

**ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF COMMERCIAL FISHERIES  
NEWS RELEASE**



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Date Issued: 10/1/2009

**2009 Norton Sound Summer Crab Season Summary**

**INTRODUCTION**

Norton Sound Section (Q3) consists of all waters in Statistical Area Q north of the latitude of Cape Romanzof (61° 49' N latitude), east of the International Dateline, and south of latitude 66° N (Figure 1). A large vessel summer commercial crab fishery existed in the Norton Sound Section from 1977 through 1992. No summer commercial fishery occurred in 1991 due to a cut in staff needed to manage the fishery the previous winter. In 1992 the summer commercial fishery resumed. Regulation changes adopted during the March 1993 Alaska Board of Fisheries (BOF) meeting changed participation in the fishery to that of small boats. A super-exclusive designation went into effect for the Norton Sound commercial crab fishery June 27, 1994. This designation stated that a vessel registered for the Norton Sound crab fishery may not be used to take king crab in any other registration area during that registration year. Later a vessel moratorium put into place before the 1996 season had the intention of creating a license limitation program. The Community Development Quota (CDQ) groups were allocated a portion of the summer harvest quota beginning in 1998. Although the CDQ allocation was in place, no harvest occurred until the 2000 season. The North Pacific License Limitation Program (LLP) went into effect for the Norton Sound crab fishery January 1, 2000. The program states that a vessel which exceeds 32 feet in length overall must hold a valid crab license issued under the LLP by the National Marine Fisheries Service.

During the March 1999 BOF meeting, a new management strategy was enacted for the Norton Sound summer red king crab fishery (5AAC 34.915). A threshold level of abundance of legal male red king crab biomass was set at 1.5 million pounds. The summer commercial season may only open if the population of legal crab exceeds 1.5 million pounds. If the legal biomass is 1.5 to 2.5 million pounds the harvest rate will not exceed 5%, so that the stock may rebuild. If the legal biomass is 2.5 million pounds or more, the harvest rate will be no more than 10%. Improved abundance estimates and the current management strategy will greatly reduce the risks of over fishing the stock.

During the March 2002 BOF meeting, new regulations were adopted changing closed water boundaries and start dates for the crab CDQ fishery. Figure 3 shows the new closed waters boundaries. Closed waters were extended further offshore near Golovin, moved closer to shore near Unalakleet and eastward near Sledge Island. The Norton Sound CDQ crab fishery may begin at 12:00 noon, June 15, or no less than 72 hours after the commercial sac roe herring fishery is closed, whichever is later, through 12:00 noon, June 28. After July 1, the commissioner may, by emergency order, open a CDQ fishery for any remaining allocation after closure of the open access fishery.

At a special BOF meeting on May 3, 2006, Norton Sound Section (Q 3) was expanded to include all waters north of the latitude of Cape Romanzof ( $61^{\circ} 49'$  N latitude), south of latitude  $66^{\circ}$  N, and east of the International Dateline (Figure 1).

At the March 2008 meeting, the BOF changed the start date of the open access fishery. Previously, the open access fishery started on July 1, but the BOF passed a regulation allowing ADF&G to open the fishery by emergency order anytime beginning on or after June 15. The CDQ fishery may open at any time, also by emergency order. Previous restrictions requiring the herring fishery to be over before the start of the crab fishery have been eliminated. For escapement of sublegal crabs, a new regulation is in effect: a minimum of 4 escapement rings are required per pot with each ring measuring a minimum inside diameter of  $4 \frac{1}{2}$  inches located within one mesh size from the bottom of the pot, or at least  $\frac{1}{2}$  of the vertical surface of a square pot or sloping side-wall surface of a conical or pyramid pot must be composed of no less than  $6 \frac{1}{2}$  inch stretched mesh. Another regulation reduced the size limit for male blue king crab in the Norton Sound commercial fishery from  $5 \frac{1}{2}$  inches to 5 inches in shell width.

The ADF&G length-based population model estimated legal male crab abundance for the 2009 summer commercial crab fishery at 3.75 million pounds (1.34 million crabs). This is up 14% from the revised 2008 model abundance estimate of 3.30 million pounds (1.18 million crabs) for legal male crabs. The model revised the 2008 estimate from 4.20 million pounds (1.50 million crabs) to 3.30 million pounds. Every time new data is incorporated into the population model, the model estimates current abundance as well as revises prior years' abundances. Current and revised abundance estimates are based on the 2008 trawl survey (Appendix A2), the latest summer and winter fisheries data, and historical data going back to 1976 that include pot and trawl surveys and summer and winter fisheries results.

The 2009 winter study data indicate recruitment has increased compared to 2008 and will likely continue to increase for the next year. Current size composition data show the portion of the crab population classified as recruits has increased by a third since the 2008 survey and postrecruit male crab population has almost doubled, leading to a combined increase of 56% in the legal component of the population. The winter pot study also points to a slightly above average pre-1 population and a pre-2 population that is less than a third compared to last year's population and less than half of the 25-year average population. Pre-1 crabs require one molt to become part of legal population next year, while pre-2 crabs require two molts. These findings indicate that legal crab population in 2009 could be greater than in 2008 and should increase in 2010, followed by a possible decline in 2011.

A 10% exploitation rate on the legal population  $\geq 4.75$ -inch (121-mm) carapace width equates to a guideline harvest level (GHL) of 375,000 pounds of crab. This follows the harvest strategy set by

the BOF. By regulation, the CDQ fishery is allocated 7.5% of the GHL; therefore, the CDQ harvest quota was set at 28,125 pounds preseason.

## **HARVEST SUMMARY**

### **Open Access Fishery**

The 2009 summer open access commercial crab fishery was opened by emergency order at 12:00 noon, June 15 in the Norton Sound Section, with a GHL of 346,875 pounds of crab. Two companies, Norton Sound Seafood Products (NSSP) and Aquatech, were registered to buy crab, and six fishermen registered to sell crab dockside as catcher-sellers. NSSP operated a seafood processing plant in Nome and two tenders in eastern Norton Sound. A fisherman based in Unalakleet flew live crabs to Aquatech in Anchorage. The majority of crabs were delivered to NSSP, while four catcher-sellers sold crabs directly to local residents.

First open-access delivery was made on June 18 and final delivery was made September 20, when the open access portion of the fishery was closed by emergency order at 12:00 noon, for a total season length of 98 days compared to 73 days in 2008. In 2009, due to poor crab meat fill, NSSP stopped purchasing crab between June 29 and July 6, except for a small test catch. Aquatech continued to purchase crab, and catcher-sellers still sold their catch. Crabs with poor meat fill were generally found south of Nome in western Norton Sound and not in eastern Norton Sound. Reasons for the poor meat fill are unclear but might be an indication that crabs in certain areas molted later than usual the previous year, or had less abundant food sources.

