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ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES  
OF THE WESTWARD REGION, 1991

BY  
WESTWARD REGION SHELLFISH STAFF

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## OVERVIEW

The report series previously titled *Westward Region Shellfish Report to the Alaska Board of Fisheries* has been changed, starting with this report, to: *Annual Management Report for the Shellfish Fisheries of the Westward Region*. While the title has been changed, the original format has been maintained.

The Westward Region includes the Gulf of Alaska south of Cape Douglas (58°52'N Latitude) on the Alaska Peninsula, the Kodiak Island and Aleutian Islands group and the Bering Sea northeast from the U S-Russian Convention Line of 1867 to Norton Sound (Figure 1). Encompassed is 525,000 square miles of the most productive shellfish habitat in the world. The three major shellfish commercial fisheries are king crab (three species), Tanner crab (two species) and Dungeness crab. Minor fisheries occur for scallops, shrimp, clams, octopus and sea urchins.

The Regional office is in Kodiak with a field office in Dutch Harbor. This report documents shellfish activities in the Region which are in progress year around. Alaska Department of Fish and Game biologists are charged with the State management and research programs associated with all commercially utilized stocks of shellfish. The fulltime staff consists of five management and five research biologists and one secretary. Approximately 12 seasonal personnel are hired for shellfish assessment cruises, logbook programs, shipboard observations, interviews, dockside sampling, data entry, secretarial assistance and overseeing the floating processor observer program.

In 1991, approximately 500 catcher vessels, 31 catcher processors, 21 shore-based processors and 16 floating processors engaged in harvesting and processing shellfish resources (Table 1).

The 1991 Westward Region shellfish landings topped 400 million pounds and was worth 298 million dollars (Table 2). Tanner crab landings reached 371 million pounds, valued at 212 million dollars. King crab landings totaled 28 million pounds, valued at 83 million dollars.

There was no regional trawl shrimp harvest in 1991 (Table 3). Poor production in recent years discouraged fishermen and processors from fishing in 1991. Their decision can be partly attributed to more favorable shrimp stock conditions off the Washington and Oregon coast.

The 1989 results of a 50-day shrimp survey, which was conducted in historically important grounds, indicated that shrimp stocks were extremely depressed and were not improving. Staff anticipates conducting another evaluation in 1992.

The 1991 king crab harvest was approximately 28 million pounds. The red king crab seasons were closed once again in Kodiak, Alaska Peninsula and Dutch Harbor. These areas have been closed continuously since 1983. The Department has surveyed these areas to assess the populations which continue to show little or no recruitment.

The only red king crab population showing stability, at a low level, was in Bristol Bay. A total of 17.2 million pounds were harvested from Bristol Bay which is similar to the harvest of 1990 at 20.4 million pounds (Table 4). The Bristol Bay stock is expected to change little in 1992, while stocks in the Kodiak, Alaska Peninsula, Dutch Harbor and Pribilof areas are expected to, at best, maintain their current levels. The harvest projection for the Bristol Bay red king crab fishery will be announced after the summer trawl survey.

The 1991 Tanner crab season produced 371 million pounds which is a record high production (Table 5). The catch was comprised of approximately 89% *C. opilio* Tanner crab.

Stocks of *C. opilio* crab look very healthy with harvest expectations in excess of 100 million pounds annually for the next few years. *C. bairdi* stocks, while small in a historic sense, are healthy, and the harvestable stock is expected to remain stable in most areas.

The 1991 Dungeness crab harvest was 1.5 million pounds (Table 6). This was a decrease in catch from last season when 3.0 million pounds were harvested. The Kodiak District produced the majority of the harvest in 1991.

In September 1988 the Alaska Board of Fisheries adopted the mandatory observer requirement for vessels processing king and *C. bairdi* crabs. The Board adopted the same requirements for *C. opilio* processing vessels in September 1990. The regulations required industry to fund the observers which are provided by a third party contractor and certified by the Department of Fish and Game.

