02	6/30/98	60	20.2	167	16.6	16	0	0	75	75	0	0	0	75
Q29	7/27/98	60	19.8	176	2.9	65	0	0	0	0	0	82	82	82
Q30	7/27/98	60	20.3	176	43.8	73	0	0	83	83	0	0	0	83
Q31	7/28/98	60	20.2	177	23.6	79	0	0	150	150	0	0	0	150
R32	7/27/98	60	39.9	178	9.5	86	0	76	227	303	0	0	0	303
Z04	6/24/98	54	50.0	165	30.9	80	235	314	3058	3607	0	3921	3921	7528
Z05	6/24/98	54	41.0	165	9.2	44	0	0	266	266	0	177	177	443

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	Total	Large	Small	Total	
A02	7/3/98	54	59.4	166	56.8	85	177	618	618	1412	0	0	0	1412
A03	6/27/98	55	0.2	166	20.8	77	713	713	713	2140	0	0	0	2140
A04	6/27/98	55	0.4	165	45.1	69	2772	734	571	4077	0	0	0	4077
A05	6/24/98	54	59.7	165	9.7	57	7577	2026	2176	11778	0	0	0	11778
A06	6/24/98	55	1.9	164	36.3	33	177	88	265	530	0	0	0	530
B01	7/3/98	55	19.6	167	33.2	80	780	334	223	1337	0	111	111	1448
B02	7/3/98	55	19.9	166	58.7	74	177	177	177	532	0	0	0	532
B03	6/27/98	55	20.3	166	21.5	71	540	771	694	2004	154	77	231	2235
B04	6/27/98	55	19.6	165	46.7	64	1015	338	846	2200	0	0	0	2200
B05	6/24/98	55	19.8	165	12.0	58	1172	78	313	1563	78	0	78	1641
B06	6/24/98	55	18.9	164	35.6	54	3037	2414	1791	7242	857	0	857	8099
B07	6/19/98	55	20.1	164	0.2	40	0	0	79	79	0	0	0	79
B08	6/18/98	55	20.2	163	25.3	27	0	0	420	420	0	0	0	420
C01	7/3/98	55	40.0	167	34.6	72	1041	80	160	1281	0	0	0	1281
C02	7/3/98	55	39.2	166	57.8	71	86	86	86	257	0	0	0	257
C03	6/27/98	55	40.1	166	23.2	67	668	149	520	1337	0	371	371	1708
C04	6/27/98	55	39.5	165	48.5	62	246	411	575	1232	164	0	164	1396
C05	6/24/98	55	40.0	165	12.2	57	708	157	157	1023	0	0	0	1023
C06	6/24/98	55	38.2	164	34.6	51	1072	907	3462	5441	577	0	577	6018
C07	6/19/98	55	41.7	164	0.1	50	1098	1647	2196	4940	0	0	0	4940
C08	6/18/98	55	39.6	163	24.9	42	506	506	759	1770	0	0	0	1770
C09	6/16/98	55	40.5	162	50.6	26	83	331	331	745	0	0	0	745
C18	7/3/98	55	40.3	168	10.8	72	845	77	154	1075	0	0	0	1075
D01	7/3/98	55	59.6	167	36.4	71	1489	745	165	2400	0	0	0	2400
D02	7/3/98	55	58.6	167	1.9	72	1031	86	86	1203	0	0	0	1203
D03	6/28/98	55	59.8	166	23.9	66	801	641	881	2323	80	481	561	2883
D04	6/28/98	56	1.0	165	47.8	56	484	484	484	1452	0	242	242	1694
D05	6/23/98	55	59.9	165	11.2	49	1041	1201	961	3204	160	80	240	3444
D06	6/23/98	56	0.2	164	33.9	49	919	1684	1684	4287	0	0	0	4287
D07	6/19/98	56	0.1	163	59.0	48	602	1054	1882	3538	0	0	0	3538
D08	6/18/98	55	59.9	163	23.6	45	360	2251	6482	9092	0	0	0	9092
D09	6/17/98	55	59.7	162	49.0	42	78	781	703	1563	0	0	0	1563
D10	6/16/98	55	59.6	162	15.8	37	0	81	162	243	0	0	0	243

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	
D18	7/3/98	55 59.2	168 12.8	79	1620	511	341	2472	0	0	0	2472
E01	7/2/98	56 20.0	167 38.9	68	2219	2060	396	4676	0	0	0	4676
E02	7/2/98	56 19.2	167 2.4	60	594	340	849	1783	170	255	425	2208
E03	6/28/98	56 20.2	166 24.7	55	1098	1098	1804	3999	78	1255	1333	5332
E04	6/28/98	56 20.2	165 47.9	48	1378	766	766	2909	77	230	306	3215
E05	6/23/98	56 19.8	165 12.3	38	1019	627	1255	2901	78	0	78	2980
E06	6/23/98	56 18.7	164 36.0	45	168	756	1176	2099	0	84	84	2183
E07	6/19/98	56 22.0	163 59.6	45	289	1013	2026	3329	0	0	0	3329
