

Norton Sound Summer Commercial Red King Crab Fishery  
Observer Project Summary Report, 1987

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## INTRODUCTION

The Norton Sound Section of the Eastern Bering Sea consists of all waters in statistical area Q that are north of the latitude of Cape Romanzof, east of 168 west longitude, and south of the latitude of Cape Prince of Wales (Figures 1 and 2). A large vessel summer commercial fishery has existed in this section since 1977.

Prior to the start of the 1987 commercial fishery for red king crab (Paralithodes camtschatica) in the Norton Sound Section of the Eastern Bering Sea, Alaska Department of Fish and Game observers were placed onboard two catcher/processor vessels. This year, 1987, is the seventh year observers have been placed aboard fishing vessels. The purpose of the placement of observers on fishing vessels is to 1) assist the managers in determining the magnitude and location of the commercial harvest and 2) to collect various biological data which will aid in determining the status of the stock.

### Objectives and Tasks

The specific objectives and associated tasks of the observer program are to:

1. Report the catch statistics daily (number of pots pulled and number of crab harvested) for each statistical area fished by the fishing vessel on which the observer is placed.
2. Estimate the length frequency of the harvested legal male and incidentally caught sublegal and female king crab.
3. Determine mean weights of the harvested legal male crab.
4. Determine the age of the carapace of sampled crab.
5. Determine the percentage of new recruits in the commercial harvest.
6. Determine the degree of ovigerity for incidentally caught females.
7. Collect information on tagged crab and pay appropriate reward for the data obtained.
8. Conduct skipper interviews, including the collection of fish tickets.
9. Assist in obtaining daily radio reports of catch and effort from the fleet.

## METHODS

The methods for catch reporting, sampling crab, conducting skipper interviews, and collecting information from tagged crab have been presented in the 1987 Observer and Catch Sampler Operational Plan and/or the Project Operation Plan for the Norton Sound summer commercial king crab fishery observer and catch sampling program (1986). Identity of the vessels from which king crab were sampled for biological data have been omitted from this report to maintain confidentiality of the data.

## RESULTS

### Harvest Summary

Red king crab harvest logs were kept by Department observers for each statistical area fished. During the 11 day commercial fishery, August 1 - 12, both vessels fished in the same statistical areas, (SA) 666401, 656401 and 656330; lifted similar number of total pots, and harvested similar numbers of legal crab, (Table 1). Overall mean soak per pot was 30.2 hours. Overall mean catch of legal male king crab per pot was 12.4 crab (Table 1).

Based upon daily harvest reports and data collected by Department observers, fishing effort, crab harvest, and catch per pot of legal male red king crab was highest in SA 656401 (Table 1). While only 57% of the observed pot lifts were made in this statistical area, 90% of the observed sublegals and 81% of observed females were captured in statistical area 656401 (Table 2). Likewise, the observed number of crab caught per pot of legal males, 14.4, sublegal males, 5.9, and females, 0.2, was highest in SA 656401 (Table 2). Legal male king crab accounted for approximately 77% of the total male king crab catch (Figure 3).

### Legal Male King Crab

In addition to carapace length, carapace shell age and crab weight samples were collected by observers from the catch of each vessel. Observers also collected these data from the king crab harvest of four additional vessels at the time of their delivery to processing vessels.

Carapace length measurement was collected from 1,985 legal male red king crab during the 1987 fishery (Table 3, Figure 4). Carapace age was also determined for each crab sampled. Carapace shell age was subjectively classified as new (11 months old) or old (at least 23 months old). King crab which possessed a new

shell carapace accounted for 87% of the total legal male crab sampled (Table 3). However, due to observer failure to record and/or recognize old shell crab, this value is considered erroneously high. After an experienced biologist assisted one observer in correctly identifying old shell crab, the new shell crab percent of a sample was estimated at 65%. Skip-molts or king crab which possess an old aged carapace may account for as much as 35% of the population (Appendix A1). Carapace length measurement summaries of samples taken from the harvest of individual fishing vessels are presented in Appendices A1 - A6. Overall mean length of sampled legal male king crab was 121.7 mm (Table 3).

Recruit red king crab are defined as crab which are less than 115mm in carapace length and possess a new shell condition carapace. Recruit crab accounted for 22% of the total legal male king crab sample (Table 3). Postrecruit king crab dominated the sample. In the various samples taken throughout the duration of the fishery recruit king crab ranged from 13% to 50% (Table 4). Mean weight of legal crab was determined from 14 individual samples which totaled 30,692 individuals. Mean weight of samples ranged from 2.96 to 3.36 pounds per crab. Overall mean weight for the entire legal male sample was 3.20 pounds (Table 5).

Overall observed mean catch per pot of legal male king crab was 12.7 crab/pot. Overall observed mean catch per pot, standardized for a 24 hour soak period, was 10.1 crab/pot (Table 2). Mean string catch/pot/24 h ranged from 1.3 to 35.5.

#### Sublegal Male King Crab

Carapace length measurement and shell age were collected from 1,156 of the 8,511 observed sublegal male king crab (Table 6, Figure 5). New shell crab accounted for 89% of the sample. Overall mean length of the sublegal crab sample was 89.8 mm. Carapace length measurement summaries of samples collected from individual fishing vessels are presented in Appendices B1 and B2.

Overall mean catch of sublegal male king crab per pot, standardized to a 24 hour soak period was 3.0 crab/pot (Table 2). Individual string mean catch/pot/24 h of sublegal male king crab ranged from 0.0 to 26.0 crab/pot/24 h.

Approximately 90% of the observed sublegal king crab were captured in SA 656401 (Table 2). Relatively high sublegal king crab catches, equal or greater than 10.0 crab/pot/24h, were prevalent in the observed catches made in the most northern quarter of SA 656401, near the 65° 15' 00" N.lat. closure line. A majority, 7 out of 9, of the strings which had the highest sublegal crab catches/pot (10.0 or greater per pot per 24 hour soak period) were located in the western half of the above-described sub-

section (west of 165° 30' N. long. and north of 64° 07' 50" N. lat.). One of the remaining two strings was located partially in the above-described area, while the other string was located immediately east (165° 27' N. long.) of the area. Overall mean catches of sublegal king crab was 1.9 and 0.4 crab/pot/24 h from SA 666401 and 656330, respectively (Table 2).

#### Female King Crab

During the commercial fishery, 215 of the observed 360 female king crab were sampled for maturity and carapace length. Approximately 20% of the total female sample was considered immature (Table 7, Figure 6). Mean carapace length of immature female king crab was 68.8 mm. Most of the mature female king crab, 92%, were considered to have at least a high degree of ovigerity (> 60%). Only 4 adult female king crab were found to be devoid of external embryos (Table 7). Mean carapace length of the adult female sample was 81.0 mm (Table 7).

Overall mean catch per pot of female king crab, standardized to a 24 hour soak period, was 0.1 crab/pot (Table 2) (range 0.0 to 0.7 crab/pot). Relatively high catches of female king crab (greater than 0.2 females pot/24 h), like sublegal male king crab, were prevalent in the most northern quarter of SA 656401, proximal to the 64° 15' 00" N. lat. closure line. However, unlike the sublegal males, number of female king crab caught per pot were highest east of the 165° 30' 00" N long. line. Overall mean catches of female king crab were similarly low, 0.1 crab/pot, from SA 666401 and 656330 (Table 2).

#### DISCUSSION

During the 1987 red king crab fishery in the Norton Sound Section, the legal male red king crab were observed scattered throughout SA 666401, 656401 and 656330. A relatively high density of legal crab in SA 666401 was initially exhausted in the first few days of fishing. Prospecting for large concentrations of legal crab, as documented in the 1986 fishery, continued throughout the duration of the fishery. Catches of legal crab appeared to increase as the fishery drew to a close.

Unlike recent previous years' harvest, post recruit crab dominated the 1987 harvest. The lower than expected percent of recruit crab harvested during the early portion of the fishery indicated that the population of legal male red king crab was lower than projected. Appropriate management action, which decreased the projected harvest by 110,000 pounds, was executed in order to protect the king crab stock from overharvest.

Although not adequately documented, the occurrence of skip-molts in the legal male crab population appeared higher than in pre-

vious years. This may indicate a poor growth year which may have detrimental effects on current survival rates and/or the 1987 year class strength.

Unlike the post recruit king crab distribution, the distribution of the prerecruit king crab was more clumped. Relatively high prerecruit king crab concentrations were found proximal to the 64° 15' 00" N. lat. closure line in SA 656401. Since the portion of the red king crab population north of the closure line was not sampled, the estimated percent recruitment to the fishery may be erroneously low.

The low incidence of female red king crab in the total catch indicates that females were not in the areas fished. Similar to the prerecruit king crab, relatively high concentrations of female king crab were found proximal to the 64° 15' 00" N. lat. closure line in SA 656401. A large portion of the female crab population was speculated to exist north of the closure line.

#### RECOMMENDATIONS

1. Alter project operational plans to include data collection methods outlined in the Project Operation Plan for the Norton Sound summer commercial king crab fishery observer and catch sampling program (1986).
2. King crab recruit data (percent of recruit crab harvested and sample size) and mean legal crab weight data should be included in the daily catch report from each observer when available.
3. Data forms which are used in the collection of raw data should be printed on "Rite-in-the-Rain" paper. Many of the tasks associated with the observer program require the observer to be on the deck when collecting data. Rain and moisture from handling crabs render data forms printed on regular paper useless.
4. The practice of duplicating the observer's log by the use of carbon paper should be discontinued. Since skippers keep their own log of strings, pots, location, crab caught and any other information that they may deem valuable, they have little use for another log. If a skipper does want a copy of the observer's log, however, copies could be made and either sent to the skipper via the mail, or given to him at the end of the season.
5. If possible, record location (latitude and longitude or loran readings) of first and last pot of a string. The

recording of these data will aid in determining the specific distribution of the population of red king crab in Norton Sound.

