# ALASKA DEPARTMENT OF FISH AND GAME DIVISION OF COMMERCIAL FISHERIES

# **NEWS RELEASE**



Sam Cotton, Commissioner Jeff Regnart, Director



Contact:

Jim Menard, Area Management Biologist Joyce Soong, Fishery Biologist

Phone: (907) 443-5167 Fax: (907) 443-5893 PO Box 1148 Nome, Alaska 99762 Date Issued: 9/25/2015

#### 2015 Norton Sound Summer & Winter Crab Fisheries Season Summary

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).

## **SUMMER FISHERY**

The department estimated harvestable legal male crab biomass for the 2015 summer commercial crab fishery was 4.38 million pounds (1.51 million crab), based on the model's results from spring of 2015 that included the latest data from the 2014 summer fishery and the 2014 trawl survey, which had associated high uncertainty (Appendix 1) leading to correspondingly high biomass estimate uncertainty. By Board of Fisheries (BOF) regulation, a harvest rate of up to 15% is allowed when the legal male biomass exceeds 3.0 million pounds. Additionally, the North Pacific Fishery Management Council had set an allowable biological catch (ABC) of 577,000 pounds for 2015, which included the winter harvest of 98,750 pounds as well as estimated winter and summer subsistence harvests. Considering the high level of biomass estimate uncertainty, sizeable winter commercial harvest, and size of the ABC, the department applied a precautionary summer commercial harvest rate of 9% to the legal male population (over 4.75 inch carapace width). A 9% harvest rate equated to a summer guideline harvest level (GHL) of 394,600 pounds of crab. The CDQ allocation (7.5%) was 29,595 pounds and the open access fishery allocation was 365,005 pounds.

#### HARVEST SUMMARY

#### **Open Access Fishery**

The 2015 summer open access commercial crab fishery was opened by emergency order at 12:00 noon, June 29 in the Norton Sound Section, with a GHL of 394,600 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-seller or catcher-processor (but only three made any sales). NSSP operated a seafood processing plant in Nome and two tenders in eastern Norton Sound. Crab were sold to NSSP, to Aquatech in Anchorage, to a live market in Korea, and to local residents.

The first open access delivery was made on July 1 and final delivery was made July 25, the day after the fishery was closed by emergency order at 12:00 noon, for a season length of 26 days, compared to 40 days in 2014. This year as in past years, the season start was based on when the crab processors were ready to purchase crab. Once the open access season was under way, both land-based buyers purchased crab continuously with no reports of poor crab meat fill.

For the 2015 season, the harvest rate was excellent from the start and, with no major storms, continued to be superb throughout the 4 week period of the season (Figure 2), making it the shortest season since the Norton Sound registration area became super-exclusive in 1994, which effectively made it a small boat fishery. The daily CPUE never dropped below 13 crab per pot and went as high as 27 crab per pot (Table 1). By the third week of July, the projected trend line showed that the open access quota would be reached in less than a week; therefore, since the weather forecast remained positive and no drop in harvest rate was expected, a closure was announced for July 24, which gave the fishermen 72 hours' notice. Because of sudden weather change and consequent safety concerns, the usual requirement to have all pot doors open and bait containers removed by the closure date and time was waived. Fishermen could get to their pots once they felt safe to do so, but all crab retrieved after the closure date and time had to be returned to the water.

The open access harvest from fish ticket reports was 133,531 red king crab or 371,520 pounds (102% of the open-access quota; Table 1). Of this total, 4,892 pounds were reported as deadloss, and 2,107 pounds reported as personal use. Out of the 37 vessels and 40 permit holders that registered to fish, 36 vessels and 36 permit holders made 231 landings (Table 2). The average weight for commercially caught crab was 2.8 pounds, slightly lighter than last year. Including CDQ, number of pots registered was 1,480, and there were 8,356 pot pulls. CPUE was 17 crab per pot, compared to 13 crab in 2014. In 2015, the total harvest rate tracked similarly to 2011 once the fishery got under way (Figure 2). The average price paid (including CDQ catch) was \$5.40 per pound, the third highest amount ever paid (Table 3). The exvessel value of the fishery (including CDQ) was \$2.130 million, the third highest fishery value ever (Figure 3).

#### **CDQ Fishery**

The Norton Sound Economic Development Corporation (NSEDC) and Yukon Delta Fisheries Development Association (YDFDA) 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 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 2015, as in the previous eight years, YDFDA transferred their quota to NSEDC. Similar to the past ten years except for 2013, NSEDC fishermen harvested all, or nearly all, of the entire allocation.

As in the previous four years, the CDQ fishery opened concurrently with the open access fishery in 2015. The initial CDQ delivery was made on July 2 and the last delivery was made July 17. Total harvest was 29,595 pounds, which was 100% of the CDQ allocation (Table 4). Six permit-holders registered to fish the CDQ fishery and, unlike last year, by the time the open access fishery closure was announced on July 21, the entire CDQ allocation had been harvested.

In 2015, there were a total of 20 CDQ landings and 717 pots lifts. Average price paid to fishermen was \$5.40 per pound, for an exvessel value of \$159,170 for the CDQ fishery. This was the fourteenth year a CDQ harvest occurred since the CDQ fishery was implemented in 1998.

## Harvest Areas and Sampling

Fish ticket reports document 11 statistical areas were fished in the open access and CDQ fisheries (Table 5), 10 of which were the same as in 2014. Unlike last year, the top harvest (34%) and most effort (30%) came from statistical areas 636401 and 626401, respectively, both of which are south of Golovin Bay in eastern Norton Sound, followed by statistical areas 656401 and 646401, south of Nome, which yielded 17% and 15%, respectively, of the total harvest. These four statistical areas are all directly south of the closed boundary line (Figure 4). Unlike past years, harvest was concentrated in these four main areas; the remaining seven statistical areas all had 2% or less of the total harvest (Appendix 2). The catch from statistical areas east of 164°W longitude made up 62% of the harvest (Figure 5).

Carapace length (CL) measurements and shell age were collected from 4,173 commercially-caught crab during the open access and CDQ fisheries. Since the summer of 2002, NSEDC has operated a seafood processing plant in Nome. In 2015, 100% of sampling data was collected from this plant as crabbers offloaded their catch. Carapace age was classified as new (2–12 months old) or old (over 13 months old). Male new-shell crab made up 90% of the total legal crab sampled, and old-shell crab made up 10%, less than half as much as last year. Recruit crab are new-shell legal crab < 116-mm CL. Postrecruit crab are legal new-shell male crab  $\geq$  116-mm CL and all legal old-shell males. Recruit crab made up 58% of the legal crab sampled and postrecruit crab made up 42%, the smallest percentage in the last 30 years (Table 2). Overall mean carapace length of legal male crab was 115-mm.

#### WINTER FISHERY - BACKGROUND

A winter commercial through-the-ice fishery has existed in Norton Sound since 1978. Until recent years, all harvest occurred within 10 miles of Nome, with an area closed to commercial fishing that is roughly 1 mile west to 3 miles east of town and extending 3 miles offshore (Figure 6). The harvest is generally divided between local residents who buy crab directly from the fishermen, the seafood plant (NSSP) in Nome, and other non-local markets such as Anchorage.