The open-access harvest from fish ticket reports was 133,498 red king crabs or 369,462 pounds (107% of the open-access quota; Table 1), compared to 364,235 pounds caught in 2008. Of the 2009 total, 1,942 pounds were reported as deadloss, and 8,972 pounds reported as personal use. In 2008, there were 606 pounds of deadloss and 9,452 pounds for personal use. A total of 22 vessels and 23 permit holders made 333 landings, compared to 23 vessels, 23 permits, and 230 landings in 2008 (Table 2). The average weight for commercially caught crab was 2.8 pounds, same as in 2008. Number of pots registered was 920 and there were 11,022 pot pulls throughout the fishery, compared to same number of pots registered in 2008 but with 8,721 pot pulls. 2009 CPUE was 12 crabs compared to the 2008 CPUE of 16 crabs. In 2009, for the months of June through August, average CPUE was 10 crabs, while for September it was 19 crabs. During the last week before fishery closure, CPUE jumped up to 26 crabs. Overall, however, the catch rate in 2009 was much lower than in the previous 5 years (Figure 3). The average price paid was \$3.18 per pound, and the exvessel value of the fishery was \$1,139,208, both very similar to values in 2008 (Table 3).

### **CDQ Fishery**

The Norton Sound and Yukon Delta CDQ groups divide the CDQ allocation. Only fishermen designated by these two CDQ groups are allowed to participate in this portion of the king crab fishery. Fishermen are required to have a CDQ fishing permit from the Commercial Fisheries Entry Commission (CFEC) and register their vessel with ADF&G before they make their first delivery. Fishermen operate under authority of the CDQ group and each CDQ group decides how their crab quota is harvested. In 2009, as in the previous 4 years, Yukon Delta transferred their quota to Norton Sound; therefore, all fishermen operated under authority of the Norton Sound CDQ group.

For the first time since the CDQ fishery was implemented in 1998, the CDQ fishery opened concurrently with the open-access fishery in 2009. First CDQ delivery was made on June 18, the season lasted 43 days, and total harvest was 28,125 pounds of crab (Table 4). The CDQ season lasted much longer than usual due to poor crab meat fill and resulting plant closure, and because the CDQ fishermen were also fishing the open access fishery. Of the 7 permit-holders that registered to fish CDQ, only 4 actually fished, making a total of 26 landings and 912 pots lifts. Average price paid to fishermen was \$3.13 per pound, for an exvessel value of \$85,620 for the CDQ fishery, which closed at 12:00 noon July 28, 2009, when 100% of the CDQ allocation had been harvested. This was the ninth year a CDQ harvest occurred since the CDQ fishery was implemented in 1998, and the sixth year the fishery harvested or nearly harvested the entire allocation.

Fish ticket reports document that 13 statistical areas were fished in the open access and CDQ fisheries (Table 5; Figure 2), compared to 9 areas in 2008. Contrary to past couple of years with half of the total harvest coming from statistical area 636401, this year roughly equal harvests came from 3 statistical areas: 626401 (26%), 636401 (24%), and 656401 (27%), all of which are directly south of the closed boundary line (Figure 2; Appendix A1). Fishermen moved around a lot more this year as they searched and waited for the crab to move offshore. Statistical area 646401 (12%) was the only other area with significant harvest. The catch from stat areas east of 164°W longitude made up 54% of the harvest, compared to 77% last year (Figure 4), likely due to a difference in crab distribution and migration this year.

### **Harvest Sampling**

Carapace length measurements and shell age were collected from 6,026 commercially-caught crabs during the open access and CDQ fisheries. Carapace age was classified as new (2–12 months old) or old (over 13 months old). Male new-shell crabs made up 82% of the total legal crabs sampled, and old-shell crabs made up 18%. Recruit crabs are new-shell legal crabs < 116-mm carapace length (CL). Postrecruit crabs are legal new-shell male crabs  $\geq$  116-mm CL and all legal old-shell males. Recruit crabs made up 43% of the legal crabs sampled and postrecruit crabs made up 57%, similar to samples from the previous 2 years (Table 2). Overall mean carapace length of legal male crabs was 116 mm, similar to 2008.

The Norton Sound red king crab fishery had the benefit of an onboard observer during the 2000 and 2001 seasons because there was a floating processor on the fishing grounds in those years. In years when there was no onboard observer, a smaller percentage of crabs from the commercial harvest were sampled because fishermen deliver at all times of the day and night. The new seafood processing plant that began operating in Nome in summer 2002 greatly improved the ability of Nome ADF&G staff to collect sampling data. In 2009, a staff biologist observed on one of the crab vessels. Several skippers were also asked to keep track of number of retained/non-retained crabs per pot. Results from the 5 vessels that participated, either in data-collection or being observed, are presented in Table 6. The department will continue to make a concerted effort to coordinate catch sampling and data collection with fishermen and buyers to ensure optimal commercial harvest data collection.

Table 1.—Daily catch based on fish ticket data for the open-access summer commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, June 15–September 20, 2009.

Date <sup>a,b</sup>	Landings	Number of Crabs	Lbs of Crabs Harvested	Cumulative Lbs	No. of Pots Pulled	Average Weight (lbs)	Daily CPUE
6/18	1	126	356	356	32	2.83	4
6/19	2	679	2,094	2,450	66	3.08	10
6/20	0	0	0	2,450	0	0.00	0
6/21	2	210	631	3,081	54	3.00	4
6/22	4	769	2,103	5,184	85	2.73	9
6/23	6	1,495	4,002	9,186	226	2.68	7
6/24	4	1,069	2,869	12,055	116	2.68	9
6/25	1	212	584	12,639	40	2.75	5
6/26	0	0	0	12,639	0	0.00	0
6/27	0	0	0	12,639	0	0.00	0
6/28	4	1,475	4,077	16,716	149	2.76	10
6/29	1	394	1,103	17,819	40	2.80	10
6/30	2	591	1,399	19,218	40	2.37	15
7/01	0	0	0	19,218	0	0.00	0
7/02	0	0	0	19,218	0	0.00	0
7/03	0	0	0	19,218	0	0.00	0
7/04	3	373	984	20,202	23	2.64	16
7/05	0	0	0	20,202	0	0.00	0
7/06	1	73	224	20,426	3	3.07	24
7/07	7	2,767	7,706	28,132	199	2.78	14
7/08	2	1,447	4,075	32,207	80	2.82	18
7/09	3	1,270	3,377	35,584	78	2.66	16
7/10	4	1,203	3,444	39,028	160	2.86	8
7/11	3	1,802	5,112	44,140	118	2.84	15
7/12	2	1,010	2,867	47,007	80	2.84	13
7/13	4	1,582	4,411	51,418	159	2.79	10
7/14	7	2,094	5,651	57,069	217	2.70	10
7/15	1	478	1,363	58,432	40	2.85	12
7/16	5	1,293	3,542	61,974	147	2.74	9
7/17	10	3,782	10,290	72,264	354	2.72	11
7/18	4	1,679	4,662	76,926	159	2.78	11
7/19	9	3,260	8,895	85,821	305	2.73	11
7/20	2	477	1,312	87,133	62	2.75	8
7/21	2	655	1,840	88,973	80	2.81	8
7/22	3	657	1,706	90,679	80	2.60	8
7/23	6	2,327	6,410	97,089	198	2.75	12
7/24	5	2,372	6,540	103,629	151	2.76	16
7/25	7	2,300	5,846	109,475	237	2.54	10
7/26	7	2,882	8,020	117,495	271	2.78	11
7/27	1	621	1,719	119,214	40	2.77	16
7/28	3	803	2,160	121,374	81	2.69	10
7/29	5	2,093	5,854	127,228	150	2.80	14
7/30	1	115	328	127,556	10	2.85	12
7/31	3	1,242	3,362	130,918	120	2.71	10
8/01	11	3,008	8,244	139,162	357	2.74	8
8/02	1	310	1,160	140,322	40	3.74	8
8/03	4	1,564	4,321	144,643	146	2.76	11
8/04	7	2,223	6,090	150,733	237	2.74	9
8/05	7	2,070	5,482	156,215	251	2.65	8

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Table 1.–Page 2 of 2.