The observer program has been active for over three years with observers participating in nine annual fisheries. Data indicate that observer presence onboard has deterred the taking of undersized crab on catcher processors.

Details of the Program are discussed later in this report.

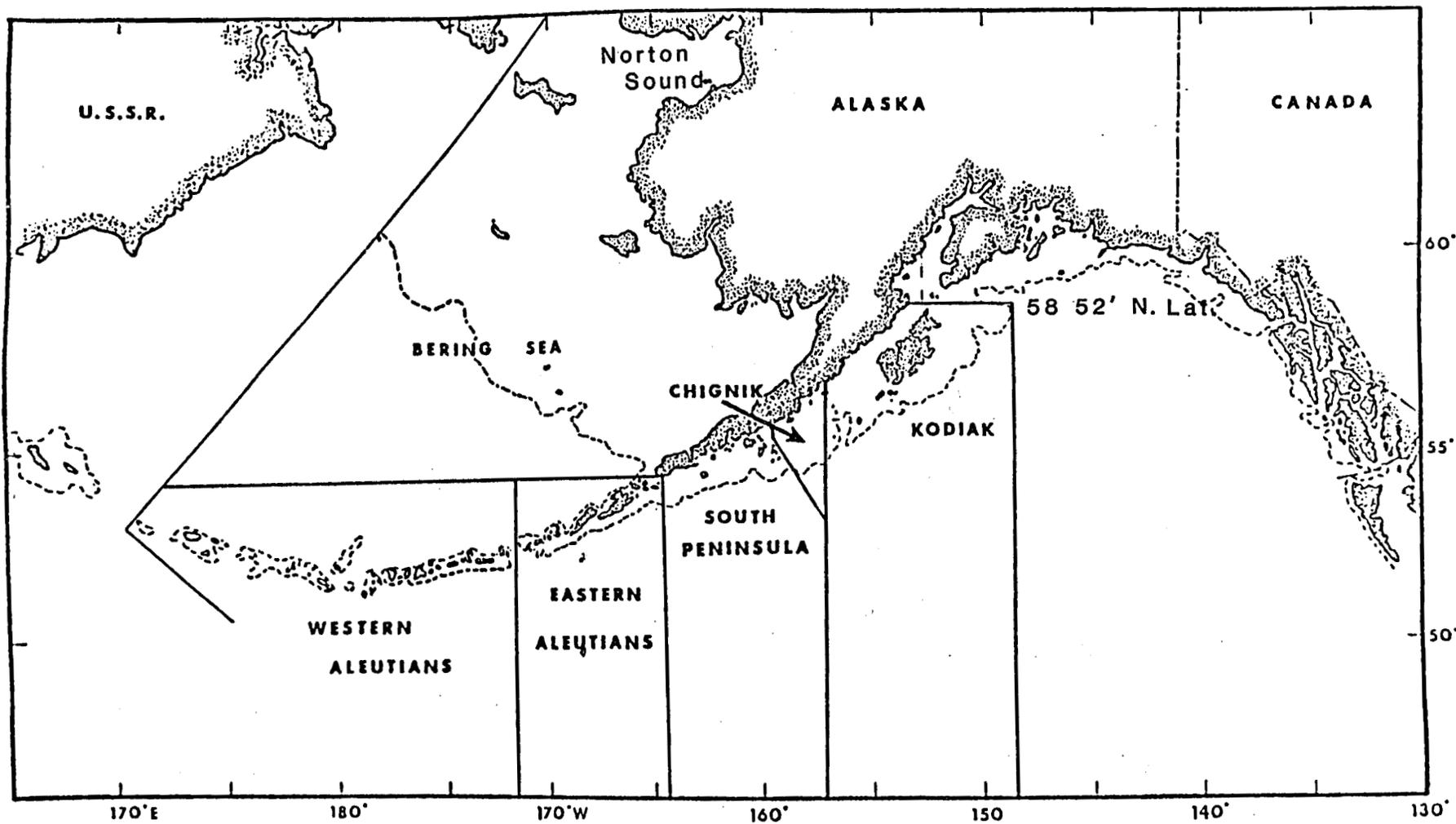


FIGURE 1. TANNER CRAB DISTRICTS— WESTWARD REGION

Table 1. Shellfish processors operating in the Westward Region during the 1991/92 fishing seasons.