E08	6/18/98	56 20.1	163 23.5	45	247	1237	2968	4452	0	82	82	4534
E09	6/17/98	56 19.8	162 48.2	41	317	951	634	1902	0	0	0	1902
E10	6/16/98	56 18.8	162 12.7	39	164	0	411	575	0	0	0	575
E11	6/12/98	56 20.0	161 37.0	34	0	0	79	79	0	0	0	79
E18	7/3/98	56 19.0	168 14.3	83	16970	4285	171	21426	0	0	0	21426
E19	7/6/98	56 19.9	168 52.4	68	2617	4337	1421	8374	374	0	374	8748
E21	7/12/98	56 20.1	170 4.2	57	773	387	155	1315	0	0	0	1315
E22	7/12/98	56 19.7	170 40.7	63	80	0	80	160	0	0	0	160
F01	7/2/98	56 39.9	167 41.3	54	2753	1295	243	4291	0	162	162	4453
F02	7/2/98	56 40.9	167 4.6	50	1228	1391	327	2946	82	0	82	3028
F03	6/28/98	56 40.1	166 25.6	45	1647	1882	1255	4783	0	471	471	5254
F04	6/28/98	56 39.1	165 49.1	41	1684	1301	1608	4593	77	459	536	5129
F05	6/23/98	56 39.7	165 13.1	38	543	1397	1940	3880	0	1630	1630	5510
F06	6/23/98	56 39.3	164 36.2	39	792	1189	2377	4359	0	872	872	5230
F07	6/19/98	56 39.2	163 58.3	40	547	1163	1300	3010	0	0	0	3010
F08	6/19/98	56 41.1	163 24.1	39	84	672	1176	1931	0	0	0	1931
F09	6/16/98	56 39.8	162 47.2	38	238	792	1030	2060	0	0	0	2060
F10	6/15/98	56 39.9	162 11.3	33	82	655	409	1146	0	0	0	1146
F11	6/12/98	56 40.3	161 35.0	48	472	1023	1102	2597	0	0	0	2597
F18	7/5/98	56 40.2	168 16.6	56	4652	25080	1011	30744	790	0	790	31533
F19	7/5/98	56 40.3	168 53.6	54	3300	7183	7183	17666	15750	0	15750	33416
F21	7/12/98	56 40.8	170 8.4	51	317	396	79	792	0	0	0	792
F21	7/6/98	56 49.9	169 54.3	38	285	356	214	855	0	0	0	855
F22	7/12/98	56 39.7	170 44.3	60	0	395	0	395	0	0	0	395
F23	7/12/98	56 39.6	171 20.9	63	306	689	306	1301	153	0	153	1454

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	
F24	7/12/98	56 40.2	171 58.4	67	0	78	0	78	155	0	155	233
F25	7/14/98	56 39.7	172 34.6	73	80	80	80	240	0	0	0	240
G01	7/2/98	56 59.7	167 42.6	40	1558	2570	2492	6619	0	1713	1713	8333
G02	7/2/98	57 0.2	167 6.2	38	399	718	399	1516	0	80	80	1596
G03	6/28/98	57 0.2	166 27.6	39	3637	530	606	4774	0	227	227	5001
G04	6/28/98	56 59.7	165 51.8	38	1041	1121	2323	4485	561	2162	2723	7208
G05	6/23/98	56 59.8	165 12.8	36	408	1060	1549	3017	163	0	163	3180
G06	6/23/98	56 59.9	164 36.3	36	251	837	1171	2259	84	502	586	2845
G07	6/20/98	56 60.0	163 57.8	36	781	1407	2110	4298	0	0	0	4298
G08	6/19/98	57 0.7	163 23.1	33	0	164	164	327	0	0	0	327
G09	6/16/98	56 59.8	162 47.2	32	79	237	395	711	0	0	0	711
G10	6/15/98	56 59.5	162 10.5	32	164	409	409	982	0	0	0	982
G11	6/13/98	57 0.2	161 33.9	37	0	875	239	1113	0	0	0	1113
G18	7/5/98	56 59.7	168 20.2	42	1744	2242	1080	5066	83	0	83	5149
G19	7/5/98	57 9.9	168 38.7	39	979	2120	652	3751	0	0	0	3751
G19	7/5/98	56 57.7	168 56.8	42	1038	5587	718	7342	239	0	239	7582
G19	7/5/98	56 50.3	168 36.7	51	2652	4582	1206	8440	161	0	161	8600
G20	7/5/98	57 9.6	169 20.0	37	1713	3660	2959	8333	6126	278	6405	14737
G20	7/5/98	56 59.7	169 32.8	31	2398	2707	1701	6806	0	0	0	6806
G20	7/6/98	56 50.1	169 18.0	43	944	2597	2676	6217	1102	157	1259	7476
G21	7/5/98	57 8.7	169 51.3	28	83	0	165	248	0	0	0	248
G21	7/5/98	57 0.0	170 9.3	36	157	79	157	393	0	79	79	472