By regulation, season dates were initially from January 1 to April 30, but in its March 1985 meeting, the BOF set the new season dates from November 15 to May 15 (Table 6). In March of 2015, a proposal adopted by the BOF set new season dates with the start date to be established by emergency order on or after January 15 and the regulatory closure to occur on April 30, unless extended by emergency order. This action was initiated in an effort to reduce pot loss and potential ghost fishing by lost pots as the shore fast ice is relatively more stable and solid from mid-January to April.

Both this proposal and a second one seeking to set a winter commercial guideline harvest level were adopted unanimously by the BOF in response to the dramatic increases in winter fishing effort that occurred in recent years due to much higher exvessel prices. During the years 1978–2011, an average of 9 permit holders fished commercially in winter. Since 2012, winter fishery participation tripled, to an average of 27 permit holders. From 1978–2011, the average harvest was roughly 7,000 pounds, but from 2012–2014, the average harvest increased more than 5-fold, to over 40,000 pounds. Average exvessel price for winter red king crab from 2012–2014 was \$6.71/lb, more than twice the average price of \$3.25/lb during the previous 5-year period (Table 6). Part of the reason for the increase in prices was due to expansion of live king crab markets overseas, particularly in

South Korea; since 2012, crab have been sold live to Korea by two catcher-processors based in Nome.

Prior to 2010, all of the crabbers were based out of Nome. Starting with the 2009–2010 winter season, crabbers in other Norton Sound villages started participating in the winter commercial crab fishery. In 2012, both Shaktoolik and Unalakleet crabbers sold roughly a third each of the total harvest, while Nome crabbers only accounted for a quarter of the harvest sold. Since then, ice conditions in eastern Norton Sound have not been conducive to winter crab fishing; consequently, Nome crabbers harvested over 90% of the total commercial winter harvest the last two years. All crab harvested by crabbers based outside of Nome is shipped live and sold to NSSP in Nome.

For 2015, no winter commercial harvest limit was set, but beginning in 2016, harvest allocation for the winter commercial fishery will be 8% of the total commercial GHL.

#### HARVEST SUMMARY

The winter commercial season opened November 15, 2014, and 49 fishermen registered. Two landbased processors (NSSP in Nome and Aquatech in Anchorage) and one catcher-processor registered to buy crab, and eight fishermen applied for a catcher-seller permit to sell crab dockside (but only three made sales). Based on fish tickets submitted, the first landing was made January 18 and last landing was made on April 30. Although the regulatory closure date of April 30 was not scheduled to go into effect until 2016, the department issued an emergency order in 2015 closing the season on April 30, due to the high rate of reported pot loss and expected early spring break-up. With the record number of 44 fishermen that fished, the harvest rate for the 2015 season started off slower than the previous record season of 2013, but picked up in mid-February once the ice stabilized, and ended the season with the catch far surpassing that of 2013 (Figure 7). A total of 664 landings was made, with an overall CPUE of 6 crab/pot, and average weight of 2.41 lbs/crab (Table 7). Price of crab averaged \$6.57/lb, lower than the record high of \$6.94/lb in 2014, but total exvessel value of the fishery was \$617,434, which was 64% higher than 2014 (Table 6). A record total of 98,750 lbs (41,046 crab) were harvested, with percentages of crab sold (and CPUE) each month as follows: January <1% (4), February 16% (5), March 47% (6), and April 36% (6). Total amount of crab harvested was almost three times more than 2014 and over five times the average harvest from 2005 to 2014. As an indicator of near-shore ice instability, commercial fishermen reported losing 104 out of 606 pots (17%) during the 2014-2015 winter season. Nome crabbers reported fishing from 20 miles west to 40 miles east of Nome, excluding the area closed to commercial fishing. Similar to last year, the majority of fishermen (28) and harvest (92%) came from the Nome area, with the remaining fishermen and harvest coming from Elim, Golovin, Shaktoolik, St. Michael/Stebbins, and Unalakleet areas. Similar to the last two years, the ice was unstable in most of eastern Norton Sound and none of the harvest from these villages exceeded 4% of the total harvest in 2015.

In 2015, NSSP and Aquatech combined purchased roughly half of the total harvest; the lone catcher-processor also purchased roughly half of the total harvest; while the 3 catcher-sellers together accounted for less than 1% of the total harvest sold.

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 29–July 24, 2015.

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		Number	Lbs of crab	Cumulative	Number of	Average	Daily
Date	Landings	of crab	harvested	lbs	pots pulled	weight (lbs)	CPUE
07/01	1	380	1,073	1,073	27	2.8	14
07/02	5	1,373	3,677	4,750	82	2.7	17
07/03	9	4,029	11,294	16,044	276	2.8	15
07/04	14	7,529	20,777	36,821	351	2.8	21
07/05	4	1,855	4,796	41,617	80	2.6	23
07/06	10	5,259	14,392	56,009	349	2.7	15
07/07	8	3,980	10,986	66,995	267	2.8	15
07/08	13	10,659	29,137	96,132	504	2.7	21
07/09	9	5,444	15,106	111,238	340	2.8	16
07/10	5	2,292	6,321	117,559	178	2.8	13
07/11	18	11,824	32,836	150,395	677	2.8	17
07/12	9	4,891	13,415	163,810	315	2.7	16
07/13	5	2,734	7,778	171,588	189	2.8	14
07/14	5	3,951	11,088	182,676	197	2.8	20
07/15	16	10,131	28,288	210,964	568	2.8	18
07/16	9	6,110	16,926	227,890	308	2.8	20
07/17	7	4,398	12,378	240,268	240	2.8	18
07/18	3	2,162	6,055	246,323	80	2.8	27
07/19	3	3,089	8,698	255,021	119	2.8	26
07/20	22	13,315	37,183	292,204	775	2.8	17
07/21	12	8,223	23,618	315,822	440	2.9	19
07/22	26	11,062	31,117	346,939	794	2.8	14
07/23	6	1,996	5,318	352,257	142	2.7	14
07/24	7	3,088	8,680	360,937	194	2.8	16
07/25	5	3,757	10,583	371,520	147	2.8	26
Total	231	133,531	371,520		7,639	2.8	17

*Note*: The fishery closed by emergency order on 7/24/15 at 12:00 noon and the last delivery was made on 7/25/15.

Table 2.-Historical summer commercial red king crab annual harvest, Norton Sound Section, Eastern Bering Sea, 1977–2015.