6. Field Form No. 2, The Norton Sound Red King Crab Catcher Log, should be incorporated in a "Rite-in-the-Rain" weatherproof level book. The column headings of the form can be written across 2 facing pages of the level book. Using the book instead of the individual form will result in several advantages: 1) individual forms would not be misplaced or lost; 2) the book is much easier to handle and to record data in when working on deck; 3) the book would aid in locating previous recorded strings or individual test pots since all the strings would be recorded in one or two books; and 4) archiving of raw data would be less cumbersome, level books versus hundreds of loose forms.
7. A Crab Catch Log Summary form, a new field data form, should be kept for each statistical area fished. As the name implies, it is a form which summarizes Field Form No. 2, Norton Sound Red King Crab Catch Log. The inclusion of this form will facilitate daily catch reporting and postseason data analysis.
8. Include at least 200 crab catcher log forms, Field Form No. 2, in the observer's briefcase if they are used in the future. Observers have repeatedly run out of these forms.
9. Concerning data analysis, string number need not be sequentially numbered for each statistical area on the Crab Catch Log Summary table. However, an individual log summary table is still required for each statistical area fished. The assigned string number used when the raw data was recorded should also be the string number recorded on the form irrespective of what statistical area the string was fished. In this way string numbers in the final tables can be identified with those of the crab catcher log. Total strings fished in a statistical area can be easily found by counting the individual string numbers on the form.

Table 1. Red king crab harvest summary for observer fishing vessels, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Date	666401		656401		656330	
	pots	crab	pots	crab	pots	crab
8/02	141	1410	91	2174		
8/03	81	743	177	3908		
8/04			132	2824		
8/05			209	2967	47	399
8/06			141	2151		
8/07			160	1375		
8/08			119	1289	41	346
8/09			62	390	133	1016
8/10					210	2087
8/11					276	3079
8/12					50	957
<b>Total</b>	<b>222</b>	<b>2153</b>	<b>1091</b>	<b>17078</b>	<b>757</b>	<b>7884</b>

Table 2. Number of observed pot lifts, legal males, sublegal males and females captured by statistical area, and the corresponding mean number of crab caught per observed pot lift (CPP) and pot lift standardized to a 24 hour soak period (CCP/24h), Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Observed by Department Staff										
Statistical Area	Pot lifts	Legal males			Sublegal males			Females		
		number	CPP	CPP/24h	number	CPP	CPP/24h	number	CPP	CPP/24h
666401	238	2,322	9.8	8.4	529	2.2	1.9	17	0.1	0.1
656401	1,286	18,505	14.4	10.8	7,632	5.9	4.4	293	0.2	0.2
656330	746	7,893	10.6	9.2	350	0.5	0.4	50	0.1	0.1
<b>Total</b>	<b>2,270</b>	<b>28,720</b>	<b>12.7</b>	<b>10.1</b>	<b>8,511</b>	<b>3.7</b>	<b>3.0</b>	<b>360</b>	<b>0.2</b>	<b>0.1</b>

Table 3. Carapace length measurement summary of sampled legal male red king crab captured during the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	2	0.12	0.1%	1	0.38	0.4%	3	0.15	0.2%
101	8	0.47	0.5%	8	0.00	0.0%	8	0.41	0.4%
102	10	0.59	0.6%	0	0.00	0.0%	10	0.51	0.5%
103	13	0.78	0.8%	4	1.55	1.5%	17	0.88	0.9%
104	17	1.03	1.0%	0	0.00	0.0%	17	0.89	0.9%
105	16	0.98	0.9%	1	0.40	0.4%	17	0.90	0.9%
106	16	0.99	0.9%	0	0.00	0.0%	16	0.85	0.8%
107	25	1.56	1.5%	5	2.02	1.9%	30	1.62	1.5%
108	26	1.63	1.5%	5	2.04	1.9%	31	1.69	1.6%
109	24	1.52	1.4%	8	3.29	3.0%	32	1.76	1.6%
110	50	3.20	2.9%	12	4.98	4.5%	62	3.44	3.1%
111	57	3.68	3.3%	8	3.35	3.0%	65	3.63	3.3%
112	58	3.78	3.4%	7	2.96	2.6%	65	3.67	3.3%
113	66	4.34	3.8%	7	2.98	2.6%	73	4.16	3.7%
114	48	3.18	2.8%	11	4.73	4.1%	59	3.39	3.0%
115	35	2.34	2.0%	9	3.91	3.4%	44	2.55	2.2%
116	61	4.11	3.5%	23	10.07	8.7%	84	4.91	4.2%
117	59	4.01	3.4%	7	3.09	2.6%	66	3.89	3.3%
118	68	4.67	4.0%	10	4.45	3.8%	78	4.64	3.9%
119	67	4.64	3.9%	20	8.98	7.5%	87	5.22	4.4%
120	55	3.04	3.2%	14	6.34	5.3%	69	4.17	3.5%
121	69	4.85	4.0%	18	8.22	6.8%	87	5.30	4.4%
122	69	4.89	4.0%	7	3.22	2.6%	76	4.67	3.8%
123	47	3.36	2.7%	10	4.64	3.8%	57	3.53	2.9%
124	63	4.54	3.7%	5	2.34	1.9%	68	4.25	3.4%
125	60	4.36	3.5%	9	4.25	3.4%	69	4.35	3.5%
126	61	4.47	3.5%	5	2.38	1.9%	66	4.19	3.3%
127	57	4.21	3.3%	13	6.23	4.9%	70	4.48	3.5%
128	33	2.46	1.9%	4	1.93	1.5%	37	2.39	1.9%
129	61	4.58	3.5%	6	2.92	2.3%	67	4.35	3.4%
130	65	4.91	3.8%	3	1.47	1.1%	68	4.45	3.4%
131	54	4.11	3.1%	10	4.94	3.8%	64	4.22	3.2%
132	42	3.22	2.4%	2	1.00	0.7%	44	2.93	2.2%
133	43	3.33	2.5%	3	1.51	1.1%	46	3.08	2.3%
134	33	2.57	1.9%	2	1.01	0.7%	35	2.36	1.8%
135	26	2.04	1.5%	3	1.53	1.1%	29	1.97	1.5%
136	27	2.13	1.6%	1	0.51	0.4%	28	1.92	1.4%
137	24	1.91	1.4%	5	2.58	1.9%	29	2.00	1.5%
138	17	1.36	1.0%	0	0.00	0.0%	17	1.18	0.9%
139	10	0.81	0.6%	3	1.57	1.1%	13	0.91	0.7%
140	16	1.30	0.9%	0	0.00	0.0%	16	1.13	0.8%
141	18	1.48	1.0%	1	0.53	0.4%	19	1.35	1.0%
142	14	1.16	0.8%	1	0.54	0.4%	15	1.07	0.8%
143	5	0.42	0.3%	0	0.00	0.0%	5	0.36	0.3%
144	5	0.42	0.3%	1	0.54	0.4%	6	0.44	0.3%
145	6	0.51	0.3%	1	0.55	0.4%	7	0.51	0.4%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	4	0.34	0.2%	0	0.00	0.0%	4	0.30	0.2%
148	3	0.26	0.2%	0	0.00	0.0%	3	0.22	0.2%
149	2	0.17	0.1%	0	0.00	0.0%	2	0.15	0.1%
150	1	0.09	0.1%	0	0.00	0.0%	1	0.08	0.1%
151	3	0.26	0.2%	0	0.00	0.0%	3	0.23	0.2%
152	1	0.09	0.1%	0	0.00	0.0%	1	0.08	0.1%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
<b>Total Mean</b>	<b>1720</b>	<b>122.0</b>	<b>86.6%</b>	<b>265</b>	<b>119.9</b>	<b>13.4%</b>	<b>1985</b>	<b>121.8</b>	<b>100.0%</b>
<b>Total legals</b>			<b>1985</b>						
<b>Total recruits</b>			<b>436</b>						
<b>Percent</b>			<b>22.0%</b>						
<b>Total postrecruits</b>			<b>1549</b>						
<b>Percent</b>			<b>78.0%</b>						

Table 4. Percent of newly recruited male king crab by sample and fishing vessel, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Date 1987	Fishing Vessel												Total	
	# 1		# 2		# 3		# 4		# 5		# 6		Sample size	Percent Recruits
801														
802	34	26%											34	26%
803	83	19%											83	19%
804	138	38%											138	38%
805	154	21%											154	21%
806	148	23%			46	30%							194	25%
807	38	13%											38	13%
808	165	21%			74	50%							239	30%
809	230	22%											230	22%
810	256	13%			56	29%							312	15%
811	229	17%			181	13%							330	16%
812			51	25%			84	13%	48	31%	50	20%	233	21%
Total	1,475	21%	51	25%	277	25%	84	13%	48	31%	50	20%	1,985	21% 23% 1/

Footnote:

1/ Simple mean averaged across vessel-specific means.