G22	7/12/98	56 50.2	170 29.0	54	325	325	650	1300	0	162	162	1462
G22	7/12/98	56 59.8	170 46.6	50	158	79	79	316	0	0	0	316
G23	7/12/98	57 0.1	171 23.0	58	231	385	0	617	0	0	0	617
G24	7/12/98	57 0.3	172 2.3	62	123	1230	123	1476	0	0	0	1476
G25	7/14/98	56 60.0	172 39.5	65	1407	2032	391	3829	0	0	0	3829
G26	7/14/98	57 0.4	173 14.7	74	484	807	81	1371	0	0	0	1371
H01	7/2/98	57 19.9	167 44.6	38	316	1579	8844	10740	0	10029	10029	20769
H02	7/2/98	57 20.2	167 6.5	37	1417	2584	3084	7085	0	667	667	7752
H03	6/29/98	57 20.2	166 29.0	37	158	872	2140	3170	0	713	713	3883
H04	6/28/98	57 19.5	165 52.4	36	4634	910	2648	8191	331	1407	1738	9929
H05	6/23/98	57 19.8	165 15.3	34	961	961	7449	9371	4227	3945	8172	17543

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	
H06	6/23/98	57 19.7	164 37.2	34	489	652	4322	5463	1223	2039	3262	8725
H07	6/20/98	57 20.1	163 59.1	32	78	0	392	471	0	0	0	471
H08	6/20/98	57 19.9	163 20.8	28	80	0	0	80	0	0	0	80
H09	6/16/98	57 19.9	162 45.5	26	0	0	78	78	0	0	0	78
H10	6/15/98	57 18.8	162 9.2	26	0	84	0	84	0	0	0	84
H11	6/13/98	57 20.1	161 32.3	29	81	403	81	565	0	0	0	565
H14	6/10/98	57 20.0	159 42.7	28	0	83	0	83	0	0	0	83
H18	7/7/98	57 19.6	168 21.0	38	551	551	630	1731	0	79	79	1810
H19	7/7/98	57 29.8	168 44.7	37	938	3282	6330	10550	0	8752	8752	19302
H19	7/7/98	57 20.8	168 59.1	37	78	0	235	314	0	0	0	314
H20	7/11/98	57 19.9	169 36.7	32	21527	7758	1745	31030	0	0	0	31030
H21	7/11/98	57 19.7	170 12.7	27	158	0	0	158	0	79	79	238
H22	7/11/98	57 29.5	170 34.9	39	768	845	77	1690	0	0	0	1690
H22	7/11/98	57 19.2	170 51.3	44	77	0	77	154	0	0	0	154
H23	7/13/98	57 20.4	171 28.3	54	776	6752	233	7761	698	0	698	8459
H24	7/13/98	57 19.9	172 5.6	57	1168	3660	1012	5841	156	0	156	5996
H25	7/14/98	57 20.6	172 48.9	62	310	388	78	776	0	0	0	776
H26	7/14/98	57 20.1	173 20.0	63	82	327	0	409	0	0	0	409
I01	7/2/98	57 39.8	167 46.3	36	160	160	641	961	0	400	400	1362
I02	7/2/98	57 38.9	167 8.3	35	2482	1241	2565	6288	0	579	579	6868
I03	6/29/98	57 40.2	166 30.1	35	6683	1075	3226	10984	77	154	230	11215
I04	6/29/98	57 40.3	165 54.1	33	4040	1641	10912	16593	2968	1484	4452	21044
I05	6/22/98	57 39.9	165 15.6	30	922	614	3457	4993	0	154	154	5146
I06	6/22/98	57 40.4	164 38.0	27	0	0	167	167	0	0	0	167
I08	6/20/98	57 39.5	163 21.9	24	0	0	79	79	0	0	0	79
I09	6/15/98	57 39.8	162 45.2	22	0	77	0	77	0	0	0	77
I10	6/14/98	57 40.1	162 7.6	24	0	81	0	81	0	0	0	81
I11	6/14/98	57 40.0	161 29.7	28	0	80	0	80	0	0	0	80
I13	6/10/98	57 39.9	160 16.5	28	0	80	0	80	0	0	0	80
I18	7/7/98	57 39.8	168 24.8	36	559	718	1357	2634	0	319	319	2953
I19	7/7/98	57 49.8	168 43.7	37	3069	1889	1102	6059	0	157	157	6217
I19	7/7/98	57 40.2	169 2.5	36	4722	1810	1259	7791	0	787	787	8577
I20	7/11/98	57 40.1	169 39.3	37	11877	6060	727	18664	80	161	241	18905

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	
I20	7/7/98	57 30.2	169 21.9	37	3598	2526	2756	8880	153	0	153	9033
I21	7/11/98	57 40.1	170 17.0	38	594	2377	371	3342	297	0	297	3640
I21	7/11/98	57 30.1	169 58.1	36	979	2936	163	4077	163	0	163	4240
I22	7/11/98	57 49.8	170 36.3	42	241	1045	0	1286	241	0	241	1527