Location	Company	*Products	Superintendent
Kodiak	Alaska Fresh Seafoods	KTMD	Dave Woodruff
	All Alaskan	KTMD	Gary Taylor
	Alaska Pacific Seafoods	TMD	John Sevier
	Cook Inlet Processing	KTMD	Tim Blott
	East Point Seafoods	KTMDS	Jim Major
	Emerald Island Seafoods	KMTD	Chris Schopen
	King Crab	KTMD	Mike Robinson
	North Star Seafoods	M	Sylvia Guild
	Ursin Seafoods	KTMD	Marty Eaton
	Western Alaska Fisheries	KTMD	Ken Allread
	Sand Point	Trident Seafoods	TD
Peter Pan Seafoods		KT	Mark Hanson
King Cove	Deep Sea	KTM	
Akutan	Trident	KTM	Brett Joines
	Alyeska Seafoods	KTMD	Frank Kelty
Dutch Harbor	Royal Aleutian Processors	KTMD	Mike Newkirk
	Arctic Star (Icicle)	KTM	Mike Clutter
	East Point Seafoods	KTD	Lewis Seutz
	San Souci Seafoods	KTD	Nakata San
	Unisea, Incorporated	KTDM	Steve Stubbe
St. Paul	Unipac	KTM	Julie Shane

FLOATER PROCESSORS

Alaskan I	KT
All Alaskan	KT
Alaska Packer	KT
Aleutian Falcon	T
Akutan	KT
Blue Wave	KT
Clipperton	KTM
Coastal Star	KT
Galaxy	KT
Mr. B	KT
Northland	KT
Ocean Pride	KT
Omni Sea	KT
Sea Alaska	KT
Tempest	KTM
Yard Arm Knot	KT

Table 1. Shellfish processors operating in the Westward Region during the 1991/92 fishing seasons (continued).

Location	Company	*Products	Superintendent
<u>CATCHER PROCESSORS</u>			
	Alaskan Enterprise	KT	
	American Empire	KT	
	Arctic Discovery	KT	
	Arctic Orion	KT	
	Arctic Rose	M	
	Baranof	KT	
	Bering Empire	KT	
	Bountiful	KT	
	Courageous	KTM	
	Deep Sea Harvester	KT	
	Diomedes	KT	
	Evening Star	KT	
	Glacier Enterprise	KT	
	Gulf Wind	KT	
	Jacquelyn R	K	
	Justice	T	
	Northern Enterprise	KT	
	Olympic	KY	
	Pacific Wind	KT	
	Patricia Lee	KT	
	Pavlof	KTM	
	Pengwin	KTM	
	Perserverence	KT	
	Pro Surveyor	KT	
	Royal Enterprise	KT	
	Seawind	KT	
	Sjovind	KT	
	Southern Wind	KT	
	Western Enterprise	KT	
	Westward Wind	KTM	
	Windance	KT	

\* K = King Crab    T = Tanner Crab    S = Shrimp  
 D = Dungeness    M = Scallops, Clams, Haircrab, Octopus, Urchins

Table 2. Westward Region king crab, shrimp, Tanner crab and Dungeness crab pounds, price per pound and value to the fishermen since 1950.