Table 5. Summary table of red king crab weight samples by date and fishing vessel, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

		Fishing Vessel						Total	
		# 1	# 2	# 3	# 4	# 5	# 6		
Date 1987	No. of Weight crab (pounds)	Weight/crab (pounds)							
801								0	0
802								0	0
803	50 167							50 167	3.34
804	70 207							70 207	2.96
805	65 203							65 203	3.12
806	110 327							110 327	2.97
807	30 90							30 90	3.00
808	110 333							110 333	3.02
809	136 454							136 454	3.34
810	148 485							148 485	3.27
811	149 497							149 497	3.34
812		941 2,972	24,621 78,787	1,077 3,620	1,524 4,611	1,661 5,441	29,824 95,431		3.20
Total	868, 2,762	941 2,972	24,621 78,787	1,077 3,620	1,524 4,611	1,661 5,441	30,692 98,193		
Mean weight	3.18	3.16	3.20	3.36	3.03	3.28	3.20		

Table 6. Carapace length measurement summary of sampled sublegal male king crab captured during the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New Shell			Old Shell			Total		
	No.	Ave Length Calc	%	No.	Ave Length Calc	%	No.	Ave Length Calc	% of Total
60	4	0.22	0.4%	0	0.00	0.0%	4	0.21	0.3%
61	1	0.06	0.1%	0	0.00	0.0%	1	0.05	0.1%
62	2	0.11	0.2%	0	0.00	0.0%	2	0.11	0.2%
63	4	0.23	0.4%	0	0.00	0.0%	4	0.22	0.3%
64	5	0.30	0.5%	0	0.00	0.0%	5	0.28	0.4%
65	6	0.36	0.6%	0	0.00	0.0%	6	0.34	0.5%
66	6	0.37	0.6%	0	0.00	0.0%	6	0.34	0.5%
67	4	0.25	0.4%	0	0.00	0.0%	4	0.23	0.3%
68	6	0.38	0.6%	0	0.00	0.0%	6	0.35	0.5%
69	10	0.64	0.9%	0	0.00	0.0%	10	0.60	0.9%
70	7	0.45	0.6%	0	0.00	0.0%	7	0.42	0.6%
71	8	0.53	0.7%	0	0.00	0.0%	8	0.49	0.7%
72	6	0.40	0.6%	0	0.00	0.0%	6	0.37	0.5%
73	11	0.74	1.0%	0	0.00	0.0%	11	0.69	1.0%
74	12	0.82	1.1%	0	0.00	0.0%	12	0.77	1.0%
75	8	0.56	0.7%	1	0.97	1.3%	9	0.58	0.8%
76	19	1.34	1.8%	0	0.00	0.0%	19	1.25	1.6%
77	22	1.57	2.0%	0	0.00	0.0%	22	1.47	1.9%
78	30	2.17	2.8%	0	0.00	0.0%	30	2.02	2.6%
79	19	1.39	1.8%	1	1.03	1.3%	20	1.37	1.7%
80	21	1.56	1.9%	0	0.00	0.0%	21	1.45	1.8%
81	24	1.80	2.2%	0	0.00	0.0%	24	1.68	2.1%
82	38	2.89	3.5%	0	0.00	0.0%	38	2.70	3.3%
83	23	1.77	2.1%	0	0.00	0.0%	23	1.65	2.0%
84	26	2.02	2.4%	0	0.00	0.0%	26	1.89	2.2%
85	29	2.28	2.7%	1	1.10	1.3%	30	2.21	2.6%
86	30	2.39	2.8%	1	1.12	1.3%	31	2.31	2.7%
87	28	2.26	2.6%	2	2.26	2.6%	30	2.26	2.6%
88	38	3.10	3.5%	1	1.14	1.3%	39	2.97	3.4%
89	32	2.64	3.0%	1	1.16	1.3%	33	2.54	2.9%
90	49	4.09	4.5%	4	4.68	5.2%	53	4.13	4.6%
91	52	4.39	4.8%	5	5.91	6.5%	57	4.49	4.9%
92	36	3.07	3.3%	3	3.58	3.9%	39	3.10	3.4%
93	47	4.05	4.4%	5	6.04	6.5%	52	4.18	4.5%
94	37	3.22	3.4%	4	4.88	5.2%	41	3.33	3.5%
95	50	4.40	4.6%	3	3.70	3.9%	53	4.36	4.6%
96	41	3.65	3.8%	1	1.25	1.3%	42	3.49	3.6%
97	44	3.96	4.1%	3	3.78	3.9%	47	3.94	4.1%
98	37	3.36	3.4%	5	6.36	6.5%	42	3.56	3.6%
99	33	3.03	3.1%	10	12.86	13.0%	43	3.68	3.7%
100	36	3.34	3.3%	5	6.49	6.5%	41	3.55	3.5%
101	39	3.65	3.6%	8	10.49	10.4%	47	4.11	4.1%
102	36	3.40	3.3%	5	6.62	6.5%	41	3.62	3.5%
103	26	2.48	2.4%	3	4.01	3.9%	29	2.58	2.5%
104	9	0.87	0.8%	4	5.40	5.2%	13	1.17	1.1%
105	12	1.17	1.1%	0	0.00	0.0%	12	1.09	1.0%
106	7	0.69	0.6%	1	1.38	1.3%	8	0.73	0.7%
107	6	0.59	0.6%	0	0.00	0.0%	6	0.56	0.5%
108	2	0.20	0.2%	0	0.00	0.0%	2	0.19	0.2%
109	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
110	1	0.10	0.1%	0	0.00	0.0%	1	0.10	0.1%

Total	1079	93.3%	77	6.7%	1156	100.0%
Mean	89.3		96.2		89.8	

Total sublegals 1156

Table 7. Carapace length measurement and percent ovigerity summary of sampled female red king crab captured in the Norton Sound Section, Eastern Bering Sea, August 1-12, 1987.

NORTON SOUND FEMALE RED KING CRAB CATCH SAMPLING

StatArea		666401, 656401, & 656330						08/02/87-08/12/87						RECORDER GJS		
JUVENILE		ADULT SIZE PER % OVIGERITY						ADULT SIZE PER % OVIGERITY								
mm	no.	mm	Full	Hi	Med	Low	Ø	No.	mm	Full	Hi	Med	Low	Ø	No.	
50		60						0	91	2					2	
51	1	61						0	92	1					1	
52		62						0	93	1					1	
53		63						0	94	1		1			2	
54		64						0	95						0	
55	1	65						0	96	1					1	
56		66						0	97						0	
57		67	1					1	98						0	
58		68						0	99						0	
59		69	1	2				3	100					1	1	
60	3	70		1			1	2	101						0	
61	2	71	1					1	102					1	1	
62	1	72	2	5				7	103						0	
63	3	73		2	1			3	104	1					1	
64		74	10	7	2			19	105						0	
65	1	75	3	2				5	106	1					1	
66	1	76	5	2				7	107						0	
67	1	77	6	4	1			11	108						0	
68	3	78	1	5				6	109						0	
69	6	79	1	4				5	110						0	
70	3	80	6	6				12	111						0	
71	1	81	8	7	1		2	18	112						0	
72	2	82	3	2				5	113						0	
73	1	83	10	1				11	114						0	
74	1	84	4	1	1			6	115						0	
75	2	85	11	1				12	116						0	
76	5	86	6	2				8	117						0	
77	2	87	3	2				5	118						0	
78	1	88	5					5	119						0	
79	1	89	3	1	1			5	120						0	
80		90	4	1				5	121						0	
42		94	58	7	1	2	162		8	0	1	0	2	11		
		TOTAL ADULTS/OVIGERITY							102	58	8	1	4	173		
		% ADULTS/OVIGERITY							58.9	33.5	4.6	0.6	2.3			
MEAN	68.8	WEIGHTED MEAN ADULT LENGTH							81.0							
VAR.	43.2	VARIANCE OF MEAN LENGTH							45.9							