I22	7/11/98	57 39.9	170 54.1	45	891	3076	243	4210	405	0	405	4615
I23	7/13/98	57 40.3	171 32.2	53	444	962	0	1407	74	0	74	1481
I24	7/13/98	57 40.0	172 9.7	57	1075	1306	307	2688	0	0	0	2688
I25	7/14/98	57 40.0	172 48.5	64	1056	2600	406	4062	0	0	0	4062
I26	7/14/98	57 40.6	173 24.0	78	696	851	309	1856	77	0	77	1933
J01	7/1/98	57 59.9	167 47.8	35	3921	627	392	4940	0	0	0	4940
J02	7/1/98	58 1.1	167 10.5	34	17972	1943	2267	22182	81	0	81	22263
J03	6/29/98	58 0.2	166 30.7	32	13534	696	1779	16009	0	0	0	16009
J04	6/29/98	58 0.2	165 54.8	28	169	169	7081	7418	337	2276	2613	10031
J05	6/22/98	58 0.0	165 16.1	24	309	77	77	464	0	0	0	464
J07	6/20/98	57 60.0	163 59.6	24	157	0	0	157	0	0	0	157
J18	7/7/98	58 0.1	168 26.6	35	655	655	818	2128	0	0	0	2128
J19	7/7/98	58 0.4	169 4.4	37	26943	2646	241	29830	0	0	0	29830
J20	7/10/98	58 0.1	169 42.5	37	9743	8253	917	18912	160	0	160	19072
J20	7/7/98	57 50.2	169 22.4	34	18781	9021	1183	28985	0	376	376	29362
J21	7/10/98	57 50.2	169 58.4	37	6243	5010	1310	12563	77	0	77	12640
J21	7/11/98	57 59.9	170 19.7	39	3793	7294	1896	12983	632	316	948	13931
J22	7/13/98	58 0.4	170 58.2	46	0	784	157	941	0	0	0	941
J23	7/13/98	58 0.3	171 35.5	52	0	78	157	235	0	0	0	235
J24	7/13/98	57 59.7	172 13.7	55	1064	1719	246	3028	2619	1146	3765	6793
J25	7/14/98	57 60.0	172 52.9	58	3705	7409	654	11768	159	0	159	11927
J26	7/14/98	57 58.8	173 29.0	62	1038	7103	2953	11093	1516	160	1676	12769
K01	7/1/98	58 18.7	167 50.1	32	15386	3585	3884	22855	77	154	230	23085
K02	7/1/98	58 20.1	167 12.9	27	4823	85	1015	5923	169	0	169	6092
K03	6/29/98	58 20.1	166 32.7	25	0	0	78	78	0	0	0	78
K04	6/29/98	58 19.5	165 55.7	22	0	0	225	225	0	75	75	300
K05	6/22/98	58 19.8	165 17.4	21	76	0	0	76	0	0	0	76
K18	7/8/98	58 18.8	168 28.2	34	8790	3637	3031	15459	303	606	909	16368
K19	7/7/98	58 20.3	169 7.0	36	7502	2373	689	10564	0	0	0	10564

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	
K20	7/10/98	58 20.1	169 43.7	36	10582	4738	395	15715	158	0	158	15873
K21	7/10/98	58 19.9	170 23.2	39	10287	6969	332	17588	0	0	0	17588
K22	7/13/98	58 20.1	171 0.7	44	9617	3386	406	13410	481	80	561	13970
K23	7/19/98	58 20.0	171 39.3	51	555	2457	634	3645	21220	5035	26255	29900
K24	7/13/98	58 19.8	172 17.6	54	776	6209	2483	9468	128651	81869	210520	219988
K25	7/13/98	58 20.2	172 55.4	57	7407	6854	884	15146	914	1547	2462	17607
K26	7/14/98	58 19.3	173 34.1	60	2227	9305	1193	12724	6706	0	6706	19430
K27	7/23/98	58 20.8	174 17.9	86	75	224	224	523	2318	4262	6580	7103
L01	7/1/98	58 39.9	167 52.8	24	475	0	79	555	0	0	0	555
L18	7/8/98	58 39.7	168 30.0	27	9417	1836	479	11732	160	80	239	11971
L19	7/8/98	58 40.2	169 8.8	33	8561	9417	4280	22258	417	1250	1667	23925
L20	7/10/98	58 40.3	169 47.0	35	19033	7786	0	26819	0	0	0	26819
L21	7/10/98	58 39.3	170 26.5	39	18362	12552	697	31611	0	0	0	31611
L22	7/19/98	58 39.8	171 5.1	43	3736	13609	1601	18946	80	0	80	19025
L23	7/19/98	58 40.3	171 43.9	49	229	1450	534	2212	27901	18833	46734	48947
L24	7/23/98	58 39.7	172 21.9	54	928	2475	1083	4486	13833	294	14128	18613