Date <sup>a,b</sup>	Landings	Number of Crabs	Lbs of Crabs Harvested	Cumulative Lbs	No. of Pots Pulled	Average Weight (lbs)	Daily CPUE
8/06	5	1,140	3,229	159,444	199	2.83	6
8/07	4	489	1,385	160,829	73	2.83	7
8/08	10	3,055	8,179	169,008	378	2.68	8
8/09	2	791	2,298	171,306	45	2.91	18
8/10	3	813	2,260	173,566	56	2.78	15
8/11	10	3,291	9,157	182,723	327	2.78	10
8/12	7	2,007	5,313	188,036	279	2.65	7
8/13	2	446	1,315	189,351	79	2.95	6
8/14	2	297	846	190,197	70	2.85	4
8/15	8	1,913	5,141	195,338	265	2.69	7
8/16	2	713	2,058	197,396	50	2.89	14
8/17	3	611	1,676	199,072	109	2.74	6
8/18	3	762	2,015	201,087	78	2.64	10
8/19	6	1,585	4,356	205,443	193	2.75	8
8/20	1	516	1,469	206,912	40	2.85	13
8/21	1	568	1,626	208,538	40	2.86	14
8/22	1	925	2,618	211,156	40	2.83	23
8/23	0	0	0	211,156	0	0.00	0
8/24	2	309	864	212,020	58	2.80	5
8/25	8	4,943	13,777	225,797	283	2.79	17
8/26	2	871	2,499	228,296	42	2.87	21
8/27	8	4,505	12,693	240,989	243	2.82	19
8/28	2	772	2,138	243,127	80	2.77	10
8/29	7	3,040	8,524	251,651	257	2.80	12
8/30	0	0	0	251,651	0	0.00	0
8/31	0	0	0	251,651	0	0.00	0
9/01	0	0	0	251,651	0	0.00	0
9/02	2	737	2,015	253,666	80	2.73	9
9/03	11	5,103	13,928	267,594	417	2.73	12
9/04	1	935	2,615	270,209	40	2.80	23
9/05	2	1,201	3,333	273,542	78	2.78	15
9/06	8	4,373	12,230	285,772	289	2.80	15
9/07	0	0	0	285,772	0	0.00	0
9/08	1	156	410	286,182	35	2.63	4
9/09	4	2,436	6,622	292,804	158	2.72	15
9/10	8	7,202	19,723	312,527	270	2.74	27
9/11	2	193	518	313,045	63	2.68	3
9/12	3	346	971	314,016	62	2.81	6
9/13	1	615	1,753	315,769	37	2.85	17
9/14	6	3,978	11,098	326,867	160	2.79	25
9/15	6	5,535	15,351	342,218	202	2.77	27
9/16	2	1,049	2,958	345,176	50	2.82	21
9/17	0	0	0	345,176	0	0.00	0
9/18	3	2,774	8,028	353,204	109	2.89	25
9/19	5	4,490	12,784	365,988	169	2.85	27
9/20	2	1,161	3,474	369,462	38	2.99	31
Totals	333	133,498	369,462	369,462	11,022	2.77	12

Note: The fishery closed by EO on 9/20/09 at noon and the last delivery was made on 9/20/09.

Table 2.—Historical summer commercial red king crab annual harvest, Norton Sound Section, Eastern Bering Sea, 1977–2009.

Year	Number of	Number of	Number of	Number of	Harvest (lbs) <sup>a</sup>		Number of Pots		CPUE	Percent	Percent	Average	Avg. Legal Mean Length (mm)
	Vessels	Permits	Landings	Crabs	Open Access	CDQ <sup>b</sup>	Registered	Pulls		Old Shell	Postrecruits	Weight (lbs)	
	<b>(open access only)</b>												
1977	7	7	13	195,877	517,787		<sup>c</sup> 5,457		36	<sup>c</sup>	<sup>c</sup>	2.7	113
1978	8	8	54	660,829	2,091,961		<sup>c</sup> 10,817		64	<sup>c</sup>	<sup>c</sup>	3.0	119
1979	34	34	76	970,962	2,931,672		<sup>c</sup> 34,773		28	<sup>c</sup>	<sup>c</sup>	3.0	120
1980	9	9	50	329,778	1,186,596		<sup>c</sup> 11,199		29	<sup>c</sup>	<sup>c</sup>	3.6	126
1981	36	36	108	376,313	1,379,014		<sup>c</sup> 33,745		11	<sup>c</sup>	<sup>c</sup>	3.7	129
1982	11	11	33	63,949	228,921		<sup>c</sup> 11,230		6	<sup>c</sup>	<sup>c</sup>	3.6	125
1983	23	23	26	132,205	368,032		3,583	11,195	12	<sup>c</sup>	45	2.8	115
1984	8	8	21	139,759	387,427		1,245	9,706	14	<sup>c</sup>	41	2.8	113
1985	6	6	72	146,669	427,011		1,116	13,209	11	<sup>c</sup>	55	2.9	116
1986	3	3	<sup>c</sup>	162,438	479,463		578	4,284	38	<sup>c</sup>	52	2.9	116
1987	9	9	<sup>c</sup>	103,338	327,121		1,430	10,258	10	13	78	3.2	122
1988	2	2	<sup>c</sup>	76,148	236,688		360	2,350	32	26	75	3.1	119
1989	10	10	<sup>c</sup>	79,116	246,487		2,555	5,149	15	29	77	3.1	120
1990	4	4	<sup>c</sup>	59,132	192,831		1,388	3,172	19	17	79	3.1	121
1991 <sup>d</sup>													
1992	27	27	<sup>c</sup>	24,902	74,029		2,635	5,746	4	29	72	3.0	120
1993	14	20	208	115,913	335,790		560	7,063	16	10	69	2.9	119
1994	34	52	407	108,824	327,858		1,360	11,729	9	71	86	3.0	119
1995	48	81	665	105,967	322,676		1,900	18,782	6	21	64	3.0	118
1996	41	50	264	74,752	224,231		1,640	10,453	7	36	70	3.0	117
1997	13	15	100	32,606	92,988		520	2,982	11	14	51	2.8	116
1998	8	11	50	10,661	29,684		360	1,639	7	39	68	2.8	117
1999	10	9	53	8,734	23,553		360	1,630	5	12	58	2.7	118
2000	14	17	202	108,249	297,654	14,870	560	6,345	18	16	60	2.7	116
2001	30	37	320	98,321	288,199	0	1,200	11,928	8	11	67	2.9	119
2002	28	32	164	86,666	244,376	15,225	1,120	6,491	14	11	67	3.0	120
2003	24	30	219	88,518	253,284	13,923	960	8,494	11	14	52	2.8	117
2004	26	29	208	120,289	314,472	26,274	1,120	8,066	15	8	51	2.8	117
2005	30	32	227	128,405	370,744	30,060	1,320	8,867	16	9	64	2.9	118
2006	28	29	224	139,131	419,191	32,557	1,120	8,695	17	27	75	3.0	119
2007	30	30	234	101,672	289,264	23,611	1,200	9,118	12	12	55	2.8	117
2008	23	23	230	132,295	364,235	30,900	920	8,721	16	23	55	2.8	115
2009	22	23	333	133,498	369,462	28,125	920	11,934	12	18	57	2.8	116