Year	-----SHRIMP-----			-----KING CRAB-----			---TANNER CRAB <sup>1</sup> ---			DUNGENESS CRAB			---TOTAL---	
	# <sup>2</sup>	Price <sup>3</sup>	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Value <sup>4</sup>
1950				2.1										
1951				.8										
1952				.7										
1953				3.3										
1954				6.6										
1955				5.5										
1956				10.9										
1957				12.3										
1958				12.4										
1959				16.4										
1960	3.4	.039	.13	30.4	.085	2.58							33.9	2.71
1961	11.0	.04	.44	38.6	.095	3.66							49.6	4.10
1962	12.6	.04	.50	49.5	.10	4.95				1.9	.09	.17	64.0	5.62
1963	10.1	.043	.43	66.8	.10	6.68				2.4	.09	.21	79.3	7.32
1964	3.9	.04	.15	91.8	.10	9.18				4.2	.09	.38	99.9	9.71
1965	13.8	.04	.55	138.2	.128	17.68				3.3	.12	.40	155.3	18.63
1966	24.1	.045	1.08	136.2	.11	14.90				1.2	.13	.16	161.5	16.14
1967	39.6	.045	1.78	103.4	.26	26.88	.1	.07	.007	6.6	.13	.86	149.7	29.53
1968	39.7	.04	1.58	69.0	.26	17.94	2.7	.10	.27	8.0	.14	1.12	119.4	20.91
1969	45.0	.055	2.48	54.7	.28	15.32	8.5	.11	.64	3.8	.16	1.08	115.0	19.82
1970	68.2	.04	2.73	49.9	.30	14.97	11.3	.11	1.24	5.7	.14	.80	135.1	19.74
1971	88.6	.04	3.54	52.8	.39	20.59	9.8	.11	1.07	1.4	.18	.25	152.6	25.45
1972	78.0	.04	3.12	70.4	.55	38.72	15.6	.13	2.03	2.1	.40	.84	166.1	44.71
1973	117.8	.08	9.42	69.3	.45	31.18	38.0	.17	6.46	2.2	.50	1.10	247.1	48.16
1974	104.0	.08	8.32	94.3	.45	42.43	43.4	.20	8.68	.8	.47	.38	242.5	59.81
1975	92.1	.08	7.37	96.7	.66	63.82	33.2	.17	5.64	.6	.61	.37	222.6	77.20
1976	119.3	.10	11.93	101.4	1.37	138.91	64.8	.20	12.96	.08	.15	.01	285.6	168.81
1977	110.6	.13	14.38	94.6	1.34	126.76	86.4	.33	28.51	.1	.30	.03	291.7	169.68
1978	64.2	.165	10.59	119.9	1.60	191.80	114.3	.43	49.15	1.3	.75	.98	301.4	253.16
							1.7	.38	.64					

continued....

Table 2. Westward Region king crab, shrimp, Tanner crab and Dungeness crab pounds, price per pound and value to the fishermen since 1950 (continued).

Year	-----SHRIMP-----			-----KING CRAB-----			---TANNER CRAB <sup>1</sup> ---			DUNGENESS CRAB			---TOTAL---	
	# <sup>2</sup>	Price <sup>3</sup>	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Price	Value <sup>4</sup>	# <sup>2</sup>	Value <sup>4</sup>
1979	44.6	.225	10.03	151.6	.95	144.02	84.2	.55	46.30	1.4	.75	1.05	314.0	211.06
							32.2	.30	9.66					
1980	43.1	.29	12.49	189.6	1.05	199.08	4.0	.55	35.20	2.0	.45	.90	338.20	255.97
							39.5	.21	8.30					
1981	21.5	.27	5.81	85.3	2.0	170.60	49.3	.65	32.05	5.6	.70	3.92	214.40	226.08
							52.7	.26	13.70					
1982	11.2	.27	3.02	38.5	3.75	144.48	34.2	1.65	56.43	5.3	.75	3.98	118.5	229.19
							29.3	.73	21.38					
1983	2.8	.35	.98	25.0	3.00	75.00	31.4	1.25	39.25	5.90	1.05	6.20	91.3	130.60
							26.2	.35	9.17					
1984	2.9	.33	.95	17.1	2.75	47.02	18.8	1.10	20.68	6.0	1.40	8.40	70.8	86.22
							26.0	.30	7.80					
1985	1.2	.20	.24	20.4	2.50	51.00	18.4	1.50	27.60	4.6	1.20	5.52	109.1	103.71
							64.5	.30	19.35					
1986	.5	.25	.13	17.3	3.50	60.50	13.2	1.90	25.08	1.2	1.15	1.38	128.7	144.99
							96.5	.60	57.90					
1987	0.0	0.00	0.00	27.3	3.50	95.46	7.6	2.11	16.02	1.7	1.25	2.07	138.5	189.98
							101.9	.75	76.43					
1988	Confidential			20.0	3.98	79.37	9.9	2.36	23.40	2.3	1.06	2.44	167.6	209.86
							135.4	.77	104.25					
1989	0.0	0.00	0.00	22.7	4.02	91.07	14.0	2.94	41.17	3.1	1.10	3.40	189.3	247.74
							149.5	.75	112.10					
1990	0.0	0.00	0.00	34.7	4.21	145.93	28.2	1.91	53.86	3.0	1.51	4.55	227.6	307.74
							161.7	.64	103.40					
1991	0.0	0.00	0.00	28.3	2.94	83.25	42.0	1.14	48.02	1.5	1.50	2.04	400.4	297.64
							328.6	.50	164.30					