L25	7/23/98	58 40.1	173 0.5	60	2311	6532	2512	11356	39318	61955	101273	112629
L26	7/23/98	58 40.0	173 38.1	67	2410	11248	5021	18680	508171	325997	834168	852847
L27	7/24/98	58 40.4	174 16.5	84	4349	3526	118	7993	75	75	150	8143
L28	7/24/98	58 44.3	174 58.9	77	0	227	1440	1667	0	2652	2652	4319
L30	7/29/98	58 40.1	176 11.9	75	0	0	2535	2535	0	3764	3764	6299
L31	7/29/98	58 40.1	176 49.9	72	0	0	0	0	0	226	226	226
M01	7/1/98	59 0.0	167 53.6	21	238	79	0	317	0	0	0	317
M18	7/8/98	59 0.1	168 32.5	24	158	158	158	475	0	0	0	475
M19	7/8/98	59 0.3	169 10.7	28	4268	1940	1164	7373	310	155	466	7838
M20	7/10/98	59 0.4	169 50.2	33	17173	18624	1209	37006	0	76	76	37082
M21	7/10/98	58 59.8	170 28.2	37	7996	6964	516	15475	0	0	0	15475
M22	7/19/98	58 59.7	171 8.4	40	14784	22639	2772	40195	464	77	541	40737
M23	7/19/98	59 0.2	171 47.8	46	2166	8663	2939	13767	266046	51163	317208	330976
M24	7/23/98	58 59.9	172 26.1	53	559	1676	160	2394	80	0	80	2474
M25	7/23/98	59 0.2	173 5.3	56	1038	1197	638	2873	3751	1357	5108	7981
M26	7/24/98	59 0.2	173 42.8	62	810	3319	4291	8419	89991	4245	94236	102656
M27	7/24/98	58 59.9	174 22.0	68	306	383	306	995	995	459	1454	2450

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	
M28	7/24/98	59	0.3	175	0.4	69	0	79	158	237	0	0	0	237
M31	7/29/98	58	59.9	176	56.6	72	0	0	299	299	0	224	224	523
M32	7/29/98	58	59.5	177	35.3	71	0	0	320	320	0	481	481	801
N18	7/8/98	59	19.6	168	34.6	21	165	82	82	330	0	82	82	412
N19	7/8/98	59	20.0	169	14.0	26	0	78	938	1016	0	234	234	1250
N20	7/9/98	59	19.9	169	52.5	32	13402	15165	1411	29978	0	240	240	30218
N21	7/10/98	59	20.1	170	31.8	36	12257	21289	1720	35266	78	0	78	35344
N22	7/19/98	59	19.9	171	11.2	39	6177	28264	3744	38184	1102	0	1102	39286
N23	7/19/98	59	20.4	171	50.1	43	1221	5493	1373	8087	2899	687	3586	11673
N24	7/22/98	59	20.1	172	30.3	46	6966	8574	1393	16933	214	214	429	17362
N25	7/23/98	59	19.7	173	9.5	53	2528	734	652	3914	10193	2990	13183	17097
N25	7/22/98	59	30.0	172	53.4	49	9661	5599	1537	16797	329	220	549	17346
N26	7/23/98	59	19.9	173	47.7	59	1301	2220	1531	5052	37649	15322	52971	58024
N27	7/24/98	59	19.9	174	26.4	64	5432	13174	578	19184	79	79	158	19342
N28	7/24/98	59	20.1	175	5.8	71	4282	8564	2696	15543	9182	501	9683	25225
N29	7/28/98	59	20.1	175	44.8	73	71	0	213	284	639	497	1136	1420
N30	7/29/98	59	20.0	176	22.3	73	0	0	246	246	246	164	411	657
N31	7/29/98	59	19.9	177	3.4	44	0	0	1714	1714	0	1267	1267	2981
O18	7/8/98	59	39.6	168	37.0	20	245	82	0	326	0	0	0	326
O19	7/8/98	59	40.1	169	16.5	25	0	0	78	78	0	78	78	155
O20	7/9/98	59	39.7	169	55.1	30	5786	8188	2183	16158	76	381	458	16615
O21	7/9/98	59	39.8	170	35.3	35	12444	28444	7555	48444	892	0	892	49336
O22	7/19/98	59	40.0	171	14.2	38	4815	17152	4965	26932	2728	152	2880	29811
O23	7/20/98	59	40.1	171	53.8	41	6413	18765	8076	33255	1176	235	1412	34667
O24	7/22/98	59	39.9	172	34.6	44	13369	9804	2897	26069	310	233	543	26612
O25	7/22/98	59	40.2	173	14.2	50	6587	4548	392	11527	0	314	314	11841
O26	7/23/98	59	40.2	173	52.3	56	3390	9450	1010	13850	216	721	938	14788