<sup>a</sup> Deadloss included in total.

<sup>b</sup> No CDQ fishery harvest prior to the 2000 season.

<sup>c</sup> Data not available.

<sup>d</sup> No summer commercial fishery.

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Table 3.—Historical summer commercial red king crab fishery economic performance, Norton Sound Section, Eastern Bering Sea, 1977–2009.

Year	Guideline Harvest Level (lbs) <sup>a</sup>	Legal Male Pop. Est.(lbs) <sup>a</sup>	Commercial Harvest (lbs) <sup>a,b</sup>		Exvessel Price/lb	Fishery Value (millions \$)	Season Length		
			Open Access	CDQ			Days	Dates	
1977	<sup>c</sup>	1.7	0.52		0.75	0.229	60	<sup>c</sup>	
1978	3.00	1.7	2.09		0.95	1.897	60	6/07-8/15	
1979	3.00	0.8	2.93		0.75	1.878	16	7/15-7/31	
1980	1.00	1.9	1.19		0.75	0.890	16	7/15-7/31	
1981	2.50	1.3	1.38		0.85	1.172	38	7/15-8/22	
1982	0.50	0.9	0.23		2.00	0.405	23	8/09-9/01	
1983	0.30	0.9	0.37		1.50	0.537	4	8/01-8/05	
1984	0.40	0.9	0.39		1.02	0.395	14	8/01-8/15	
1985	0.45	1.1	0.43		1.00	0.427	22	8/01-8/23	
1986	0.42	1.1	0.48		1.25	0.600	13	8/01-8/25	<sup>d</sup>
1987	0.40	1.1	0.33		1.50	0.491	11	8/01-8/12	
1988	0.20	1.0	0.24		<sup>c</sup>	<sup>c</sup>	10	8/01-8/11	
1989	0.20	1.0	0.25		3.00	0.739	3	8/01-8/04	
1990	0.20	1.0	0.19		<sup>c</sup>	<sup>c</sup>	4	8/01-8/05	
1991	0.34	1.3			No summer fishery				
1992	0.34	1.3	0.07		1.75	0.130	2	8/01-8/03	
1993	0.34	1.3	0.33		1.28	0.430	52	7/01-8/28	<sup>e</sup>
1994	0.34	1.3	0.32		2.02	0.646	31	7/01-7/31	
1995	0.34	1.3	0.32		2.87	0.926	67	7/01-9/05	
1996	0.34	0.5	0.22		2.29	0.519	57	7/01-9/03	<sup>f</sup>
1997	0.08	0.5	0.09		1.98	0.184	44	7/01-8/13	<sup>g</sup>
1998	0.08	0.5	0.03		1.47	0.041	65	7/01-9/03	<sup>h</sup>
1999	0.08	1.6	0.02		3.08	0.073	66	7/01-9/04	<sup>i</sup>
2000	0.33	4.2	0.29	0.01	2.29	0.715	91	7/01-9/29	<sup>j</sup>

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Year	Guideline	Legal Male Pop. Est.(lbs) <sup>a</sup>	Commercial		Exvessel Price/lb	Fishery Value (millions \$)	Season Length		
	Harvest		Harvest (lbs) <sup>a,b</sup>				Days	Dates	
	Level (lbs) <sup>a</sup>		Open Access	CDQ					
2004	0.35	4.4	0.34	0.03	3.13	1.158	53	6/15-8/08	<sup>n</sup>
2005	0.37	4.8	0.37	0.03	3.18	1.264	72	6/15-8/27	<sup>o</sup>
2006	0.45	4.5	0.42	0.03	2.26	1.021	67	6/15-8/22	<sup>n</sup>
2007	0.32	3.1	0.29	0.02	2.84	0.750	52	6/15-8/07	<sup>n</sup>
2008	0.41	4.1	0.36	0.03	3.20	1.231	73	6/23-9/03	<sup>p</sup>
2009	0.38	3.8	0.37	0.03	3.17	1.225	98	6/15-9/20	<sup>q</sup>

<sup>a</sup> Millions of pounds.

<sup>b</sup> Deadloss included in total.

<sup>c</sup> Information not available.

<sup>d</sup> Fishing actually began 8/12.

<sup>e</sup> Fishing actually began 7/8.

<sup>f</sup> Fishing began 7/9 due to fishers' strike.

<sup>g</sup> First delivery was made 7/10.

<sup>h</sup> First delivery was made 7/16.

<sup>i</sup> The season was extended 24 hours due to bad weather.

<sup>j</sup> Open access (OA) fishery closed 8/29; CDQ fishery opened 9/1-9/29.

<sup>k</sup> OA closed 9/1. CDQ opened 9/1-9/9.

<sup>l</sup> OA opened 7/1-8/6. CDQ opened 6/15-6/28 and 8/9-9/3.

<sup>m</sup> OA opened 7/1-8/13. CDQ opened 6/15-6/28 and 8/15-8/24.

<sup>n</sup> CDQ opened 6/15-6/28. OA opened 7/1 to the end date.

<sup>o</sup> OA opened 7/1-8/15. CDQ opened 6/15-6/28 and 8/17-8/27.

<sup>p</sup> OA opened 6/23 - 8/18. CDQ opened 8/17 - 9/3.

<sup>q</sup> CDQ opened 6/15 - 7/28. OA opened 6/15 to the end date.

Table 4.—Daily catch based on fish ticket data for the CDQ summer commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, June 15–July 28, 2009.