	Number	Number	Number	Number	Harvest (	lbs) <sup>a</sup>	Numbe	er		Percent		Average	Avg legal
	vessels	permits	landings	crab	open		pots			old	Percent	weight	mean
Year	(op	en access or	nly)		access	CDQ <sup>b</sup>	registered	pulls	CPUE	shell	postrecruits	(lbs)	length (mm)
1977	7	7	13	195,877	517,787		c	5,457	36	c	c	2.7	113
1978	8	8	54	660,829	2,091,961		c	10,817	64	c	c	3.0	119
1979	34	34	76	970,962	2,931,672		c	34,773	28	c	c	3.0	120
1980	9	9	50	329,778	1,186,596		c	11,199	29	c	c	3.6	126
1981	36	36	108	376,313	1,379,014		c	33,745	11	c	c	3.7	129
1982	11	11	33	63,949	228,921		c	11,230	6	c	c	3.6	125
1983	23	23	26	132,205	368,032		3,583	11,195	12	c	45	2.8	115
1984	8	8	21	139,759	387,427		1,245	9,706	14	c	41	2.8	113
1985	6	6	72	146,669	427,011		1,116	13,209	11	c	55	2.9	116
1986	3	3	c	162,438	479,463		578	4,284	38	c	52	2.9	116
1987	9	9	c	103,338	327,121		1,430	10,258	10	13	78	3.2	122
1988	2	2	c	76,148	236,688		360	2,350	32	26	75	3.1	119
1989	10	10	c	79,116	246,487		2,555	5,149	15	29	77	3.1	120
1990	4	4	c	59,132	192,831		1,388	3,172	19	17	79	3.1	121
1991 <sup>d</sup>						No si	ummer comme	rcial fisher	y				
1992	27	27	c	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

Table 2.–Page 2 of 2.

	Number	Number	Number	Number	Harvest (lb	s) a	Number			Percent		Average	Avg legal
	vessels	permits	landings	crab	open		pots			old	Percent	weight	mean
Year	(opei	n access only	y)		access	CDQ b	registered	pulls	CPUE	shell	postrecruits	(lbs)	length (mm)
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
2010	23	25	256	139,014	387,304	30,000	1,040	9,698	16	14	51	2.8	116
2011	24	25	173	132,030	373,990	26,850	1,040	6,808	21	14	57	2.8	116
2012	29	29	289	149,604	441,080	34,910	1,200	10,041	16	9	67	2.9	118
2013	33	33	435	124,485	373,278	18,585	1,420	15,058	9	8	68	3.0	120
2014	33	35	281	120,385	360,860	28,148	1,560	10,127	13	22	65	3.0	120
2015	36	36	231	133,531	371,520	29,595	1,480	8,356	17	22	42	2.8	115

Deadloss included in total.
No CDQ fishery harvest prior to the 2000 season.

<sup>&</sup>lt;sup>c</sup> Data not available.

d No summer commercial fishery.

Table 3.—Historical summer commercial red king crab fishery economic performance, Norton Sound Section, Eastern Bering Sea, 1977–2015.

	Guideline		Commerc			Fishery		Season 1	ength
	harvest	Legal male	harvest (lbs	a,b	Exvessel	value			dates
Year	level (lbs) b	pop est (lbs) b	open access	CDQ	price/lb	(millions \$)	days	open access	CDQ
1977	С	16.4	0.52	d	0.75	0.229	60	с	d
1978	3.00	15.5	2.09	d	0.95	1.897	60	6/07-8/15	d
1979	3.00	11.5	2.93	d	0.75	1.878	16	7/15-7/31	d
1980	1.00	6.6	1.19	d	0.75	0.890	16	7/15-7/31	d
1981	2.50	4.4	1.38	d	0.85	1.172	38	7/15-8/22	d
1982	0.50	3.3	0.23	d	2.00	0.405	23	8/09-9/01	d
1983	0.30	4.0	0.37	d	1.50	0.537	4	8/01-8/05	d
1984	0.40	4.4	0.39	d	1.02	0.395	14	8/01-8/15	d
1985	0.45	5.0	0.43	d	1.00	0.427	22	8/01-8/23	d
1986	0.42	5.5	0.48	d	1.25	0.600	13	8/01-8/25 <sup>e</sup>	d
1987	0.40	5.6	0.33	d	1.50	0.491	11	8/01-8/12	d
1988	0.20	5.6	0.24	d	c	c	10	8/01-8/11	d
1989	0.20	5.6	0.25	d	3.00	0.739	3	8/01-8/04	d
1990	0.20	5.2	0.19	d	c	c	4	8/01-8/05	d
1991	0.34	5.0			]	No Summer Commer	cial Fisher	7	
1992	0.34	4.6	0.07	d	1.75	0.130	2	8/01-8/03	d
1993	0.34	4.1	0.33	d	1.28	0.430	52	$7/01-8/28^{\ f}$	d
1994	0.34	3.4	0.32	d	2.02	0.646	31	7/01-7/31	d
1995	0.34	2.7	0.32	d	2.87	0.926	67	7/01-9/05	d
1996	0.34	2.3	0.22	d	2.29	0.519	57	7/01-9/03 <sup>g</sup>	d
1997	0.08	2.3	0.09	d	1.98	0.184	44	$7/01-8/13^{h}$	d
1998	0.08	2.7	0.03	d	1.47	0.041	65	7/01–9/03 <sup>i</sup>	d
1999	0.08	3.4	0.02	d	3.08	0.073	66	7/01–9/04 <sup>j</sup>	d
2000	0.33	4.0	0.29	0.01	2.29	0.715	91	7/01-8/29	9/01-9/29
2001	0.30	3.7	0.28	0.00	2.34	0.674	97	7/01–9/01	9/01–9/09
2002	0.24	3.5	0.24	0.01	2.81	0.729	77	7/01–8/06	6/15–28; 8/9–9/3
2003	0.25	3.6	0.25	0.01	3.09	0.823	68	7/01–8/13	6/15–28; 8/15–24
2004	0.35	4.0	0.34	0.03	3.13	1.038	53	7/01–8/08	6/15-6/28
2005	0.37	4.2	0.37	0.03	3.18	1.264	72	7/01–8/15	6/15–28; 8/17–27
2006	0.45	4.0	0.42	0.03	2.26	1.021	67	7/01–8/22	6/15–6/28

9

<sup>&</sup>lt;sup>a</sup> Deadloss included in total.

<sup>&</sup>lt;sup>b</sup> Millions of pounds.

<sup>&</sup>lt;sup>c</sup> Information not available.

<sup>&</sup>lt;sup>d</sup> No CDQ was allocated until 1998, and no harvest occurred until 2000.

<sup>&</sup>lt;sup>e</sup> Fishing actually began 8/12.

<sup>&</sup>lt;sup>f</sup> Fishing actually began 7/8.

<sup>&</sup>lt;sup>g</sup> Fishing began 7/9 due to fishermen's strike.

<sup>&</sup>lt;sup>h</sup> First delivery was made 7/10.

<sup>&</sup>lt;sup>i</sup> First delivery was made 7/16.

<sup>&</sup>lt;sup>j</sup> The season was extended 24 hours due to bad weather.

<sup>&</sup>lt;sup>k</sup> NSSP stopped buying crab from 6/29 to 7/6 due to poor meatfill.

<sup>&</sup>lt;sup>1</sup> Final delivery was made 7/17.

Table 4.—Daily catch based on fish ticket data for the CDQ summer commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, June 29–July 24, 2015.