O26	7/23/98	59	30.2	173	30.3	55	4738	6791	553	12082	79	1421	1500	13583
O27	7/24/98	59	39.8	174	27.1	61	1684	5435	2450	9569	85393	14358	99752	109320
O27	7/24/98	59	49.8	174	14.6	57	614	5530	1997	8142	17402	1130	18532	26674
O28	7/24/98	59	39.2	175	6.9	67	772	7721	7610	16103	254947	267911	522858	538961
O29	7/28/98	59	40.1	175	51.7	74	2501	3791	403	6695	81	161	242	6937
O30	7/28/98	59	40.3	176	31.7	74	1468	1631	979	4077	1142	1712	2854	6931

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	
O31	7/28/98	59 40.0	177 8.7	92	74	74	1110	1259	222	888	1110	2369
P18	7/9/98	59 59.3	168 39.3	20	0	78	0	78	0	0	0	78
P19	7/8/98	60 0.1	169 19.4	24	0	0	817	817	0	743	743	1560
P20	7/9/98	60 0.4	169 58.5	28	250	1334	417	2001	83	0	83	2084
P21	7/9/98	59 59.9	170 37.6	34	1385	33578	29770	64733	4479	1034	5512	70245
P22	7/20/98	59 60.0	171 17.9	36	1315	13752	8610	23678	2813	0	2813	26491
P23	7/20/98	59 60.0	171 57.8	35	1936	2985	2985	7905	1210	1694	2904	10809
P23	7/22/98	59 50.1	172 15.2	40	7006	13752	5968	26726	3215	1568	4783	31510
P24	7/21/98	60 0.3	172 38.8	34	2088	348	1508	3944	580	1972	2552	6497
P24	7/22/98	59 50.0	172 52.2	42	13223	7970	906	22099	312	78	389	22488
P25	7/22/98	59 59.8	173 19.8	39	2369	2685	1500	6554	553	316	869	7423
P26	7/22/98	60 9.5	173 47.0	45	5699	22798	3257	31754	325	975	1300	33054
P26	7/22/98	60 0.0	173 56.4	50	6316	13816	2566	22698	21554	7034	28588	51286
P26	7/22/98	59 50.2	173 35.4	50	4806	6407	1281	12494	721	2243	2963	15458
P27	7/24/98	59 59.8	174 35.7	57	995	6354	4440	11789	52935	5476	58411	70200
P27	7/25/98	60 9.8	174 21.1	54	553	8686	4975	14214	14813	4074	18887	33101
P28	7/25/98	60 0.1	175 16.3	63	156	4595	10357	15108	133647	106917	240564	255672
P29	7/28/98	59 58.5	175 56.4	69	0	0	0	0	229838	256652	486490	486490
P30	7/28/98	60 0.1	176 42.9	75	2726	4906	6152	13784	155732	120248	275980	289764
P31	7/28/98	60 0.1	177 13.3	73	2005	2228	891	5125	16284	22712	38996	44121
P32	7/28/98	59 59.9	177 56.0	76	0	0	999	999	0	461	461	1459
Q18	7/9/98	60 19.4	168 40.3	19	0	0	327	327	0	327	327	655
Q19	7/9/98	60 19.7	169 18.6	22	0	0	2188	2188	0	860	860	3048
Q20	7/9/98	60 19.7	170 3.2	27	157	2990	1731	4879	79	393	472	5351
Q21	7/9/98	60 20.4	170 39.7	32	0	19176	236504	255680	308102	130351	438452	694132
Q22	7/20/98	60 19.8	171 21.4	34	431	4307	28138	32875	27306	0	27306	60181
Q23	7/20/98	60 19.9	172 4.1	31	854	388	466	1707	155	155	310	2018
Q24	7/21/98	60 10.2	172 21.1	30	779	1558	1713	4050	78	1791	1869	5919
Q25	7/21/98	60 19.6	173 25.3	33	0	634	2377	3011	634	634	1268	4279
Q25	7/21/98	60 10.5	173 0.8	31	155	387	2707	3248	0	4331	4331	7579
Q26	7/21/98	60 20.3	174 4.9	48	2027	17621	10916	30564	961	1842	2803	33367
Q27	7/25/98	60 20.0	174 41.3	55	329	1314	1889	3532	9331	7749	17080	20612
Q28	7/25/98	60 20.2	175 23.8	60	612	4210	5818	10641	37115	58873	95988	106628

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	
Q29	7/27/98	60 19.8	176 2.9	65	989	5853	2143	8986	4534	4946	9481	18466
Q30	7/27/98	60 20.3	176 43.8	73	500	1917	3834	6252	26486	99964	126450	132702