Date	Landings	Number of Crab	Lbs of Crab Harvested	Cumulative Total (lbs)	No. of Pots Pulled	Average Weight (lbs)	CPUE
6/18	2	556	1,607	1,607	68	2.89	8
6/20	1	356	1,004	2,611	40	2.82	9
6/21	3	1,324	3,938	6,549	101	2.97	13
6/22	1	248	697	7,246	40	2.81	6
6/24	2	596	1,736	8,982	65	2.91	9
6/26	3	1,130	3,178	12,160	120	2.81	9
7/04	1	56	167	12,327	3	2.98	19
7/10	1	779	2,210	14,537	39	2.84	20
7/12	2	1,229	3,419	17,956	79	2.78	16
7/14	1	457	1,305	19,261	40	2.85	11
7/15	1	319	869	20,130	28	2.72	11
7/16	2	1,124	3,023	23,153	80	2.69	14
7/18	1	418	1,279	24,432	40	3.06	10
7/19	1	302	723	25,154	40	2.39	8
7/23	1	422	1,206	26,360	40	2.86	11
7/24	1	281	756	27,116	40	2.69	7
7/26	1	272	714	27,830	40	2.63	7
7/28	1	118	295	28,125	9	2.50	13
<b>Total</b>	<b>26</b>	<b>9,987</b>	<b>28,125</b>		<b>912</b>	<b>2.82</b>	<b>11</b>

*Note:* The CDQ fishery closed by regulation 7/28/2009, and the last delivery was made on 7/28/2009.

Table 5.—Red king crab CDQ and open-access summer commercial harvest based on fish ticket reports by statistical area for Norton Sound Section, Eastern Bering Sea, June 15–September 20, 2009.

Statistical Area	Number	Pounds	Pots Pulled	CPUE	Average Weight (Lbs.)	Percent of Pots Pulled in Stat. Area	Percent Harvest in Stat. Area
616331	338	888	37	9.1	2.6	0.3	0.2
616401	2,244	6,170	219	10.2	2.7	1.8	1.6
626331	1,121	3,047	102	11.0	2.7	0.9	0.8
626401	37,502	103,043	2,679	14.0	2.7	22.4	25.9
636330	1,799	5,026	78	23.1	2.8	0.7	1.3
636401	35,206	96,279	2,667	13.2	2.7	22.3	24.2
646330	318	933	24	13.3	2.9	0.2	0.2
646401	16,775	46,264	1,633	10.3	2.8	13.7	11.6
656330	3,825	10,617	331	11.6	2.8	2.8	2.7
656401	38,082	107,557	3,609	10.6	2.8	30.2	27.1
666330	540	1,514	80	6.8	2.8	0.7	0.4
666401	3,605	10,021	333	10.8	2.8	2.8	2.5
666402	2,130	6,228	142	15.0	2.9	1.2	1.6
Total	143,485	397,587	11,934	12.0	2.8	100.0	100.0

Table 6.—Number of male red king crab retained and non-retained during the Norton Sound red king crab summer commercial fishery, 2009.

Vessel	Dates of Observation	Number of Trips	Avg Soak Time	Retained Crabs (%)	Non-retained Crabs (%)
1	7/22 - 8/4	4	4 days	35	65
2	8/4	1	2 days	38	62
3	7/13 - 7/23	5	3 days	59	41
4	7/19	1	3 days	55	45
5	8/10 - 9/9	8	4 days	43	57
Total	7/13 - 9/9	19	3 days	46	54

*Note:* Vessel 4 was an observed boat, so "retained" crabs were all legal crabs (male crabs > 4.75" in carapace width). For all other vessels, "retained" crabs were > 5" in carapace width, because the buyer would only buy crabs  $\geq$  5" in carapace width.

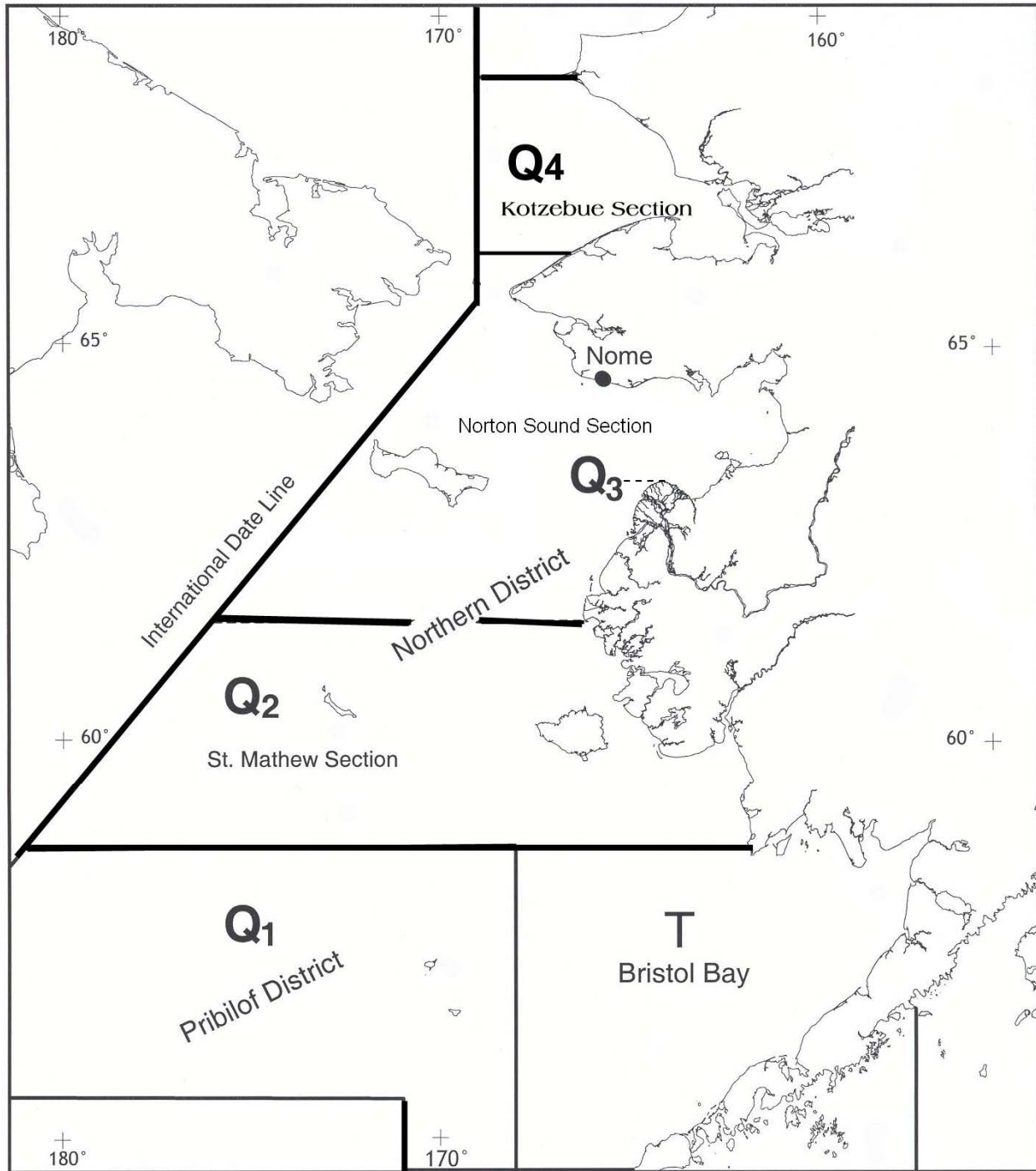


Figure 1.—King crab fishing districts and sections of Statistical Area Q.