Full=90-100%, Hi=60-89%, Med=30-59%, Lo=1-29%

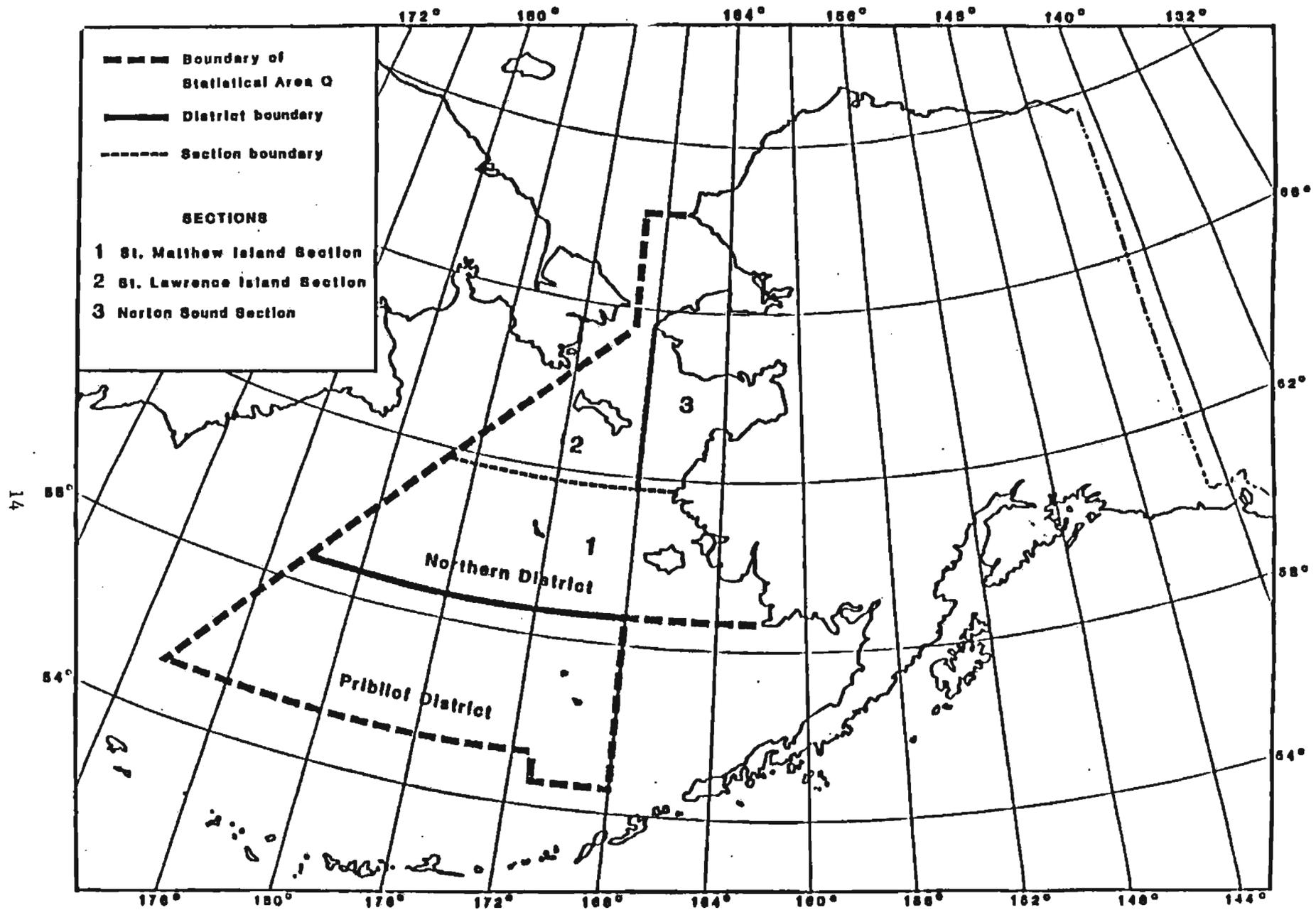


Figure 1. King crab fishing districts and sections of Statistical Area Q

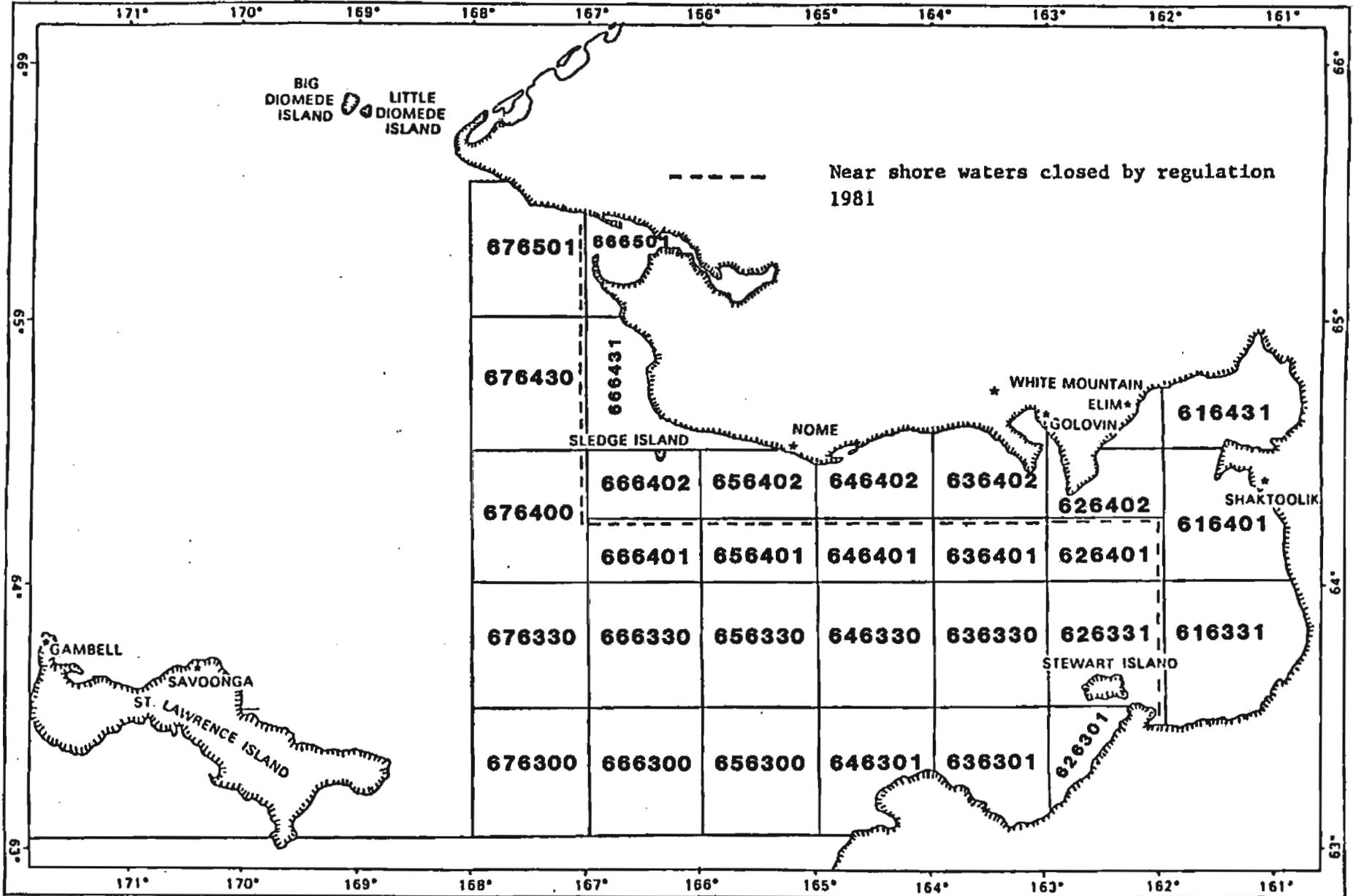


Figure 2. Statistical areas for the Norton Sound red king crab fishery.

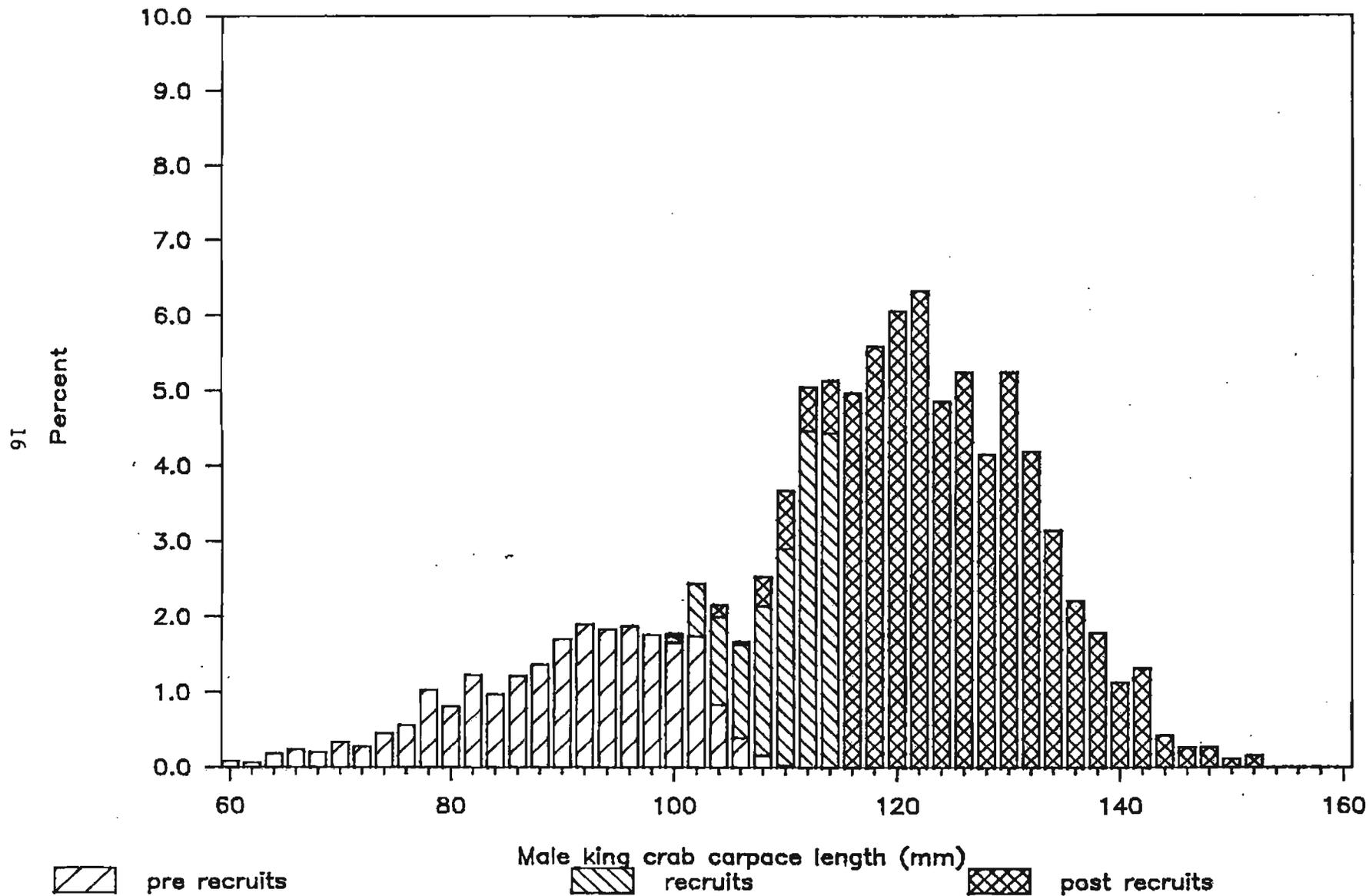


Figure 3. Length frequency distribution of pre-recruit, recruit, and post recruit male red king crab, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