Q31	7/28/98	60 20.2	177 23.6	79	18570	11407	1592	31569	150	750	900	32469
R22	7/20/98	60 39.6	171 26.2	33	0	1515	45057	46572	21554	3943	25497	72068
R23	7/20/98	60 40.1	172 7.7	32	0	1353	89305	90658	45781	8079	53860	144519
R24	7/20/98	60 40.5	172 46.5	23	0	0	1225	1225	77	230	306	1531
R25	7/21/98	60 40.3	173 28.2	35	0	12007	84052	96060	52833	2401	55234	151294
R26	7/21/98	60 40.2	174 8.2	45	314	11449	8077	19840	941	471	1412	21251
R27	7/25/98	60 39.8	174 48.6	52	76	2746	2289	5112	2670	2518	5188	10299
R28	7/25/98	60 40.2	175 26.5	57	1742	3630	2686	8059	1815	4864	6679	14738
R29	7/27/98	60 40.2	176 13.0	63	904	4353	2053	7310	329	739	1068	8378
R30	7/27/98	60 39.7	176 47.6	69	1141	3498	3193	7831	10846	9713	20558	28390
R31	7/28/98	60 39.8	177 29.4	78	5327	6393	152	11873	149	894	1043	12916
R32	7/27/98	60 39.9	178 9.5	86	76	76	530	682	303	909	1212	1894
S22	7/20/98	60 59.6	171 29.3	31	0	0	99015	99015	54291	34347	88638	187652
S23	7/20/98	61 0.1	172 9.3	33	0	902	43748	44650	51237	15371	66608	111258
S24	7/21/98	61 0.1	172 49.1	34	0	1822	33885	35707	24432	8907	33339	69046
S25	7/21/98	60 60.0	173 29.3	39	0	2079	66523	68602	41075	4564	45639	114241
S26	7/21/98	60 59.8	174 10.8	43	330	6932	37959	45221	16108	546	16654	61875
S27	7/25/98	61 0.1	174 52.8	49	569	5362	7637	13569	812	1462	2275	15844
S28	7/25/98	60 59.9	175 32.9	54	1630	5743	2018	9390	155	1242	1397	10787
S29	7/27/98	61 0.2	176 17.2	60	674	2782	1517	4973	2782	2529	5310	10284
S30	7/27/98	61 0.0	176 58.6	65	3803	5588	2328	11719	0	1475	1475	13193
S31	7/27/98	60 59.6	177 39.0	72	2393	2916	150	5458	150	374	523	5982
T25	7/26/98	61 19.8	173 35.4	39	0	204	25525	25729	12986	13535	26521	52250
T26	7/25/98	61 19.8	174 21.1	41	0	2941	41829	44770	27202	15693	42895	87664
T27	7/25/98	61 20.5	175 0.9	46	480	7194	26617	34291	11456	4296	15752	50042
T28	7/26/98	61 20.1	175 39.9	53	391	1875	3751	6017	3204	938	4142	10159
T29	7/27/98	61 20.0	176 18.1	56	1114	2971	2748	6833	371	74	446	7279
T30	7/27/98	61 19.9	176 57.8	62	3368	3062	3445	9875	153	4287	4440	14315
U25	7/26/98	61 39.5	173 40.1	37	0	188	45248	45436	9733	34906	44639	90075
U26	7/26/98	61 40.2	174 25.3	40	0	311	38527	38838	23356	27668	51023	89861
U27	7/26/98	61 39.9	175 4.3	45	0	389	10115	10504	5447	1167	6614	17118

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	
U28	7/26/98	61	41.0	175	48.4	51	417	3473	15699	19588	5974	1250	7224	26813
U29	7/27/98	61	39.9	176	26.0	56	78	4268	3880	8226	1940	1707	3648	11874
V25	7/26/98	61	59.8	173	46.1	33	0	0	173980	173980	12317	144726	157043	331023
V26	7/26/98	62	0.2	174	30.1	39	0	0	73480	73480	35112	35112	70224	143703
V27	7/26/98	62	0.1	175	12.8	43	0	0	43904	43904	8630	16225	24855	68759
V28	7/26/98	62	0.2	175	50.2	49	0	6330	30594	36923	17380	2397	19777	56701
Z04	6/24/98	54	50.0	165	30.9	80	1176	1647	1804	4627	0	0	0	4627
Z05	6/24/98	54	41.0	165	9.2	44	532	886	354	1772	0	0	0	1772

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	
A06	6/24/98	55 1.9	164 36.3	33	0	0	0	0	0	88	88	88
D10	6/16/98	55 59.6	162 15.8	37	81	0	0	81	81	0	81	162