<sup>1</sup>*C. bairdi* and *C. opilio*

<sup>2</sup>Millions of pounds

<sup>3</sup>Dollars

<sup>4</sup>Millions of dollars

Table 3. Historic domestic trawl shrimp catch, Alaska Westward Region, since 1960.

Calendar Year	Kodiak	Chignik	South Peninsula	Aleutians	Total
1960	3,379,000				3,379,000
1961	11,083,500				11,083,500
1962	12,654,300				12,654,300
1963	10,118,500				10,118,500
1964	3,946,900				3,946,900
1965	13,810,500				13,810,500
1966	24,097,100				24,097,100
1967	38,722,100	879,900			39,602,000
1968	34,468,700	1,153,700	4,137,400		39,759,800
1969	41,243,600	419,900	3,365,600		45,029,100
1970	62,369,300	1,226,800	4,634,700		68,230,800
1971	82,153,724	987,900	5,532,400		88,674,024
1972	58,352,319	4,829,800	14,740,800	94,627	78,017,546
1973	70,511,477	26,884,200	20,022,000	456,179	117,873,858
1974	48,771,375	23,392,400	26,145,900	5,749,407	104,059,082
1975	46,806,799	24,435,400	20,044,400	893,567	92,180,166
1976	51,400,472	27,059,700	37,170,300	3,670,609	119,301,081
1977	31,801,573	27,797,739	46,454,376	4,599,858	110,653,546
1978	22,820,135	22,976,720	11,812,795	6,618,263	64,227,913
1979	14,540,901	23,722,330	3,134,367	3,236,721	44,634,319
1980	27,783,437	12,843,270	C L O S E D	2,479,350	43,106,057
1981	19,030,341	70,948	C L O S E D	2,398,458	21,499,747
1982	10,884,059	0 <sup>1</sup>	0 <sup>1</sup>	341,551	11,225,610
1983	2,779,030	0 <sup>1</sup>	0 <sup>1</sup>	5,600	2,784,630
1984	3,023,438	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	3,023,438
1985	1,159,912	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	1,159,912
1986	453,468	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	453,468
1987	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>
1988		C o n f i d e n t i a l			
1989	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>
1990	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>
1991	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>	0 <sup>1</sup>
AVERAGE (Years Fished)	26,720,606	14,128,629	15,236,533	2,377,888	41,963,058

Source: Westward Region Shellfish Management Office (3/88).

<sup>1</sup> Season Open - No Catch Reported

Table 4. Historic king crab catch by registration area for Alaska's Westward Region (in thousands of pounds) since 1950.