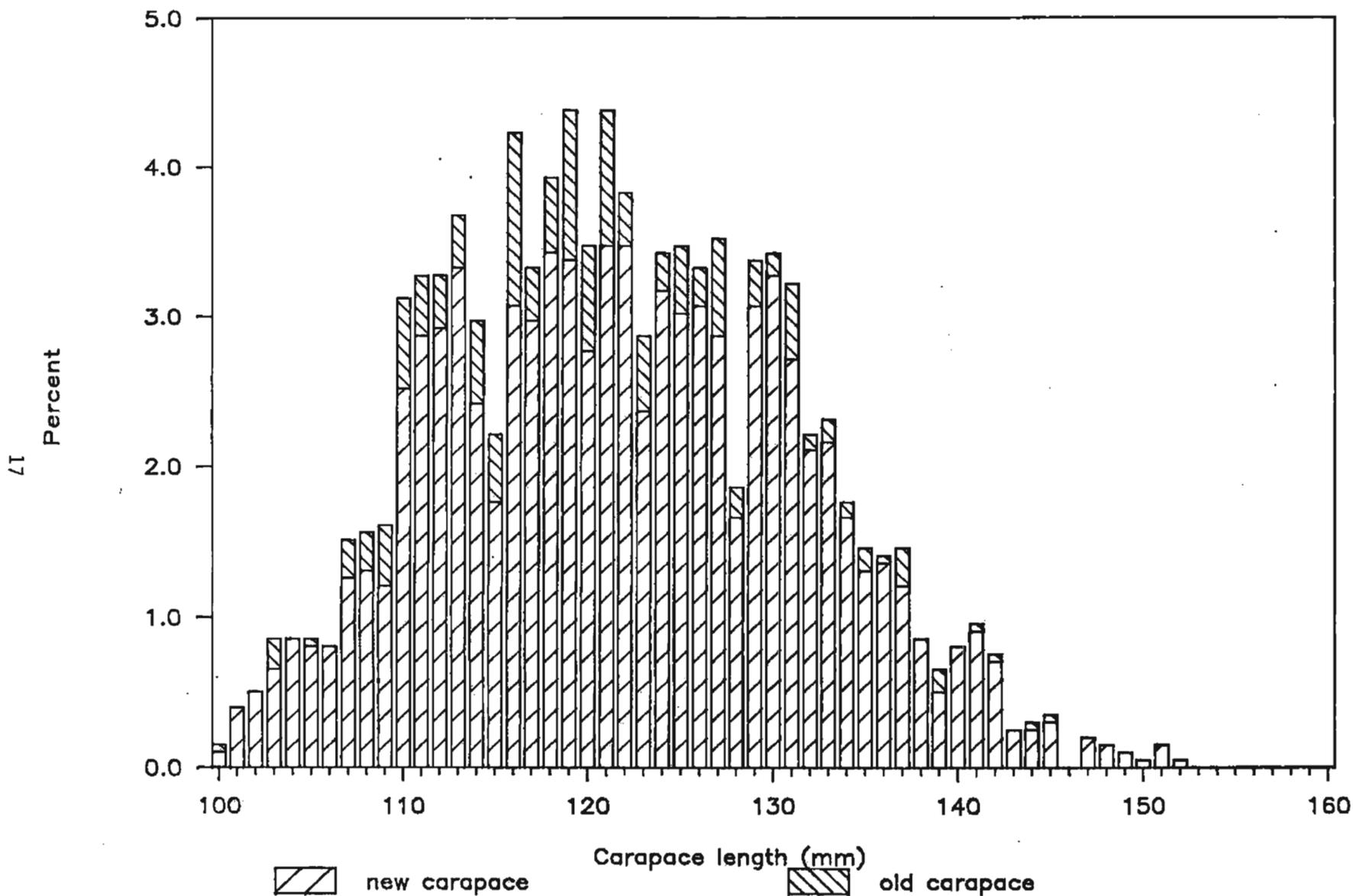


Figure 4. Length frequency distribution and frequency of old and new carapace age condition of legal male red king crab, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

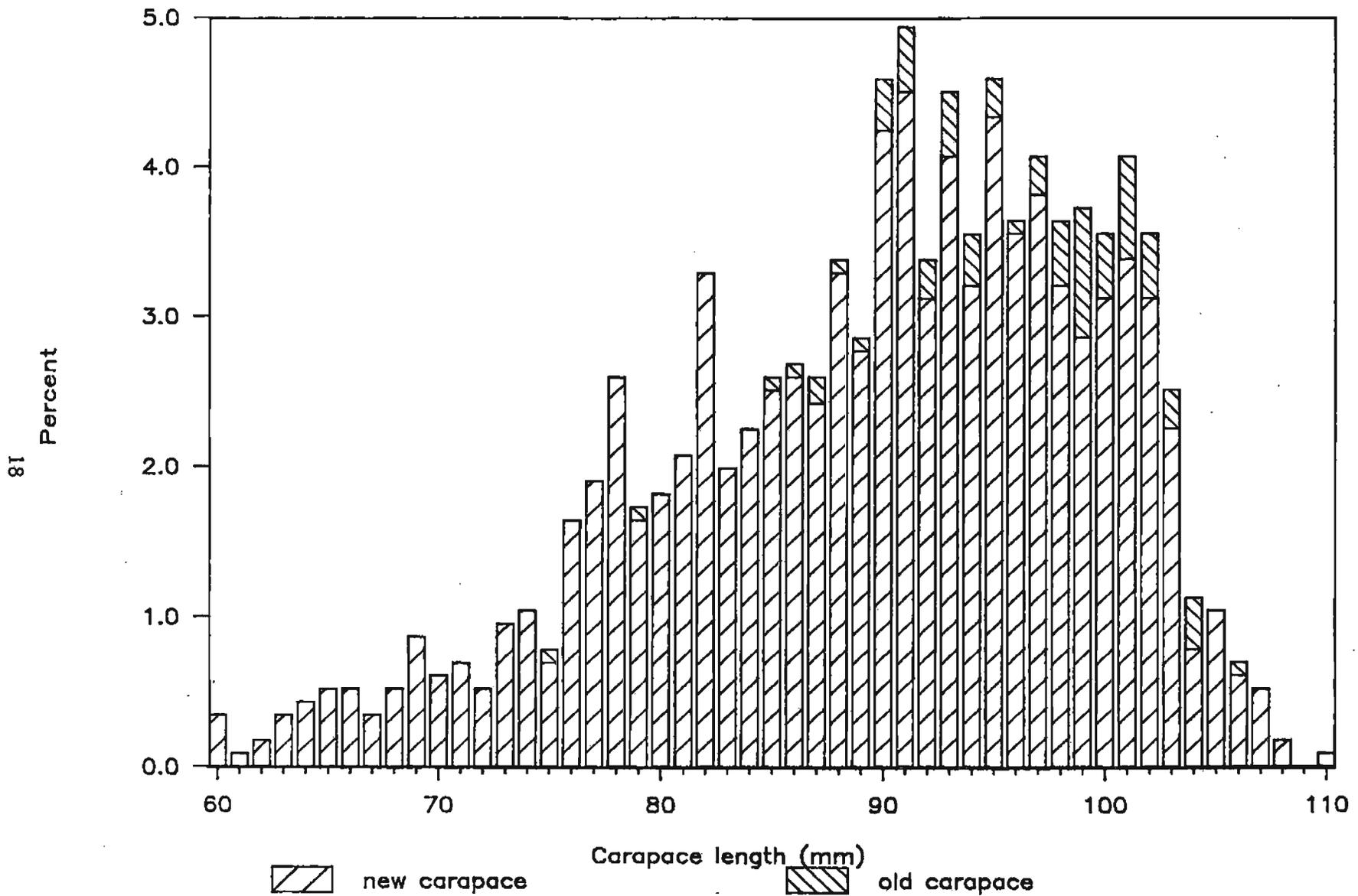


Figure 5. Length frequency distribution and frequency of new and old carapace age condition of pre-recruit male king crab, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

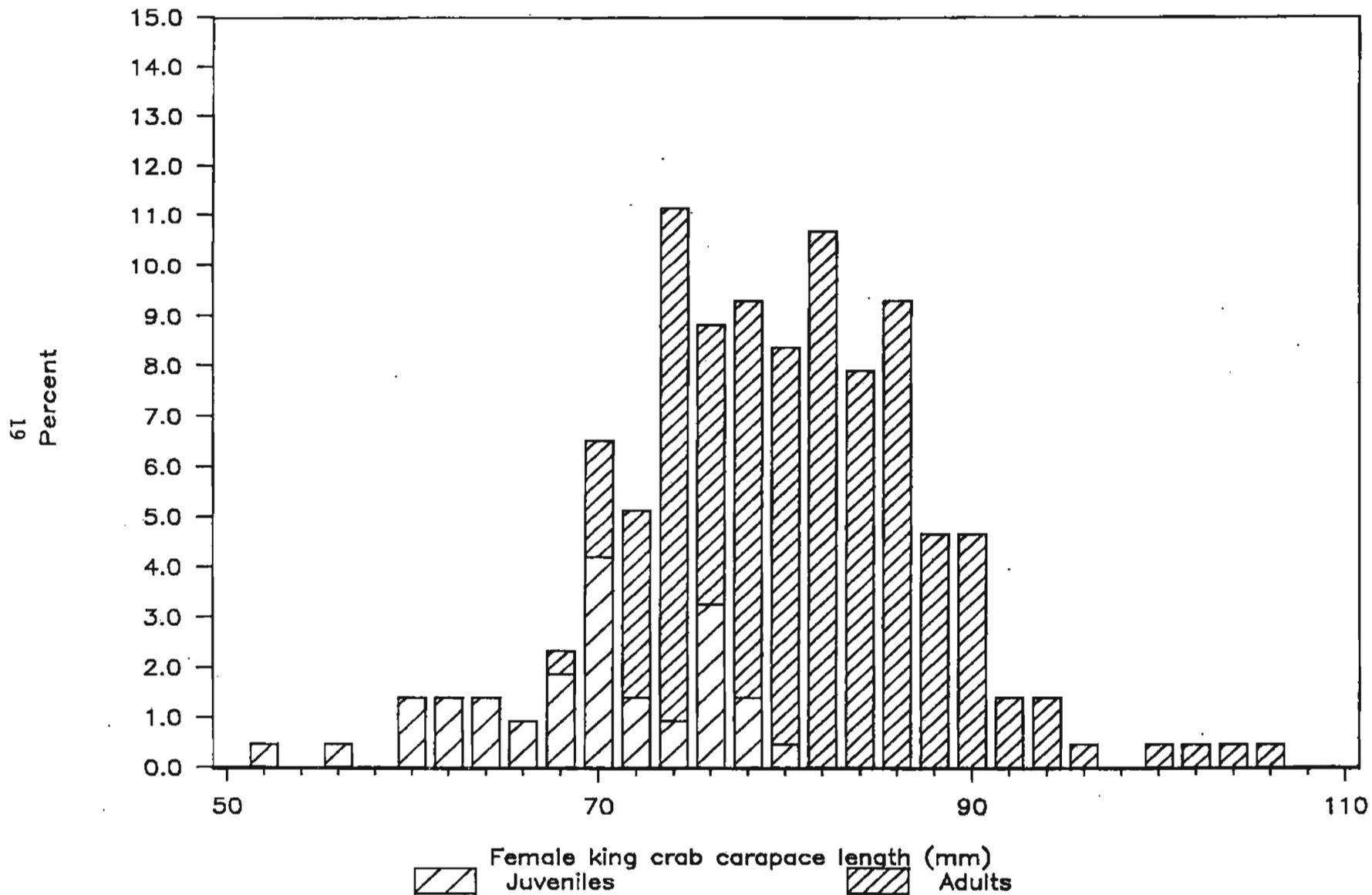


Figure 6. Length frequency distribution of female red king crab, juveniles and adults, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