E09	6/17/98	56 19.8	162 48.2	41	79	0	0	79	0	0	0	79
F09	6/16/98	56 39.8	162 47.2	38	79	0	0	79	0	0	0	79
F12	6/12/98	56 40.2	160 59.2	35	84	0	0	84	84	0	84	169
F13	6/11/98	56 39.8	160 22.2	31	77	0	0	77	154	0	154	230
F21	7/6/98	56 49.9	169 54.3	38	214	0	0	214	0	0	0	214
G10	6/15/98	56 59.5	162 10.5	32	82	0	0	82	82	0	82	164
G11	6/13/98	57 0.2	161 33.9	37	159	0	0	159	239	0	239	398
G12	6/12/98	56 59.6	160 56.8	35	82	0	0	82	0	0	0	82
G13	6/11/98	56 59.8	160 19.8	33	787	79	0	866	944	0	944	1810
G14	6/11/98	56 59.7	159 41.9	28	172	0	0	172	0	0	0	172
G20	7/5/98	56 59.7	169 32.8	31	155	0	0	155	0	77	77	232
G20	7/6/98	56 50.1	169 18.0	43	79	0	0	79	0	0	0	79
G21	7/5/98	57 8.7	169 51.3	28	579	248	0	827	0	0	0	827
G21	7/5/98	57 0.0	170 9.3	36	79	0	0	79	0	0	0	79
G22	7/12/98	56 59.8	170 46.6	50	79	0	0	79	0	0	0	79
H02	7/2/98	57 20.2	167 6.5	37	0	0	0	0	167	0	167	167
H05	6/23/98	57 19.8	165 15.3	34	80	0	0	80	0	0	0	80
H09	6/16/98	57 19.9	162 45.5	26	78	0	0	78	78	0	78	156
H10	6/15/98	57 18.8	162 9.2	26	84	0	0	84	0	0	0	84
H11	6/13/98	57 20.1	161 32.3	29	161	0	0	161	0	0	0	161
H12	6/12/98	57 20.3	160 56.0	32	0	0	0	0	82	0	82	82
H13	6/10/98	57 19.6	160 18.5	32	381	0	0	381	76	0	76	458
H19	7/7/98	57 29.8	168 44.7	37	234	0	0	234	0	0	0	234
H19	7/7/98	57 20.8	168 59.1	37	1490	235	0	1725	314	78	392	2117
H20	7/11/98	57 19.9	169 36.7	32	1168	78	0	1246	312	0	312	1558
H21	7/11/98	57 19.7	170 12.7	27	158	0	0	158	0	0	0	158
I01	7/2/98	57 39.8	167 46.3	36	80	80	0	160	0	80	80	240
I18	7/7/98	57 39.8	168 24.8	36	160	0	0	160	0	0	0	160
I19	7/7/98	57 40.2	169 2.5	36	157	0	0	157	79	0	79	236
I20	7/11/98	57 40.1	169 39.3	37	80	80	0	161	0	161	161	322
I20	7/7/98	57 30.2	169 21.9	37	919	0	0	919	459	77	536	1454

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	
I21	7/11/98	57 30.1	169 58.1	36	408	0	0	408	82	0	82	489
J01	7/1/98	57 59.9	167 47.8	35	78	0	0	78	0	0	0	78
J02	7/1/98	58 1.1	167 10.5	34	81	0	0	81	0	0	0	81
J03	6/29/98	58 0.2	166 30.7	32	77	0	0	77	0	0	0	77
J04	6/29/98	58 0.2	165 54.8	28	169	0	0	169	84	0	84	253
J20	7/7/98	57 50.2	169 22.4	34	75	0	0	75	75	0	75	151
K01	7/1/98	58 18.7	167 50.1	32	154	0	0	154	0	0	0	154
K02	7/1/98	58 20.1	167 12.9	27	0	0	0	0	85	0	85	85
K19	7/7/98	58 20.3	169 7.0	36	0	77	0	77	0	0	0	77
L02	7/1/98	58 40.4	167 13.4	22	163	0	0	163	0	0	0	163
L19	7/8/98	58 40.2	169 8.8	33	0	83	0	83	0	0	0	83
M01	7/1/98	59 0.0	167 53.6	21	158	79	0	238	0	0	0	238
M02	7/1/98	58 60.0	167 15.0	20	82	0	0	82	0	0	0	82
M19	7/8/98	59 0.3	169 10.7	28	78	78	0	155	0	0	0	155
N01	7/1/98	59 20.0	167 55.0	20	78	0	0	78	0	0	0	78
N18	7/8/98	59 19.6	168 34.6	21	82	82	0	165	0	165	165	330
N19	7/8/98	59 20.0	169 14.0	26	78	78	0	156	0	0	0	156
O18	7/8/98	59 39.6	168 37.0	20	245	245	0	489	0	82	82	571
P01	6/30/98	60 0.7	167 59.4	12	0	72	0	72	0	0	0	72
P18	7/9/98	59 59.3	168 39.3	20	78	78	0	157	0	0	0	157
Q19	7/9/98	60 19.7	169 18.6	22	78	0	0	78	0	0	0	78
S23	7/20/98	61 0.1	172 9.3	33	0	80	0	80	0	0	0	80
Z04	6/24/98	54 50.0	165 30.9	80	78	0	0	78	0	0	0	78

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