		Number	Crab harvested	Cumulative total	Number pots	Average weight	
Date	Landings	crab	(lbs)	(lbs)	pulled	(lbs)	CPUE
07/02	2	880	2,330	2,330	50	2.6	18
07/04	1	721	1,929	4,259	40	2.7	18
07/06	1	718	2,042	6,301	40	2.8	18
07/07	2	603	1,817	8,118	80	3.0	8
07/09	1	1,017	2,796	10,914	38	2.7	27
07/10	3	1,133	3,231	14,145	120	2.9	9
07/11	1	850	2,363	16,508	40	2.8	21
07/12	1	432	1,149	17,657	39	2.7	11
07/13	2	1,249	3,519	21,176	80	2.8	16
07/15	2	1,607	4,271	25,447	76	2.7	21
07/16	1	415	1,178	26,625	40	2.8	10
07/17	3	1,069	2,970	29,595	74	2.8	14
Total	20	10,694	29,595	29,595	717	2.8	15

*Note:* The CDQ fishery closed on 7/24/15, and the last delivery was made on 7/17/15.

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 29–July 24, 2015.

`		Crab	Number		Average	Percent of pots	Percent of
Statistical	Number	harvested	pots		weight	pulled in	harvest in
area	crab	(lbs.)	pulled	CPUE	(lbs.)	stat area <sup>a</sup>	stat area <sup>a</sup>
616331	1,180	3,410	133	9	2.89	1.6	0.9
616401	660	1,929	40	17	2.92	0.5	0.5
626401	37,264	103,881	2,522	15	2.79	30.2	25.9
636330	900	2,680	40	23	2.98	0.5	0.7
636401	49,319	137,285	1,952	25	2.78	23.4	34.2
646330	669	1,812	30	22	2.71	0.4	0.5
646401	21,233	58,929	1,137	19	2.78	13.6	14.7
656330	1,698	4,828	97	18	2.84	1.2	1.2
656401	25,370	69,355	1,827	14	2.73	21.9	17.3
666401	3,242	9,308	338	10	2.87	4.0	2.3
666402	2,690	7,699	240	11	2.86	2.9	1.9
Total	144,225	401,115	8,356	17	2.78	100.0	100.0

<sup>&</sup>lt;sup>a</sup> Percentage rounded to nearest tenth except total.

Table 6.—Historical winter commercial red king crab fishery catch statistics and economic performance, Norton Sound Section, Eastern Bering Sea, 1978–2015.

	Commercial	Permits		Pot		Average	Exvessel	Fishery	Season
Year	harvest (lbs) <sup>a</sup>	fished	Landings	pulls	CPUE	weight (lb)	price/lb	value (\$)	dates <sup>b</sup>
1978	25,025	37	С	С	С	С	0.90	28,800	1/01-4/30
1979	575	1	c	c	c	c	С	c	1/01-4/30
1980	57	1	c	c	c	c	С	c	1/01-4/30
1981	0	0	c	c	c	c	c	c	1/01-4/30
1982	44	1	c	c	c	c	С	c	1/01-4/30
1983	1,427	5	c	c	c	c	c	c	1/01-4/30
1984	2,226	8	c	c	c	c	С	c	1/01-4/30
1985 <sup>c</sup>	3,042	10	106	103	11	2.6	5.56 <sup>d</sup>	6,494 <sup>d</sup>	1/01-5/15
1986 <sup>c</sup>	5,015	6	64	c	c	2.3	5.40 <sup>d</sup>	11,707 <sup>d</sup>	11/15-5/15
1987	2,590	7	51	55	19	2.5	2.60	6,734	11/15-5/15
1988	980	10	56	148	3	2.3	2.33	2,283	11/15-5/15
1989 <sup>c</sup>	1,045	5	59	c	c	c	5.40 <sup>d</sup>	2,210 <sup>d</sup>	11/15-5/15
1990 <sup>c</sup>	9,792	12	199	257	14	2.8	5.33 <sup>d</sup>	19,327 <sup>d</sup>	11/15-5/15
1991 <sup>c</sup>	10,064	11	187	609	6	2.7	5.00 <sup>d</sup>	19,000 <sup>d</sup>	11/15-5/15
1992	21,177	13	287	1,823	4	2.8	3.60	76,283	11/15-5/15
1993 <sup>c</sup>	4,926	8	66	c	c	2.8	2.84 <sup>c</sup>	14,000 <sup>d</sup>	11/15-5/15
1994	17,214	25	183	1,018	6	3.0	3.01	51,709	11/15-5/15
1995	21,813	42	345	3,302	2	2.9	3.09	66,190	11/15-5/15
1996	5,064	9	68	292	7	2.5	3.16	14,838	11/15-5/15
1997	e	2	e	e	e	e	2.81	e	11/15-5/15
1998	2,349	5	31	749	1	2.4	3.57	8,168	11/15-5/15
1999	7,041	5	61	425	6	2.6	3.69	24,777	11/15-5/15
2000	7,894	10	90	1,230	2	2.6	3.72	29,300	11/15-5/15
2001	2,943	3	21	534	2	2.7	3.60	10,582	11/15-5/15
2002	6,860	11	68	1,247	2	2.7	3.53	22,682	11/15-5/15
2003	16,827	13	128	1,960	3	2.5	3.52	57,577	11/15-5/15
$2004^{\mathrm{f}}$	1,293	2	16	397	1	2.5	3.95	5,110	11/15-5/15
2005	5,619	4	51	1,076	2	2.7	4.52	25,054	11/15-5/15
2006	e	1	e	e	e	e	3.98	e	11/15-5/15
2007	8,023	8	106	926	4	2.4	3.06	24,464	11/15-5/15

Table 6.—Page 2 of 2.

	Commercial	Permits		Pot		Average	Exvessel	Fishery	Season
Year	harvest (lbs) <sup>a</sup>	fished	Landings	pulls	CPUE	weight (lb)	price/lb	value (\$)	dates <sup>b</sup>
2008	14,676	9	129	1,008	6	2.5	3.03	43,664	11/15-5/15
2009	12,348	7	130	1,282	4	2.5	3.01	32,649	11/15-5/15
2010	12,028	10	184	1,848	3	2.5	3.54	41,265	11/15-5/15
2011	8,669	5	129	1,747	2	2.6	3.59	30,776	11/15-5/15
2012	24,142	35	319	1,668	5	2.6	6.47	150,569	11/15-5/15
2013	62,179	26	495	6,093	4	2.8	6.73	402,256	11/15-5/15
2014	34,587	21	323	4,037	4	2.3	6.94	234,291	11/15-5/15
2015	98,750	44	664	7,314	6	2.4	6.57	617,434	11/15–4/30

<sup>&</sup>lt;sup>a</sup> Deadloss included in total.

<sup>&</sup>lt;sup>b</sup> From 1986 to 2014, season dates were from November 15 of the previous year to May 15 of the current year. In 2015, season dates were from November 15 of 2014 to April 30.

<sup>&</sup>lt;sup>c</sup> Prior to the 1985 season, no crab fish ticket data were entered into the fish ticket database. Some data for years 1985-86, 1989-91, and 1993 were missing from the fish ticket database, and some information was found in the text of the annual management report for the respective year.

<sup>&</sup>lt;sup>d</sup> Value given is price per crab. Fishery value was derived by multiplying price per crab by number of crab harvested.

<sup>&</sup>lt;sup>e</sup> Information is confidential because less than 3 permit holders delivered.

<sup>&</sup>lt;sup>f</sup> Confidentiality was waived by the fishermen.

Table 7–Daily catch based on fish ticket data for the winter commercial king crab harvest, Norton Sound, November 15–April 30, 2015.