**APPENDIX A**

**Carapace length measurement summary of sampled legal male red king crab by fishing vessel.**

Appendix Table A1. Carapace length measurement summary of sampled legal male red king crab captured by vessel # 1, Norton Sound Section, Eastern Bering Sea, August 1-12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	2	0.16	0.2%	1	0.44	0.4%	3	0.20	0.2%
101	8	0.65	0.6%	0	0.00	0.0%	8	0.55	0.5%
102	3	0.25	0.2%	0	0.00	0.0%	3	0.21	0.2%
103	5	0.41	0.4%	4	1.81	1.8%	9	0.63	0.6%
104	8	0.67	0.6%	0	0.00	0.0%	8	0.56	0.5%
105	12	1.01	1.0%	1	0.46	0.4%	13	0.93	0.9%
106	14	1.19	1.1%	0	0.00	0.0%	14	1.01	0.9%
107	16	1.37	1.3%	4	1.88	1.8%	20	1.45	1.4%
108	18	1.56	1.4%	4	1.89	1.8%	22	1.61	1.5%
109	19	1.66	1.5%	7	3.35	3.1%	26	1.92	1.8%
110	32	2.82	2.6%	9	4.34	3.9%	41	3.06	2.8%
111	40	3.56	3.2%	8	3.89	3.5%	48	3.61	3.3%
112	45	4.04	3.6%	7	3.44	3.1%	52	3.95	3.5%
113	48	4.35	3.8%	6	2.97	2.6%	54	4.14	3.7%
114	37	3.38	3.0%	10	5.00	4.4%	47	3.63	3.2%
115	23	2.12	1.8%	8	4.04	3.5%	31	2.42	2.1%
116	46	4.28	3.7%	20	10.18	8.8%	66	5.19	4.5%
117	40	3.75	3.2%	6	3.88	2.6%	46	3.65	3.1%
118	44	4.16	3.5%	10	5.18	4.4%	54	4.32	3.7%
119	45	4.29	3.6%	17	8.07	7.5%	62	5.00	4.2%
120	44	4.23	3.5%	12	6.32	5.3%	56	4.56	3.8%
121	53	5.14	4.3%	18	9.55	7.9%	71	5.82	4.8%
122	44	4.30	3.5%	6	3.21	2.6%	50	4.14	3.4%
123	37	3.65	3.0%	9	4.86	3.9%	46	3.84	3.1%
124	40	4.77	3.8%	5	2.72	2.2%	53	4.46	3.6%
125	49	4.91	3.9%	7	3.84	3.1%	56	4.75	3.8%
126	45	4.55	3.6%	4	2.21	1.8%	49	4.19	3.3%
127	46	4.68	3.7%	11	6.13	4.8%	57	4.91	3.9%
128	21	2.16	1.7%	2	1.12	0.9%	23	2.00	1.6%
129	44	4.55	3.5%	5	2.83	2.2%	49	4.29	3.3%
130	54	5.63	4.3%	2	1.14	0.9%	56	4.94	3.8%
131	43	4.52	3.4%	7	4.02	3.1%	50	4.44	3.4%
132	33	3.49	2.6%	1	0.58	0.4%	34	3.04	2.3%
133	27	2.88	2.2%	2	1.17	0.9%	29	2.61	2.0%
134	23	2.47	1.8%	2	1.18	0.9%	25	2.27	1.7%
135	21	2.27	1.7%	3	1.78	1.3%	24	2.20	1.6%
136	22	2.40	1.8%	1	0.60	0.4%	23	2.12	1.6%
137	16	1.76	1.3%	4	2.40	1.8%	20	1.86	1.4%
138	10	1.11	0.8%	0	0.00	0.0%	10	0.94	0.7%
139	9	1.00	0.7%	2	1.22	0.9%	11	1.04	0.7%
140	10	1.12	0.8%	0	0.00	0.0%	10	0.95	0.7%
141	13	1.47	1.0%	1	0.62	0.4%	14	1.34	0.9%
142	8	0.91	0.6%	1	0.62	0.4%	9	0.87	0.6%
143	4	0.46	0.3%	0	0.00	0.0%	4	0.39	0.3%
144	4	0.46	0.3%	0	0.00	0.0%	4	0.39	0.3%
145	4	0.47	0.3%	1	0.64	0.4%	5	0.49	0.3%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	1	0.12	0.1%	0	0.00	0.0%	1	0.10	0.1%
148	2	0.24	0.2%	0	0.00	0.0%	2	0.20	0.1%
149	2	0.24	0.2%	0	0.00	0.0%	2	0.20	0.1%
150	1	0.12	0.1%	0	0.00	0.0%	1	0.10	0.1%
151	3	0.36	0.2%	0	0.00	0.0%	3	0.31	0.2%
152	1	0.12	0.1%	0	0.00	0.0%	1	0.10	0.1%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	1247		84.5%	228		15.5%	1475		100.0%
Mean		122.3			119.5			121.8	
Total legals			1475						
Total Recruits Percent			307						20.8%
Total Post Recruits Percent			1168						79.2%

Appendix Table A2. Carapace length measurement summary of sampled male red king crab captured by vessel # 2, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
101	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
102	1	2.00	2.0%	0	0.00	0.0%	1	2.00	2.0%
103	1	2.02	2.0%	0	0.00	0.0%	1	2.02	2.0%
104	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
105	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
106	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
107	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
108	1	2.12	2.0%	0	0.00	0.0%	1	2.12	2.0%
109	2	4.27	3.9%	0	0.00	0.0%	2	4.27	3.9%
110	3	6.47	5.9%	0	0.00	0.0%	3	6.47	5.9%
111	1	2.18	2.0%	0	0.00	0.0%	1	2.18	2.0%
112	2	4.39	3.9%	0	0.00	0.0%	2	4.39	3.9%
113	2	4.43	3.9%	0	0.00	0.0%	2	4.43	3.9%
114	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
115	1	2.25	2.0%	0	0.00	0.0%	1	2.25	2.0%
116	4	9.18	7.8%	0	0.00	0.0%	4	9.18	7.8%
117	4	9.18	7.8%	0	0.00	0.0%	4	9.18	7.8%
118	4	9.25	7.8%	0	0.00	0.0%	4	9.25	7.8%
119	2	4.67	3.9%	0	0.00	0.0%	2	4.67	3.9%
120	2	4.71	3.9%	0	0.00	0.0%	2	4.71	3.9%
121	2	4.75	3.9%	0	0.00	0.0%	2	4.75	3.9%
122	5	11.96	9.8%	0	0.00	0.0%	5	11.96	9.8%
123	1	2.41	2.0%	0	0.00	0.0%	1	2.41	2.0%
124	1	2.43	2.0%	0	0.00	0.0%	1	2.43	2.0%
125	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
126	4	9.88	7.8%	0	0.00	0.0%	4	9.88	7.8%
127	1	2.49	2.0%	0	0.00	0.0%	1	2.49	2.0%
128	2	5.82	3.9%	0	0.00	0.0%	2	5.82	3.9%
129	1	2.53	2.0%	0	0.00	0.0%	1	2.53	2.0%
130	1	2.55	2.0%	0	0.00	0.0%	1	2.55	2.0%
131	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
132	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
133	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
134	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
135	1	2.65	2.0%	0	0.00	0.0%	1	2.65	2.0%
136	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
137	1	2.69	2.0%	0	0.00	0.0%	1	2.69	2.0%
138	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
139	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
140	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
141	1	2.76	2.0%	0	0.00	0.0%	1	2.76	2.0%
142	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
143	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
144	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
145	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
148	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
151	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
152	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	51		100.0%	0		0.0%	51		100.0%
Mean		119.2			0.0			119.2	
Total legal			51						
Total Recruits			13						
Percent			25.5%						
Total Post Recruits			38						
Percent			74.5%						

Appendix Table A3. Carapace length measurement summary of sampled legal red male king crab captured by vessel # 3, Norton Sound Section, Eastern Bering Sea, August 1-12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
101	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
102	6	2.28	2.2%	0	0.00	0.0%	6	2.21	2.2%
103	4	1.53	1.5%	0	0.00	0.0%	4	1.49	1.4%
104	5	1.93	1.9%	0	0.00	0.0%	5	1.88	1.8%
105	1	0.39	0.4%	0	0.00	0.0%	1	0.38	0.4%
106	1	0.39	0.4%	0	0.00	0.0%	1	0.38	0.4%
107	7	2.78	2.6%	1	13.38	12.5%	8	3.09	2.9%
108	3	1.20	1.1%	1	13.50	12.5%	4	1.56	1.4%
109	2	0.81	0.7%	1	13.63	12.5%	3	1.18	1.1%
110	10	4.09	3.7%	1	13.75	12.5%	11	4.37	4.0%
111	13	5.36	4.8%	0	0.00	0.0%	13	5.21	4.7%
112	8	3.33	3.0%	0	0.00	0.0%	8	3.23	2.9%
113	10	4.20	3.7%	0	0.00	0.0%	10	4.08	3.6%
114	10	4.24	3.7%	1	14.25	12.5%	11	4.53	4.0%
115	9	3.85	3.3%	0	0.00	0.0%	9	3.74	3.2%
116	9	3.88	3.3%	0	0.00	0.0%	9	3.77	3.2%
117	11	4.78	4.1%	0	0.00	0.0%	11	4.65	4.0%
118	11	4.83	4.1%	0	0.00	0.0%	11	4.69	4.0%
119	12	5.31	4.5%	1	14.88	12.5%	13	5.58	4.7%
120	5	2.23	1.9%	0	0.00	0.0%	5	2.17	1.8%
121	11	4.95	4.1%	0	0.00	0.0%	11	4.81	4.0%
122	12	5.44	4.5%	0	0.00	0.0%	12	5.29	4.3%
123	5	2.29	1.9%	1	15.38	12.5%	6	2.66	2.2%
124	5	2.30	1.9%	0	0.00	0.0%	5	2.24	1.8%
125	7	3.25	2.6%	0	0.00	0.0%	7	3.16	2.5%
126	5	2.34	1.9%	0	0.00	0.0%	5	2.27	1.8%
127	5	2.36	1.9%	0	0.00	0.0%	5	2.29	1.8%
128	6	2.86	2.2%	1	16.00	12.5%	7	3.23	2.5%
129	12	5.75	4.5%	0	0.00	0.0%	12	5.59	4.3%
130	10	4.83	3.7%	0	0.00	0.0%	10	4.69	3.6%
131	3	1.46	1.1%	0	0.00	0.0%	3	1.42	1.1%
132	6	2.94	2.2%	0	0.00	0.0%	6	2.86	2.2%
133	9	4.45	3.3%	0	0.00	0.0%	9	4.32	3.2%
134	6	2.99	2.2%	0	0.00	0.0%	6	2.90	2.2%
135	4	2.01	1.5%	0	0.00	0.0%	4	1.95	1.4%
136	2	1.01	0.7%	0	0.00	0.0%	2	0.98	0.7%
137	6	3.06	2.2%	0	0.00	0.0%	6	2.97	2.2%
138	5	2.57	1.9%	0	0.00	0.0%	5	2.49	1.8%
139	1	0.52	0.4%	0	0.00	0.0%	1	0.50	0.4%
140	3	1.56	1.1%	0	0.00	0.0%	3	1.52	1.1%
141	2	1.05	0.7%	0	0.00	0.0%	2	1.02	0.7%
142	3	1.58	1.1%	0	0.00	0.0%	3	1.54	1.1%
143	1	0.53	0.4%	0	0.00	0.0%	1	0.52	0.4%
144	1	0.54	0.4%	0	0.00	0.0%	1	0.52	0.4%
145	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	2	1.09	0.7%	0	0.00	0.0%	2	1.06	0.7%
148	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
151	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
152	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	269		97.1%	8		2.9%	277		100.0%
Mean		121.2			114.7			120.9	
Total Legals			277						
Total Recruits			80						
Percent			28.9%						
Total Postrecruits			197						
Percent			71.1%						