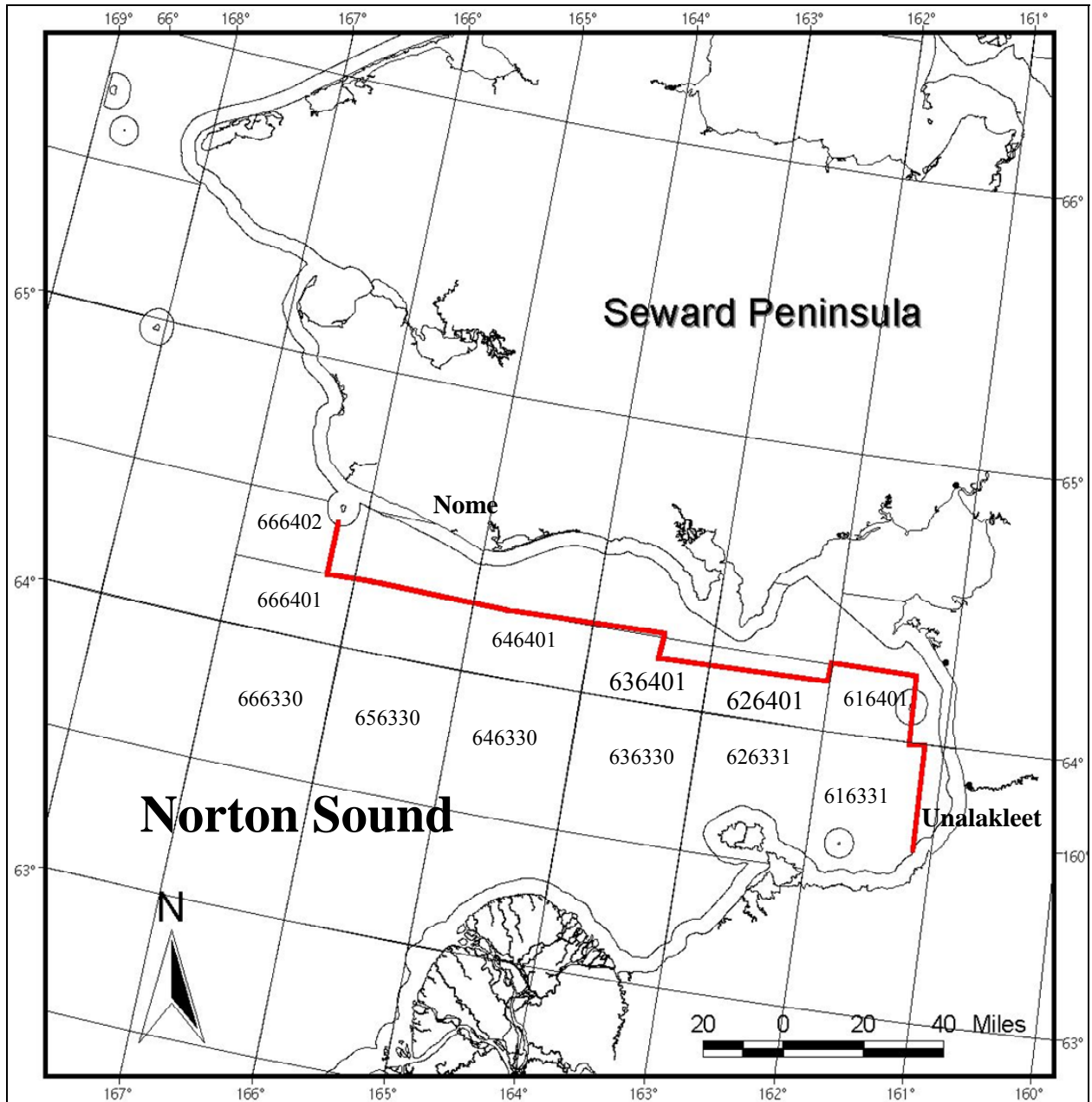
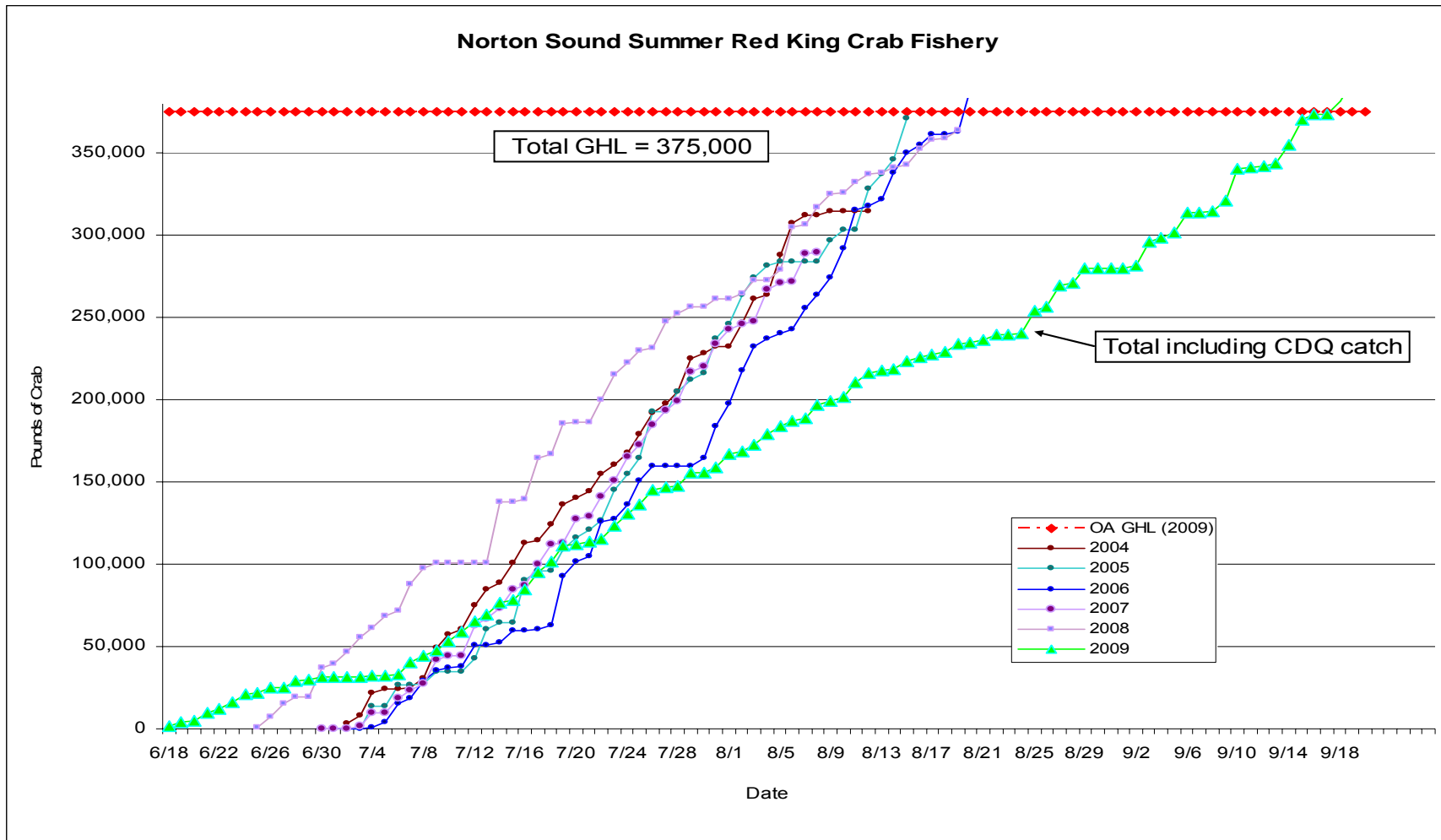