Date	Landings	Number of crab	Lbs of crab harvested	Number of pots pulled	Average weight (lbs)	Daily CPUE
01/18	1	a	a	a a	2.66	2
01/10	1	a	a	a	2.67	
01/24	1	a	a	a	2.63	2 5 5 5
01/25	1	a	a	a	2.50	5
01/23	1	a	a	a	2.64	5
01/27	1	a	a	a	2.46	4
02/01	2	a	a	a	2.56	2
02/01	1	a	a	a	2.42	2 7
		a	a	a		3
02/03	2	a	a	a	2.50	
02/04	1				2.26	10
02/05	4	164	406	26	2.48	6
02/06	2	a	a	a	2.57	8
02/07	2				2.21	8
02/08	3	172	423	31	2.46	6
02/09	3	161	370	45	2.30	4
02/10	5	272	645	72	2.37	4
02/11	2	a	a	a	2.35	7
02/12	5	243	575	65	2.37	4
02/13	4	130	317	35	2.44	4
02/14	7	413	1,059	113	2.56	4
02/15	2	a	a	a	2.36	5
02/16	9	484	1,143	103	2.36	5
02/17	5	261	616	97	2.36	3
02/18	6	429	1,017	83	2.37	3 5
02/19	4	240	563	50	2.35	5
02/20	7	508	1,150	92	2.26	6
02/21	6	230	546	63	2.38	4
02/22	6	309	718	66	2.32	5
02/23	5	387	931	65	2.41	6
02/24	9	392	955	130	2.44	3
02/25	4	197	468	24	2.38	8
02/26	6	387	924	86	2.39	5
02/27	7	584	1,376	79	2.36	7
02/28	5	217	517	41	2.38	5
03/01	12	803	1,913	133	2.38	6
03/01	4	92	226	27	2.46	3
03/02	7	468	1,140	88	2.44	5
03/03	9	356	851	88	2.39	4
						5
03/05	10	770	1,950	166	2.53	
03/06	4	289 a	695 a	50 <sub>a</sub>	2.40	6
03/07	2	425	1.020		2.39	4
03/08	8	435	1,039	65	2.39	7
03/09	9	498	1,176	72	2.36	7
03/10	8	475	1,157	105	2.44	5
03/11	7	409	1,058	74	2.59	6
03/12	8	476	1,143	117	2.40	4
03/13	5	272	670	43	2.46	6
03/14	9	476	1,108	96	2.33	5

Table 7.—Page 2 of 2.

		Number	Lbs of crab	Number of	Average	Daily
Date	Landings	of crab	harvested	pots pulled	weight (lbs)	CPUE
03/15	9	567	1,340	111	2.36	5
03/16	11	657	1,553	118	2.36	6
03/17	5	578	1,368	89	2.37	6
03/18	9	534	1,234	115	2.31	5
03/19	9	780	1,761	121	2.26	6
03/20	9	299	715	92	2.39	3
03/21	7	345	807	45	2.34	8
03/22	6	569	1,307	77	2.30	7
03/23	11	832	1,920	132	2.31	6
03/24	14	1,133	2,676	154	2.36	7
03/25	7	848	2,010	107	2.37	8
03/26	19	1,664	4,087	256	2.46	7
03/27	5	117	274	29	2.34	4
03/28	12	1,563	3,638	176	2.33	9
03/29	4	309	733	50	2.37	6
03/30	14	989	2,345	137	2.37	7
03/31	20	1,885	4,555	240	2.42	8
04/01	15	794	2,033	139	2.56	6
04/02	13	1,221	2,927	150	2.40	8
04/03	10	486	1,372	104	2.82	5
04/04	5	347	786	71	2.27	5 5 6
04/06	5	288	697	49	2.42	6
04/07	23	1,506	3,592	213	2.38	7
04/08	9	896	2,163	126	2.41	7
04/09	11	661	1,610	140	2.44	5
04/10	8	702	1,646	106	2.35	7
04/11	9	208	513	88	2.47	2
04/11	10	510	1,247	96	2.45	7 2 5 5
04/12	7	290	735	62	2.53	<i>5</i>
04/13	15	952	2,297	161	2.33	6
04/14		932		152	2.38	
04/15	11 4	908 105	2,162 264	30		6
		803		157	2.51	4
04/17	15	803 a	1,929	13 / a	2.40	5
04/18	2		010		2.31	6
04/19	9	333	818	66 124	2.46	5 5 8 5 5
04/20	12	581	1,419	124	2.44	3
04/21	8	370	943	44	2.55	ŏ
04/22	7	279	678	55 52	2.43	5
04/23	4	235	599	52	2.55	-
04/24	13	518	1,264	109	2.44	5 5 6 2 5
04/25	7	235	578	49	2.46	5
04/26	7	384	959	67	2.50	6
04/27	4	41	106	18	2.59	2
04/28	5	202	516	44	2.55	5
04/29	3	140	356	19	2.54	7
04/30	10	452	1,135	106	2.51	4
Total	664	41,046	98,750	7,314	2.41	6

*Note:* The fishery closed by emergency order on 4/30/15 and the last delivery was made on 4/30/15.

<sup>&</sup>lt;sup>a</sup> Information is confidential since there were less than 3 deliveries.

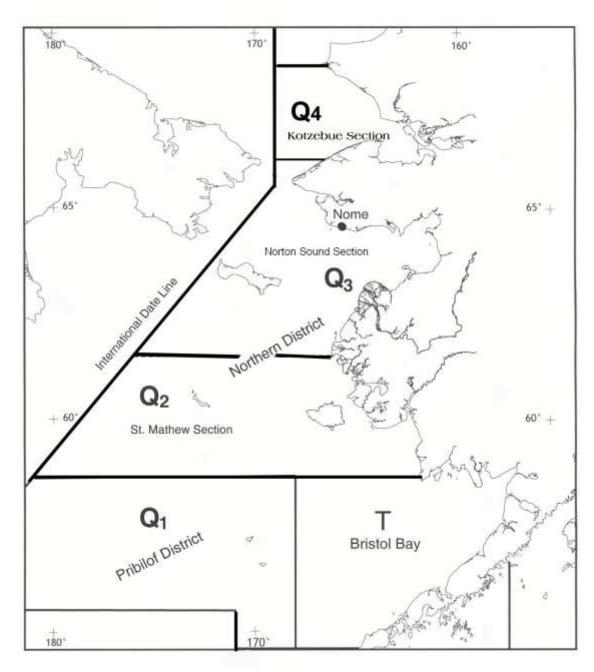


Figure 1.-King crab fishing districts and sections of Statistical Area Q.