Appendix Table A4. Carapace length measurement summary of sampled legal male red king crab captured by vessel # 4, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
101	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
102	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
103	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
104	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
105	1	1.91	1.0%	0	0.00	0.0%	1	1.25	1.2%
106	1	1.93	1.0%	0	0.00	0.0%	1	1.26	1.2%
107	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
108	1	1.96	1.0%	0	0.00	0.0%	1	1.29	1.2%
109	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
110	2	4.00	3.6%	2	7.59	6.9%	4	5.24	4.8%
111	3	6.05	5.5%	0	0.00	0.0%	3	3.96	3.6%
112	1	2.04	1.0%	0	0.00	0.0%	1	1.33	1.2%
113	1	2.05	1.0%	1	3.90	3.4%	2	2.69	2.4%
114	1	2.07	1.0%	0	0.00	0.0%	1	1.36	1.2%
115	1	2.09	1.0%	1	3.97	3.4%	2	2.74	2.4%
116	1	2.11	1.0%	3	12.00	10.3%	4	5.52	4.8%
117	2	4.25	3.6%	1	4.03	3.4%	3	4.18	3.6%
118	2	4.29	3.6%	0	0.00	0.0%	2	2.81	2.4%
119	5	10.82	9.1%	2	8.21	6.9%	7	9.92	8.3%
120	1	2.18	1.0%	2	8.28	6.9%	3	4.29	3.6%
121	1	2.20	1.0%	0	0.00	0.0%	1	1.44	1.2%
122	2	4.44	3.6%	1	4.21	3.4%	3	4.36	3.6%
123	2	4.47	3.6%	0	0.00	0.0%	2	2.93	2.4%
124	3	6.76	5.5%	0	0.00	0.0%	3	4.43	3.6%
125	1	2.27	1.0%	2	8.62	6.9%	3	4.46	3.6%
126	2	4.58	3.6%	1	4.34	3.4%	3	4.50	3.6%
127	1	2.31	1.0%	2	8.76	6.9%	3	4.54	3.6%
128	1	2.33	1.0%	1	4.41	3.4%	2	3.05	2.4%
129	1	2.35	1.0%	1	4.45	3.4%	2	3.07	2.4%
130	0	0.00	0.0%	1	4.48	3.4%	1	1.55	1.2%
131	3	7.15	5.5%	3	13.55	10.3%	6	9.36	7.1%
132	0	0.00	0.0%	1	4.55	3.4%	1	1.57	1.2%
133	3	7.25	5.5%	1	4.59	3.4%	4	6.33	4.8%
134	1	2.44	1.0%	0	0.00	0.0%	1	1.60	1.2%
135	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
136	3	7.42	5.5%	0	0.00	0.0%	3	4.86	3.6%
137	0	0.00	0.0%	1	4.72	3.4%	1	1.63	1.2%
138	2	5.02	3.6%	0	0.00	0.0%	2	3.29	2.4%
139	0	0.00	0.0%	1	4.79	3.4%	1	1.65	1.2%
140	1	2.55	1.0%	0	0.00	0.0%	1	1.67	1.2%
141	1	2.56	1.0%	0	0.00	0.0%	1	1.68	1.2%
142	2	5.16	3.6%	0	0.00	0.0%	2	3.38	2.4%
143	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
144	0	0.00	0.0%	1	4.97	3.4%	1	1.71	1.2%
145	1	2.64	1.0%	0	0.00	0.0%	1	1.73	1.2%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	1	2.67	1.0%	0	0.00	0.0%	1	1.75	1.2%
148	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
151	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
152	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	55		65.5%	29		34.5%	84		100.0%
Mean		124.3			124.4			124.3	
Total legals			84						
Total Recruits Percent			11						13.1%
Total Post Recruits Percent			73						86.9%

Appendix Table A5. Carapace length measurement summary of sampled legal male red king crab captured by vessel # 5, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
101	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
102	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
103	3	6.44	6.3%	0	0.00	0.0%	3	6.44	6.3%
104	4	8.67	8.3%	0	0.00	0.0%	4	8.67	8.3%
105	1	2.19	2.1%	0	0.00	0.0%	1	2.19	2.1%
106	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
107	1	2.23	2.1%	0	0.00	0.0%	1	2.23	2.1%
108	1	2.25	2.1%	0	0.00	0.0%	1	2.25	2.1%
109	1	2.27	2.1%	0	0.00	0.0%	1	2.27	2.1%
110	1	2.29	2.1%	0	0.00	0.0%	1	2.29	2.1%
111	1	2.31	2.1%	0	0.00	0.0%	1	2.31	2.1%
112	1	2.33	2.1%	0	0.00	0.0%	1	2.33	2.1%
113	1	2.35	2.1%	0	0.00	0.0%	1	2.35	2.1%
114	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
115	1	2.40	2.1%	0	0.00	0.0%	1	2.40	2.1%
116	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
117	2	4.88	4.2%	0	0.00	0.0%	2	4.88	4.2%
118	3	7.38	6.3%	0	0.00	0.0%	3	7.38	6.3%
119	2	4.96	4.2%	0	0.00	0.0%	2	4.96	4.2%
120	2	5.00	4.2%	0	0.00	0.0%	2	5.00	4.2%
121	1	2.52	2.1%	0	0.00	0.0%	1	2.52	2.1%
122	3	7.63	6.3%	0	0.00	0.0%	3	7.63	6.3%
123	1	2.56	2.1%	0	0.00	0.0%	1	2.56	2.1%
124	4	10.33	8.3%	0	0.00	0.0%	4	10.33	8.3%
125	2	5.21	4.2%	0	0.00	0.0%	2	5.21	4.2%
126	1	2.63	2.1%	0	0.00	0.0%	1	2.63	2.1%
127	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
128	2	5.33	4.2%	0	0.00	0.0%	2	5.33	4.2%
129	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
130	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
131	1	2.73	2.1%	0	0.00	0.0%	1	2.73	2.1%
132	1	2.75	2.1%	0	0.00	0.0%	1	2.75	2.1%
133	2	5.54	4.2%	0	0.00	0.0%	2	5.54	4.2%
134	1	2.79	2.1%	0	0.00	0.0%	1	2.79	2.1%
135	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
136	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
137	1	2.85	2.1%	0	0.00	0.0%	1	2.85	2.1%
138	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
139	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
140	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
141	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
142	1	2.96	2.1%	0	0.00	0.0%	1	2.96	2.1%
143	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
144	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
145	1	3.02	2.1%	0	0.00	0.0%	1	3.02	2.1%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
148	1	3.08	2.1%	0	0.00	0.0%	1	3.08	2.1%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
151	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
152	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	48		100.0%	0		0.0%	48		100.0%
Mean		119.9			0.0			119.8	
Total Legals			48						
Total Recruits			15						
Percent			31.3%						
Total Postrecruits			33						
Percent			68.8%						

Appendix Table A6. Carapace length measurement summary of sampled legal red male king crab captured by vessel # 6, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New shell			Old shell			Total		
	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%	No.	Ave Length Calc.	%
100	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
101	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
102	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
103	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
104	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
105	1	2.10	2.0%	0	0.00	0.0%	1	2.10	2.0%
106	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
107	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
108	2	4.32	4.0%	0	0.00	0.0%	2	4.32	4.0%
109	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
110	2	4.40	4.0%	0	0.00	0.0%	2	4.40	4.0%
111	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
112	1	2.24	2.0%	0	0.00	0.0%	1	2.24	2.0%
113	4	9.04	8.0%	0	0.00	0.0%	4	9.04	8.0%
114	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
115	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
116	1	2.32	2.0%	0	0.00	0.0%	1	2.32	2.0%
117	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
118	4	9.44	8.0%	0	0.00	0.0%	4	9.44	8.0%
119	1	2.38	2.0%	0	0.00	0.0%	1	2.38	2.0%
120	1	2.40	2.0%	0	0.00	0.0%	1	2.40	2.0%
121	1	2.42	2.0%	0	0.00	0.0%	1	2.42	2.0%
122	3	7.32	6.0%	0	0.00	0.0%	3	7.32	6.0%
123	1	2.46	2.0%	0	0.00	0.0%	1	2.46	2.0%
124	2	4.96	4.0%	0	0.00	0.0%	2	4.96	4.0%
125	1	2.50	2.0%	0	0.00	0.0%	1	2.50	2.0%
126	4	10.08	8.0%	0	0.00	0.0%	4	10.08	8.0%
127	4	10.16	8.0%	0	0.00	0.0%	4	10.16	8.0%
128	1	2.56	2.0%	0	0.00	0.0%	1	2.56	2.0%
129	3	7.74	6.0%	0	0.00	0.0%	3	7.74	6.0%
130	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
131	4	10.48	8.0%	0	0.00	0.0%	4	10.48	8.0%
132	2	5.28	4.0%	0	0.00	0.0%	2	5.28	4.0%
133	2	5.32	4.0%	0	0.00	0.0%	2	5.32	4.0%
134	2	5.36	4.0%	0	0.00	0.0%	2	5.36	4.0%
135	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
136	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
137	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
138	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
139	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
140	2	5.60	4.0%	0	0.00	0.0%	2	5.60	4.0%
141	1	2.82	2.0%	0	0.00	0.0%	1	2.82	2.0%
142	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
143	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
144	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
145	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
146	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
147	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
148	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
149	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
150	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
151	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
152	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
153	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
154	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
155	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
156	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
157	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
158	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
159	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
160	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total No.	50		100.0%	0		0.0%	50		100.0%
Mean		123.7			0.0%			123.7	
Total legal			50						
Total Recruits			10						
Percent			20.0%						
Total Post Recruits			40						
Percent			80.0%						

## APPENDIX B

Carapace length measurement summary of sampled sublegal male red king crab by fishing vessel.