Figure 2.—Closed-waters area in effect for the Norton Sound summer commercial crab fishery and the 13 statistical areas where fishermen fished in 2009.



Note: CDQ catch is not included in years other than 2009 because the open-access and CDQ portions of the crab fishery did not occur concurrently in those years.

Figure 3.—Current and historical catch performance for the Norton Sound summer commercial crab fishery, 2004–2009.

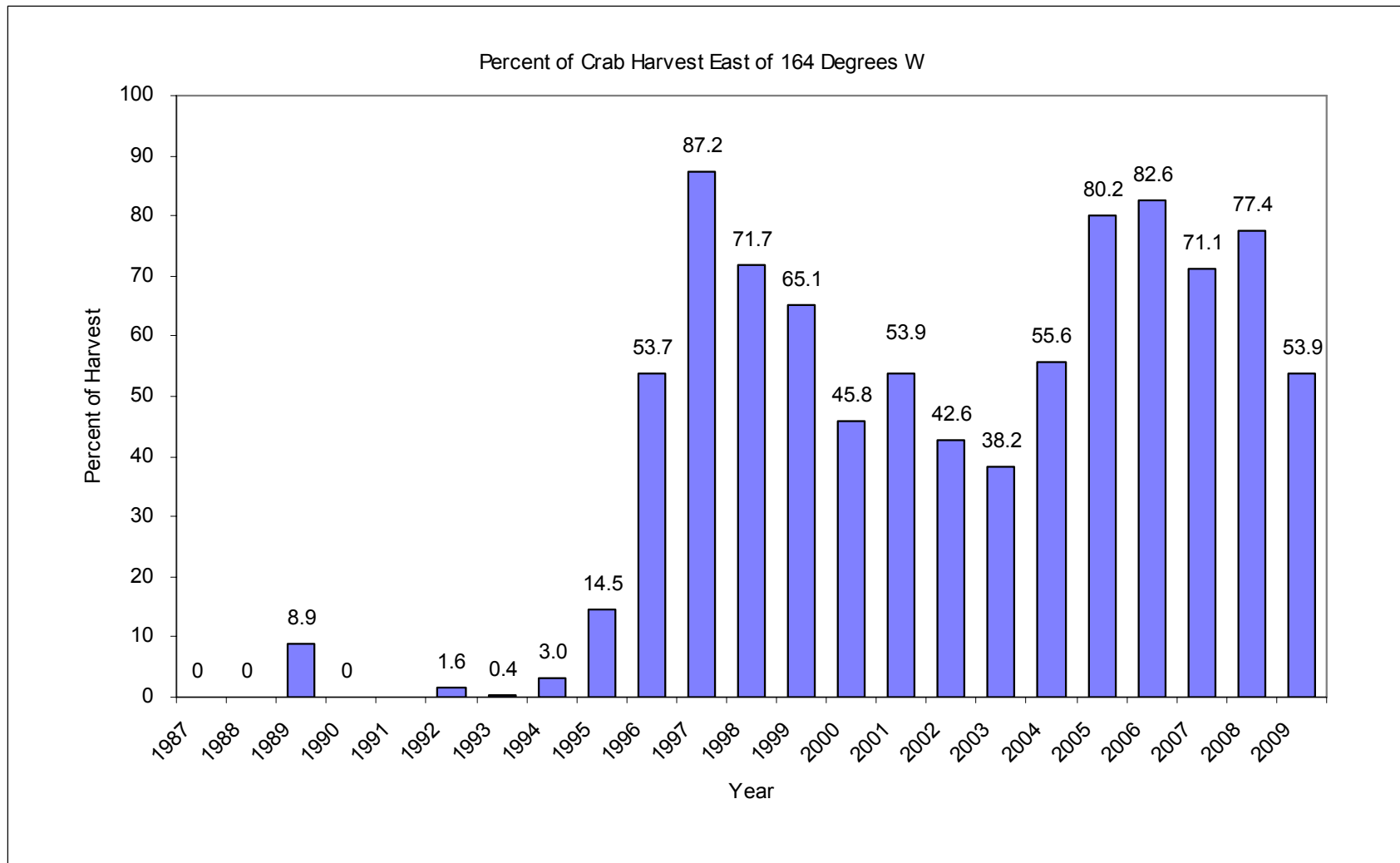


Figure 4.—The percent of crab harvested during the Norton Sound summer commercial red king crab fishery east of 164° W longitude, 1987–2009.



Appendix A1.—Historical commercial harvest by statistical areas of red king crabs from Norton Sound Section, Eastern Bering Sea, 1977–2009 (catch in pounds).

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Statistical Area	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
616331	7,893												
616401													
626331	40,020					22							
626401	31,572			4,830	399								
626402	38,995												
636330													
636401				12,398	61,823	32,246	5,880	41	891				22,030
636402													
646301													
646330					4,716								5,212
646401			155,972		1,319	17,532							
646402	80,969					748							
656300			161,699		15,174								
656330			323,518	72,735	395,662	3,983	24,246	83,479	7,632		79,006	36,129	1,757
656401			138,011	121,147	253,387	60,480	11,422	183,119	246,200		194,408	165,644	100,956
656402	306,302	90,187	288,869	918	3,098	2,832			132,363				
666230		55,490			77								
666300		162,795	60,816	84,874	9,167	95		4,534					
666330		353,016	505,050	367,446	141,513	8,990	1,192		389	70,615	2,963	13,020	1,275
666401		179,212	486,947	205,400	381,510	79,580	325,045	116,254	5,341	408,848	50,744	21,895	115,257
666402	12,036	515,778	534,938	183,581		17,585			32,992				
666431			146,029										
676300		13,238		126,231									
676330		51,304	81,798	6,762	18,734								
676400		667,130	33,856	274	92,026	1,315	247		32				
676430		3,811	12,309		373	3,513			1,171				
676501					36								
686330			1,860										
686431													
Totals	517,787	2,091,961	2,931,672	1,186,596	1,379,014	228,921	368,032	387,427	427,011	479,463	327,121	236,688	246,487