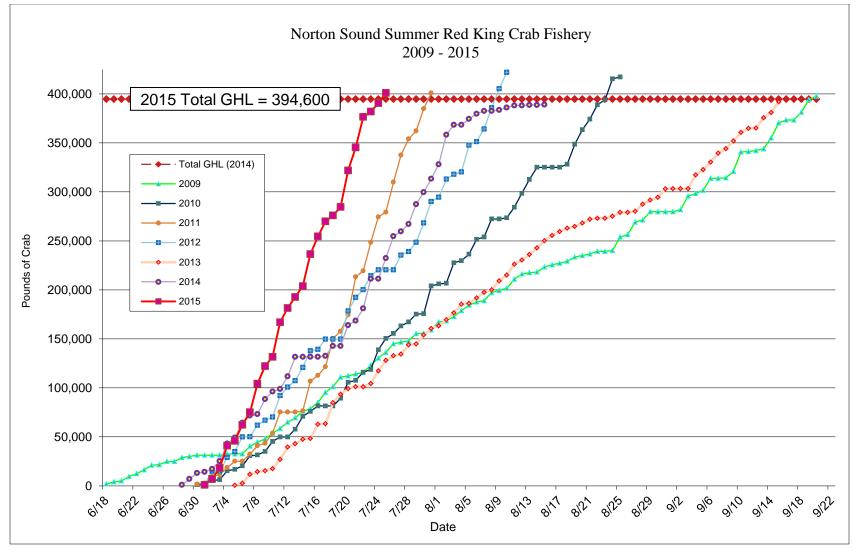
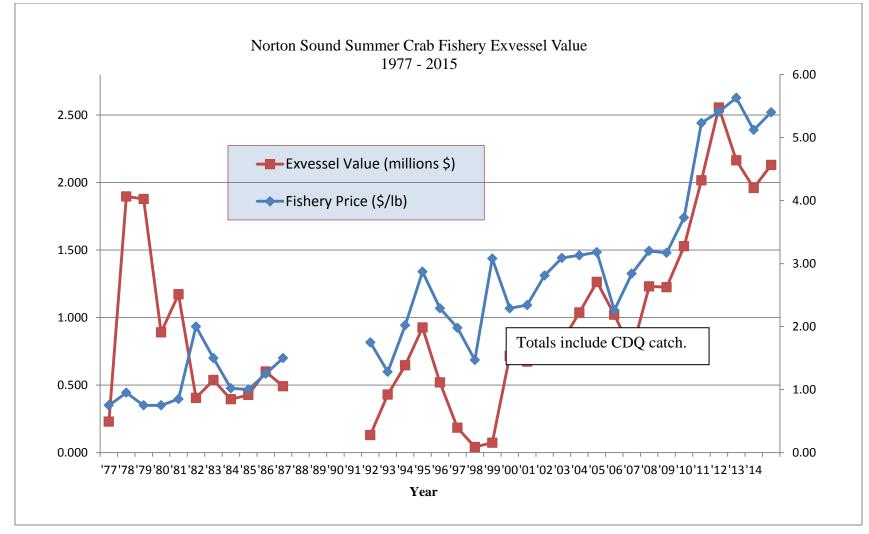


Figure 2.—Current and historical catch performance for the Norton Sound summer commercial crab fishery, 2009–2015.



Notes: Pricing information was not available for 1988–1990. No summer commercial fishery occurred in 1991.

Figure 3.-Norton Sound crab exvessel value and fishery price per pound, 1977–2015.

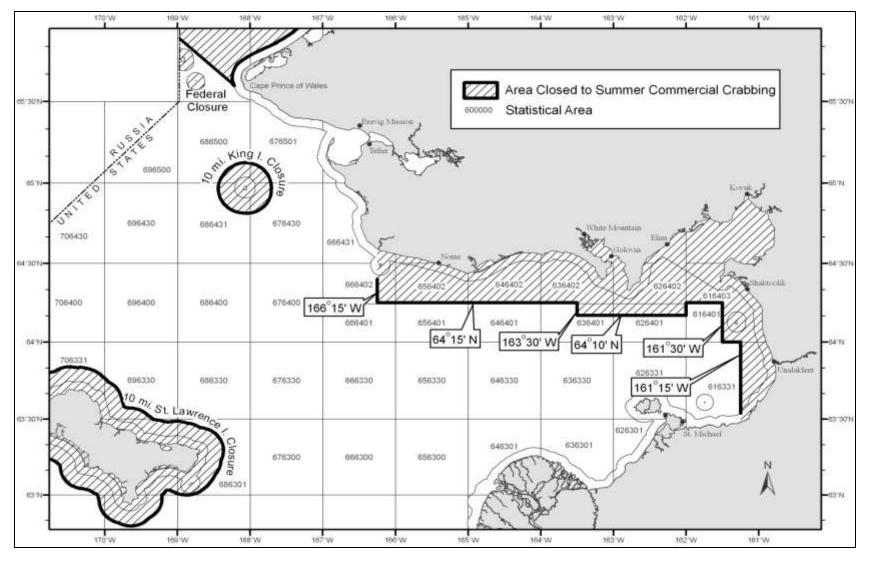
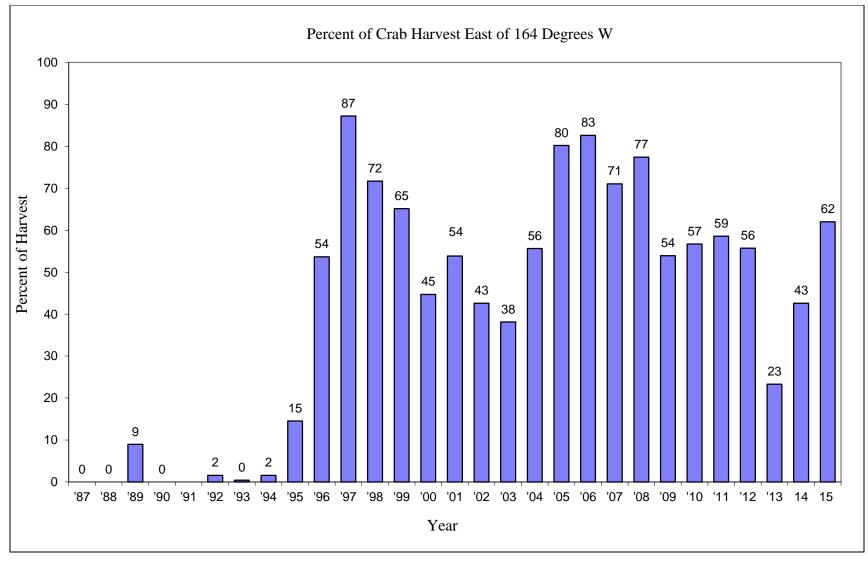


Figure 4.—Statistical areas and closed-waters area in effect for the Norton Sound summer commercial crab fishery.



Note: No summer commercial fishery occurred in 1991.

Figure 5.—The percent of crab harvested during the Norton Sound summer commercial red king crab fishery east of 164 degrees west longitude, 1987–2015.