Appendix Table B1. Carapace length measurement summary of sampled sublegal male red king crab captured by vessel # 1, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New Shell			Old Shell			Total		
	No.	Ave Length Calc	%	No.	Ave Length Calc	%	No.	Ave Length Calc	%
60	4	0.25	0.4%	0	0.00	0.0%	4	0.23	0.4%
61	1	0.06	0.1%	0	0.00	0.0%	1	0.06	0.1%
62	2	0.13	0.2%	0	0.00	0.0%	2	0.12	0.2%
63	3	0.20	0.3%	0	0.00	0.0%	3	0.18	0.3%
64	4	0.27	0.4%	0	0.00	0.0%	4	0.25	0.4%
65	4	0.27	0.4%	0	0.00	0.0%	4	0.25	0.4%
66	6	0.41	0.6%	0	0.00	0.0%	6	0.38	0.6%
67	4	0.28	0.4%	0	0.00	0.0%	4	0.26	0.4%
68	6	0.42	0.6%	0	0.00	0.0%	6	0.39	0.6%
69	10	0.72	1.0%	0	0.00	0.0%	10	0.67	1.0%
70	7	0.51	0.7%	0	0.00	0.0%	7	0.47	0.7%
71	7	0.52	0.7%	0	0.00	0.0%	7	0.48	0.7%
72	5	0.37	0.5%	0	0.00	0.0%	5	0.35	0.5%
73	8	0.61	0.8%	0	0.00	0.0%	8	0.56	0.8%
74	11	0.85	1.1%	0	0.00	0.0%	11	0.78	1.1%
75	8	0.62	0.8%	1	0.99	1.3%	9	0.65	0.9%
76	16	1.27	1.7%	0	0.00	0.0%	16	1.17	1.5%
77	21	1.68	2.2%	0	0.00	0.0%	21	1.56	2.0%
78	28	2.27	2.9%	0	0.00	0.0%	28	2.11	2.7%
79	14	1.15	1.5%	1	1.04	1.3%	15	1.14	1.4%
80	18	1.50	1.9%	0	0.00	0.0%	18	1.39	1.7%
81	22	1.85	2.3%	0	0.00	0.0%	22	1.72	2.1%
82	34	2.90	3.5%	0	0.00	0.0%	34	2.69	3.3%
83	17	1.47	1.8%	0	0.00	0.0%	17	1.36	1.6%
84	24	2.10	2.5%	0	0.00	0.0%	24	1.94	2.3%
85	26	2.30	2.7%	1	1.12	1.3%	27	2.21	2.6%
86	24	2.15	2.5%	1	1.13	1.3%	25	2.07	2.4%
87	24	2.17	2.5%	2	2.29	2.6%	26	2.18	2.5%
88	37	3.39	3.9%	1	1.16	1.3%	38	3.22	3.7%
89	27	2.50	2.8%	1	1.17	1.3%	28	2.40	2.7%
90	44	4.12	4.6%	4	4.74	5.3%	48	4.17	4.6%
91	47	4.45	4.9%	4	4.79	5.3%	51	4.48	4.9%
92	31	2.97	3.2%	3	3.63	3.9%	34	3.02	3.3%
93	40	3.87	4.2%	5	6.12	6.6%	45	4.04	4.3%
94	36	3.52	3.7%	4	4.95	5.3%	40	3.63	3.9%
95	48	4.75	5.0%	3	3.75	3.9%	51	4.67	4.9%
96	38	3.80	4.0%	1	1.26	1.3%	39	3.61	3.8%
97	39	3.94	4.1%	3	3.83	3.9%	42	3.93	4.1%
98	32	3.26	3.3%	5	6.45	6.6%	37	3.50	3.6%
99	30	3.09	3.1%	10	13.03	13.2%	40	3.82	3.9%
100	31	3.23	3.2%	5	6.50	6.6%	36	3.47	3.5%
101	36	3.78	3.7%	8	10.63	10.5%	44	4.29	4.2%
102	30	3.18	3.1%	5	6.71	6.6%	35	3.44	3.4%
103	26	2.79	2.7%	3	4.07	3.9%	29	2.88	2.8%
104	9	0.97	0.9%	4	5.47	5.3%	13	1.30	1.3%
105	12	1.31	1.2%	0	0.00	0.0%	12	1.22	1.2%
106	4	0.44	0.4%	1	1.39	1.3%	5	0.51	0.5%
107	5	0.56	0.5%	0	0.00	0.0%	5	0.52	0.5%
108	1	0.11	0.1%	0	0.00	0.0%	1	0.10	0.1%
109	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
110	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
Total	961		92.7%	76		7.3%	1037		100.0%
Mean		89.3			96.3			89.8	

Total sublegals 1037

Appendix Table B2. Carapace length measurement summary of sampled sublegal male red king crab captured by vessel # 3, Norton Sound Section, Eastern Bering Sea, August 1 - 12, 1987.

Carapace Length (mm)	New Shell			Old Shell			Total		
	No.	Ave Length Calc	%	No.	Ave Length Calc	%	No.	Ave Length Calc	%
60	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
61	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
62	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
63	1	0.53	0.8%	0	0.00	0.0%	1	0.53	0.8%
64	1	0.54	0.8%	0	0.00	0.0%	1	0.54	0.8%
65	2	1.10	1.7%	0	0.00	0.0%	2	1.09	1.7%
66	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
67	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
68	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
69	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
70	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
71	1	0.60	0.8%	0	0.00	0.0%	1	0.60	0.8%
72	1	0.61	0.8%	0	0.00	0.0%	1	0.61	0.8%
73	3	1.86	2.5%	0	0.00	0.0%	3	1.84	2.5%
74	1	0.63	0.8%	0	0.00	0.0%	1	0.62	0.8%
75	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
76	3	1.93	2.5%	0	0.00	0.0%	3	1.92	2.5%
77	1	0.65	0.8%	0	0.00	0.0%	1	0.65	0.8%
78	2	1.32	1.7%	0	0.00	0.0%	2	1.31	1.7%
79	5	3.35	4.2%	0	0.00	0.0%	5	3.32	4.2%
80	3	2.03	2.5%	0	0.00	0.0%	3	2.02	2.5%
81	2	1.37	1.7%	0	0.00	0.0%	2	1.36	1.7%
82	4	2.78	3.4%	0	0.00	0.0%	4	2.76	3.4%
83	6	4.22	5.1%	0	0.00	0.0%	6	4.18	5.0%
84	2	1.42	1.7%	0	0.00	0.0%	2	1.41	1.7%
85	3	2.16	2.5%	0	0.00	0.0%	3	2.14	2.5%
86	6	4.37	5.1%	0	0.00	0.0%	6	4.34	5.0%
87	4	2.95	3.4%	0	0.00	0.0%	4	2.92	3.4%
88	1	0.75	0.8%	0	0.00	0.0%	1	0.74	0.8%
89	5	3.77	4.2%	0	0.00	0.0%	5	3.74	4.2%
90	5	3.81	4.2%	0	0.00	0.0%	5	3.78	4.2%
91	5	3.86	4.2%	1	91.00	100.0%	6	4.59	5.0%
92	5	3.90	4.2%	0	0.00	0.0%	5	3.87	4.2%
93	7	5.52	5.9%	0	0.00	0.0%	7	5.47	5.9%
94	1	0.80	0.8%	0	0.00	0.0%	1	0.79	0.8%
95	2	1.61	1.7%	0	0.00	0.0%	2	1.60	1.7%
96	3	2.44	2.5%	0	0.00	0.0%	3	2.42	2.5%
97	5	4.11	4.2%	0	0.00	0.0%	5	4.08	4.2%
98	5	4.15	4.2%	0	0.00	0.0%	5	4.12	4.2%
99	3	2.52	2.5%	0	0.00	0.0%	3	2.50	2.5%
100	5	4.24	4.2%	0	0.00	0.0%	5	4.20	4.2%
101	3	2.57	2.5%	0	0.00	0.0%	3	2.55	2.5%
102	6	5.19	5.1%	0	0.00	0.0%	6	5.14	5.0%
103	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
104	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
105	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
106	3	2.69	2.5%	0	0.00	0.0%	3	2.67	2.5%
107	1	0.91	0.8%	0	0.00	0.0%	1	0.90	0.8%
108	1	0.92	0.8%	0	0.00	0.0%	1	0.91	0.8%
109	0	0.00	0.0%	0	0.00	0.0%	0	0.00	0.0%
110	1	0.93	0.8%	0	0.00	0.0%	1	0.92	0.8%
Total	118		100.0%	1		0.8%	119		100.0%
Mean		89.1			91.0			89.1	

Total sublegals

119