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Statistical Area	1990	1992	1993	1994	1995	1996 <sup>a</sup>	1997	1998	1999	2000	2001	2002	2003
616331				48					633	4,557		3,506	646
616401					35								
626331						61						2,455	
626401					18,971	45,045	18,066	8,065	508	4,689	61,620	53,722	15,899
626402													1,352
636330						4,560	3,838	2,449			2,253		
636401		1,159	1,373	8,087	24,329	70,677	59,206	10,771	14,201	126,994	91,343	50,906	83,949
636402				1,754	3,466								
646301					4,628	13,888							
646330					1,493	2,894	314		3,021		1,868	1,955	
646401			1,963	37,222	105,045	22,834	1,052	3,194	221		4,287		3,952
646402			730	143,511	66,821								
656300													14
656330		4,814	265		19,745	15,446	4,661	4,078	1,300		20,869	12,374	21,176
656401	171	53,119	105,341	29,566	32,289	9,985	4,035	1,127	2,739	94,813	55,158	63,038	40,566
656402			193,079	106,053	44,000								1,441
666230													
666300						25,519							
666330	27,185	4,305	31,758		730					5,839	7,030	1,332	1,296
666401	162,263	10,632	746	396		3,001	1,816		930	60,762	43,771	35,970	83,998
666402			535	1,221								30,070	12,873
666431					1,124							4,274	45
676300						546							
676330													
676400	3,212					9,775							
676430													
676501													
686330													
686431													
Totals	192,831	74,029	335,790	327,858	322,676	224,231	92,988	29,684	23,553	297,654	288,199	259,602	267,207

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Statistical Area	2004	2005	2006	2007	2008	2009	Totals
616331			2,357		5,658	888	25,298
616401				231	416	6,170	682
626331			1,415	27,018	3,235	3,047	74,226
626401	23,113	94,130	118,202	61,704	96,327	103,043	656,862
626402							40,347
636330		126	26,680	10,253	2,350	5,026	52,509
636401	166,489	227,204	224,531	123,092	197,948	96,279	1,617,568
636402							5,220
646301							18,516
646330	2,226	4,097	2,629	5,290	1,505	933	37,220
646401	1,964	149	1,660		18,728	46,264	377,094
646402							292,779
656300	932		284	1,909			180,012
656330	46,288	47,411	17,752	4,911		10,617	1,249,237
656401	21,579	9,405	28,434	70,065	68,968	107,557	2,165,172
656402		380	807	2,254			1,172,583
666230			1,721				57,288
666300			18,245				366,045
666330	12,359	142	5,041	511		1,514	1,562,997
666401	42,452	727	600	2,498		10,021	2,826,595
666402	23,344	16,025	1,050	2,959		6,228	1,384,987
666431							151,472
676300							140,015
676330							158,598
676400				180			808,047
676430							21,177
676501		1,008					1,044
686330							1,860
686431			340				340
<b>Totals</b>	<b>340,746</b>	<b>400,804</b>	<b>451,748</b>	<b>312,875</b>	<b>395,135</b>	<b>397,587</b>	<b>15,445,790</b>

Note: No commercial fishery occurred in 1991.

<sup>a</sup> Does not include approximately 2,490 lbs not reported on fish tickets.

## Appendix A2.—Standardized results from population assessment surveys for red king crabs in Norton Sound, 1976–2008.

Year	Dates	Research Agency Agency	Gear	Number of Red King Crabs Captured <sup>a, b</sup>				Population Abundance Estimates <sup>c</sup>			Standard Error		
				Pre-2 Males	Pre-1 Males	Legal Males <sup>d</sup>	Females	Pre-2 Males Males	Pre-1 Males	Legal Males	Pre-2 Males Males	Pre-1 Males Males	Legal Males Males
1976	9/02 - 9/05, 9/16 - 10/7	NMFS	Trawl	58(38)	110(213)	180(614)	101(35)	331,555	808,091	1,742,755	44,653	70,094	104,941
1979 <sup>e</sup>	7/26 - 8/05	NMFS	Trawl			90(86)	N/A			809,799			61,176
1980 <sup>f</sup>	7/04 - 7/14	ADF&G	Pots			3,290	158			1,900,000			
1981	6/28 - 7/14	ADF&G	Pots			3,415	1,933			1,285,195			
1982	7/06 - 7/20	ADF&G	Pots			2,001	424			353,273			
1982	9/05 - 9/11	NMFS	Trawl	42	107	97	256	356,724	832,581	877,722	50,116	76,454	79,907
1985	7/01 - 7/14	ADF&G	Pots			4,645	181			907,579			
1985	9/16 - 10/01	NMFS	Trawl	63	94	139	139	466,858	707,140	1,051,857	58,598	71,999	87,931
1988	8/16 - 8/30	NMFS	Trawl	82(0)	69(1)	135(3)	212(2)	565,255	493,030	978,748	62,339	58,224	82,083
1991	8/22 - 8/30	NMFS	Trawl	39	42	166	105	294,801	303,682	1,287,486	46,648	46,960	98,101
1996	8/07 - 8/18	ADF&G	Trawl	39(36)	32(17)	53(14)	98(70)	452,580	325,699	536,235	52,324	47,338	69,647
1999	7/28 - 8/07	ADF&G	Trawl	9(3)	64(38)	103(63)	64(18)	103,832	940,198	1,594,341	40,841	120,449	129,864
2002	7/27 - 8/06	ADF&G	Trawl	34(18)	42(23)	61(29)	116(35)	427,703	518,638	771,569	73,494	80,741	85,303
2006	7/25 - 8/08	ADF&G	Trawl	77(3)	37(16)	51(18)	66(1)	775,076	569,833	726,251	91,812	82,883	92,590
2008	7/24 - 8/11	ADF&G	Trawl	51(18)	46(19)	53(15)	90(2)	795,777	697,442	811,727	100,778	91,542	103,155

Note: Blank cells are because the numbers were not calculated.

<sup>a</sup> Number of crabs captured on ADF&G pot surveys represent data standardized for a 24-hour soak.

<sup>b</sup> The 1976, 1979, 1988, and all ADF&G trawl catches include resampled stations (in parentheses). The 1979, 1996, 2006, and 2008 population estimates incorporated resampled stations by combining catches and tow distances for each station resampled.

<sup>c</sup> Population estimates are valid for the date of the survey (i.e., either before or after the summer commercial fishery).

<sup>d</sup> Legal male red king crabs were defined as  $\geq 121$ -mm (4.75-in) in carapace width (CW) for the pot surveys and all ADF&G trawl surveys, and  $\geq 104$ -mm CL for all of the NMFS trawl surveys except the 1979 survey which defined legal males as  $\geq 100$ -mm CL.

<sup>e</sup> Pre-1 and pre-2 male, and female data is not available for the 1979 NMFS trawl survey and the legal male abundance estimate is fully standardized.

<sup>f</sup> The 1980 pot survey estimate has been revised from the original estimate of 13.4 million pounds which was thought inaccurate due to an under-reporting of recovered tagged crabs.