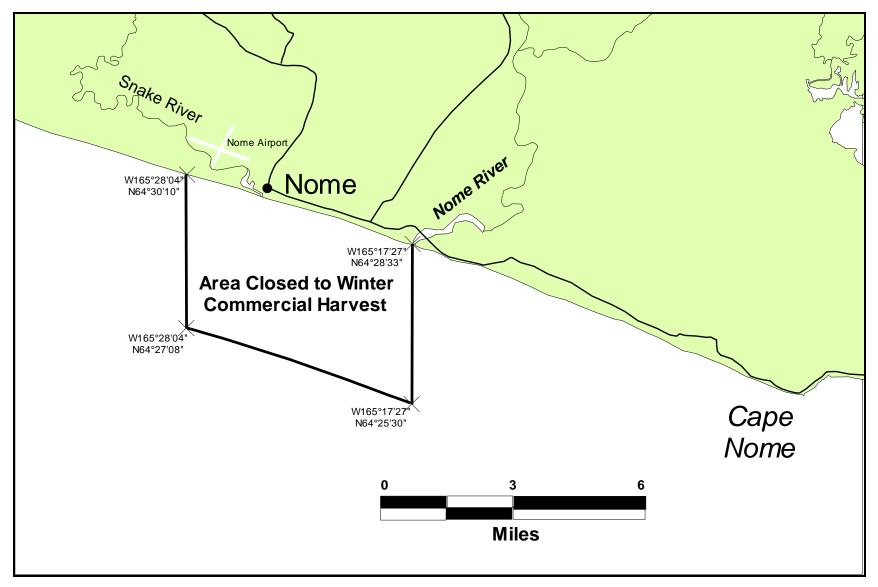


Figure 6.—Closed waters area in effect for the Norton Sound winter commercial crab fishery.

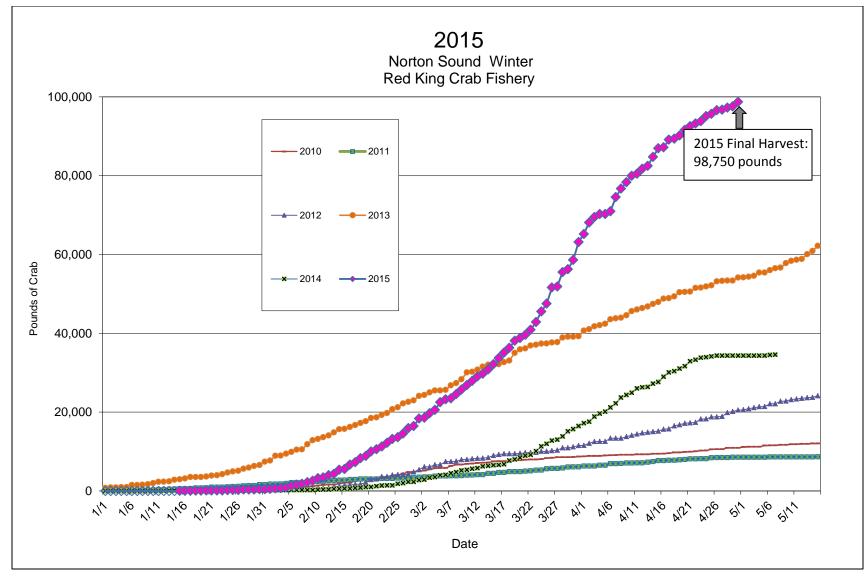


Figure 7.—Current and historical catch performance for the Norton Sound winter commercial crab fishery, 2010–2015.

Appendix 1.—Standardized results from population assessment surveys for red king crab in Norton Sound, 1976–2014.

				Populati	on abundance es	stimates	Legal male	Ç	Standard error		
		Research		(1	number of crab)	a	biomass	prerecruit-	prerecruit-	legal	
Year	Date	agency	Gear	pre-2 males b	pre-1 males b	legal males c	(millions of pounds) d	2 males	1 males	males	
1976	9/02-09/05	NMFS	Trawl	653,106	1,414,353	2,491,086	7,473,258	285,637	642,876	801,298	
	9/16-10/07										
1979	7/26-08/05	NMFS	Trawl	19,038	47,313	813,274	2,439,822	16,488	22,711	204,197	
1980 <sup>e</sup>	7/04-07/14	ADF&G	Pots			1,900,000	5,700,000				
1981	6/28-07/14	ADF&G	Pots			1,285,195	3,855,585				
1982	7/06-07/20	ADF&G	Pots			353,273	1,059,819				
1982	9/05-09/11	NMFS	Trawl	379,347	1,012,272	918,686	2,756,058	120,610	295,984	243,467	
1985	7/01-07/14	ADF&G	Pots			907,579	2,722,737				
1985	9/16-10/01	NMFS	Trawl	402,922	664,594	1,132,662	3,397,986	157,046	281,598	249,394	
1988	8/16-08/30	NMFS	Trawl	583,924	486,570	972,757	2,918,271	146,733	249,394	354,901	
1991	8/22-08/30	NMFS	Trawl	386,338	408,241	1,545,558	4,636,674	297,059	157,018	450,814	
1996	9/07-09/18	ADF&G	Trawl	395,888	277,595	528,431	1,585,293	243,594	78,712	157,909	
1999	7/28-08/07	ADF&G	Trawl	96,295	582,799	1,542,589	4,627,767	56,017	165,689	318,731	
2002	7/27-08/06	ADF&G	Trawl	393,689	482,815	740,450	2,221,350	85,797	81,271	81,271	
2006	7/25-08/08	ADF&G	Trawl	937,083	571,890	718,379	2,155,137	551,144	153,272	105,487	
2008	7/24-08/11	ADF&G	Trawl	795,777	689,843	811,727	2,435,181	187,516	120,153	152,145	
2011	7/18-08/15	ADF&G	Trawl	431,153	311,550	1,310,634	3,931,902	151,713	87,866	123,310	
2014	7/18-07/30	ADF&G	Trawl	1,547,538	2,110,274	1,747,720	5,243,160	643,563	1,474,574	912,399	

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

<sup>&</sup>lt;sup>a</sup> Population estimates are valid for the date of the survey (i.e., either before or after the summer commercial fishery). All historical abundances were updated based on newly recovered data.

<sup>&</sup>lt;sup>b</sup> Pre-2 males were defined as 76–89 mm in carapace length (CL) and pre-1 males were defined as sublegal crab > 90 mm CL.

<sup>&</sup>lt;sup>c</sup> Legal male red king crab were defined as ≥ 121 mm (4.75 inches) in carapace width (CW) for the pot surveys and all ADF&G trawl surveys, and ≥ 104 mm CL for all of the NMFS trawl surveys except the 1979 survey which defined legal males as ≥ 100 mm CL.

<sup>&</sup>lt;sup>d</sup> Legal male biomass is estimated by multiplying the population abundance estimate of legal males by an average weight of 3.0 pounds.

<sup>&</sup>lt;sup>e</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 crab.

Appendix 2.—Historical commercial harvest by statistical areas of red king crab from Norton Sound Section, Eastern Bering Sea, 1977–2015 (catch in pounds).

Statistical													
Area	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
616331	7,893	0	0	0	0	0	0	0	0	0	0	0	0
616401	0	0	0	0	0	0	0	0	0	0	0	0	0
626331	40,020	0	0	0	0	22	0	0	0	0	0	0	0
626401	31,572	0	0	4,830	399	0	0	0	0	0	0	0	0
626402	38,995	0	0	0	0	0	0	0	0	0	0	0	0
636330	0	0	0	0	0	0	0	0	0	0	0	0	0
636401	0	0	0	12,398	61,823	32,246	5,880	41	891	0	0	0	22,030
636402	0	0	0	0	0	0	0	0	0	0	0	0	0
646301	0	0	0	0	0	0	0	0	0	0	0	0	0
646330	0	0	0	0	4,716	0	0	0	0	0	0	0	5,212
646401	0	0	155,972	0	1,319	17,532	0	0	0	0	0	0	0
646402	80,969	0	0	0	0	748	0	0	0	0	0	0	0
656300	0	0	161,699	0	15,174	0	0	0	0	0	0	0	0
656330	0	0	323,518	72,735	395,662	3,983	24,246	83,479	7,632	0	79,006	36,129	1,757
656401	0	0	138,011	121,147	253,387	60,480	11,422	183,119	246,200	0	194,408	165,644	100,956
656402	306,302	90,187	288,869	918	3,098	2,832	0	0	132,363	0	0	0	0
666230	0	55,490	0	0	77		0	0	0	0	0	0	0
666300	0	162,795	60,816	84,874	9,167	95	0	4,534	0	0	0	0	0
666330	0	353,016	505,050	367,446	141,513	8,990	1,192	0	389	70,615	2,963	13,020	1,275
666401	0	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	0	17,585	0	0	32,992	0	0	0	0
666431	0	0	146,029	0	0	0	0	0	0	0	0	0	0
676300	0	13,238	0	126,231	0	0	0	0	0	0	0	0	0
676330	0	51,304	81,798	6,762	18,734	0	0	0	0	0	0	0	0
676400	0	667,130	33,856	274	92,026	1,315	247	0	32	0	0	0	0
676430	0	3,811	12,309	0	373	3,513	0	0	1,171	0	0	0	0
676501	0	0	0	0	36	0	0	0	0	0	0	0	0
686330	0	0	1,860	0	0	0	0	0	0	0	0	0	0
686431	0	0	0	0	0	0	0	0	0	0	0	0	0
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

## Appendix 2.–Page 2 of 3.

Statistical													
Area	1990	1992	1993	1994	1995	1996 <sup>a</sup>	1997	1998	1999	2000	2001	2002	2003
616331	0	0	0	48	0	0	0	0	633	4,557	0	3,506	646
616401	0	0	0	0	35	0	0	0	0	0	0	0	0
626331	0	0	0	0	0	61	0	0	0	0	0	2,455	0
626401	0	0	0	0	18,971	45,045	18,066	8,065	508	4,689	61,620	53,722	15,899
626402	0	0	0	0	0	0	0	0	0	0	0	0	1,352
636330	0	0	0	0	0	4,560	3,838	2,449	0	0	2,253	0	0
636401	0	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	0	0	0	1,754	3,466	0	0	0	0	0	0	0	0
646301	0	0	0	0	4,628	13,888	0	0	0	0	0	0	0
646330	0	0	0	0	1,493	2,894	314	0	3,021	0	1,868	1,955	0
646401	0	0	1,963	37,222	105,045	22,834	1,052	3,194	221	0	4,287	0	3,952
646402	0	0	730	143,511	66,821	0	0	0	0	0	0	0	0
656300	0	0	0	0	0	0	0	0	0	0	0	0	14
656330	0	4,814	265	0	19,745	15,446	4,661	4,078	1,300	0	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	0	0	193,079	106,053	44,000	0	0	0	0	0	0	0	1,441
666230	0	0	0	0	0	0	0	0	0	0	0	0	0
666300	0	0	0	0	0	25,519	0	0	0	0	0	0	0
666330	27,185	4,305	31,758	0	730	0	0	0	0	5,839	7,030	1,332	1,296
666401	162,263	10,632	746	396	0	3,001	1,816	0	930	60,762	43,771	35,970	83,998
666402	0	0	535	1,221	0	0	0	0	0	0	0	30,070	12,873
666431	0	0	0	0	1,124	0	0	0	0	0	0	4,274	45
676300	0	0	0	0	0	546	0	0	0	0	0	0	0
676330	0	0	0	0	0	0	0	0	0	0	0	0	0
676400	3,212	0	0	0	0	9,775	0	0	0	0	0	0	0
676430	0	0	0	0	0	0	0	0	0	0	0	0	0
676501	0	0	0	0	0	0	0	0	0	0	0	0	0
686330	0	0	0	0	0	0	0	0	0	0	0	0	0
686431	0	0	0	0	0	0	0	0	0	0	0	0	0
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

Appendix 2.—Page 3 of 3.

Statistical													
Area	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Totals
616331	0	0	2,357	0	5,658	888	0	0	0	0	4,923	3,410	34,518
616401	0	0	0	231	416	6,170	0	0	0	7,729	4,692	1,929	21,202
626331	0	0	1,415	27,018	3,235	3,047	0	2,489	0	686	0	0	80,448
626401	23,113	94,130	118,202	61,704	96,327	103,043	52,054	85,271	115,524	36,802	69,936	103,881	1,223,373
626402	0	0	0	0	0	0	0	0	0	0	0	0	40,347
636330	0	126	26,680	10,253	2,350	5,026	2,584	0	1,454	12,035	7,565	2,680	83,853
636401	166,489	227,204	224,531	123,092	197,948	96,279	182,040	146,973	148,183	34,027	78,572	137,285	2,439,648
636402	0	0	0	0	0	0	0	0	0	0	0	0	5,220
646301	0	0	0	0	0	0	0	0	0	0	0	0	18,516
646330	2,226	4,097	2,629	5,290	1,505	933	1,205	02.000	1,204	4,195	5,390	1,812	51,959
646401	1,964	149 0	1,660	0	18,728	46,264 0	77,437	83,099	98,811	59,737	36,409	58,929	838,068
646402	0		0		0		0	0	0	5,271	0	0	294,200
656300	932	0	284	1,909	0	0	0	0	0	0	0	0	180,012
656330	46,288	47,411	17,752	4,911	0	10,617	17,660	1,546	8,168	8,515	0	4,828	1,302,560
656401	21,579	9,405	28,434	70,065	68,968	107,557	82,747	77,149	85,920	147,569	122,631	69,355	2,864,384
656402	0	380	807	2,254	0	0	0	0	0	37,743	0	0	1,214,562
666230	0	0	1,721	0	0	0	0	0	0	0	0	0	57,288
666300	0	0	18,245	0	0	0	0	0	0	0	0	0	366,045
666330	12,359	142	5,041	511	0	1,514	0	2,042	1,000	0	0	0	1,567,553
666401	42,452	727	600	2,498	0	10,021	0	0	15,726	33,469	38,099	9,308	2,941,463
666402	23,344	16,025	1,050	2,959	0	6,228	1,577	2,271	0	1,419	18,968	7,699	1,423,148
666431	0	0	0	0	0	0	0	0	0	2,669	1,825	0	155,966
676300	0	0	0	0	0	0	0	0	0	0	0	0	140,015
676330	0	0	0	0	0	0	0	0	0	0	0	0	158,598
676400	0	0	0	180	0	0	0	0	0	0	0	0	808,047
676430	0	0	0	0	0	0	0	0	0	0	0	0	21,177
676501	0	1,008	0	0	0	0	0	0	0	0	0	0	1,044
686330	0	0	0	0	0	0	0	0	0	0	0	0	1,860
686431	0	0	340	0	0	0	0	0	0	0	0	0	340
Totals	340,746	400,804	451,748	312,875	395,135	397,587	417,304	400,840	475,990	391,863	389,008	401,115	18,335,414

Note: No summer commercial fishery occurred in 1991.

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