Year	K Kodiak	M S. Peninsula Chignik	O Unalaska	R W. Aleutians Adak	Q Bering Sea	T Bristol Bay	U. S.	Foreign	Total
1950	60.0	2,124.0	0	0	0	0	2,184.0	0	2,184.0
1951	200.0	599.0	0	0	0	0	799.0	0	799.0
1952	400.0	298.0	0	0	0	0	698.0	0	698.0
1953	900.0	380.0	0	0	0	2,000.0	3,280.0	11,356.0	14,636.0
1954	4,000.0	317.0	0	0	0	2,329.0	6,646.0	8,086.0	14,732.0
1955	2,000.0	1,641.0	0	0	0	1,878.0	5,519.0	8,693.0	14,212.0
1956	4,800.0	4,221.0	0	0	0	1,896.0	10,917.0	8,308.0	19,225.0
1957	5,000.0	6,687.0	0	0	0	588.0	12,275.0	8,548.0	20,823.0
1958	5,200.0	7,246.0	0	0	0	7.0	12,453.0	8,136.0	20,589.0
1959	10,200.0	6,167.0	0	0	0	0	16,367.0	11,602.0	27,969.0
Subtotal	32,760.0	29,680.0	0	0	0	8,698.0	71,138.0	64,729.0	135,867.0
Average	3,276.0	2,968.0	0	0	1,449.6	7,113.0	9,247.0	13,586.7	
1960-61	21,064.0	6,700.0	0	2,093.7	0	598.0	30,456.5	24,611.0	55,067.5
1961-62	28,962.9	3,900.0	533.0	4,776.0	0	459.0	38,630.9	40,404.0	79,034.0
1962-63	37,626.7	2,273.0	1,536.0	8,006.5	0	74.0	49,543.2	49,516.2	102,782.2
1963-64	37,716.2	6,539.0	3,893.0	17,903.7	0	747.0	66,798.9	56,671.0	123,469.9
1964-65	41,596.5	14,354.0	13,761.0	21,193.0	0	910.0	91,815.0	63,076.0	154,891.3
1965-66	94,431.0	14,713.0	19,196.0	8,040.0	0	1,762.0	138,142.4	41,405.0	179,547.4
1966-67	73,817.8	22,577.0	32,852.0	5,883.1	0	927.0	136,126.9	43,998.0	180,124.9
1967-68	43,448.5	17,252.0	22,709.0	16,948.9	0	3,102.0	103,460.4	32,528.0	135,988.4
1968-69	18,211.4	10,944.0	11,300.0	19,874.8	0	8,687.0	69,017.2	27,681.0	96,698.2
1969-70	12,200.5	4,137.0	8,950.0	19,055.4	0	10,403.0	54,745.9	14,113.0	68,858.9
Subtotal	409,076.3	103,389.0	114,730.0	123,778.3	0	27,739.0	778,737.6	394,003.2	1,176,463.6
Average	40,907.6	10,338.9	12,747.8	12,377.6	0	2,773.9	77,873.8	39,400.3	117,646.4

continued....

Table 4. Historic king crab catch by registration area for Alaska's Westward Region (in thousands of pounds) since 1950 (continued).

Year	K Kodiak	M S. Peninsula Chignik	O Unalaska	R W. Aleutians Adak	Q Bering Sea	T Bristol Bay	U. S.	Foreign	Total
1970-71	11,719.9	3,425.7	9,652.0	16,057.0	NF	8,559.2	49,913.6	12,930.0	62,843.6
1971-72	10,884.1	4,123.1	9,391.6	15,475.9	NF	12,995.8	52,869.7	6,188.0	59,057.7
1972-73	15,479.9	4,069.3	10,450.4	18,724.1	NF	21,744.9	70,490.7	4,721.0	75,211.7
1973-74	14,397.3	4,260.6	12,722.7	9,741.5	1,276.6	26,913.6	69,331.8	1,279.0	70,610.8
1974-75	23,582.7	4,572.1	13,991.1	2,775.0	7,107.3	42,266.3	94,274.0	2,618.0	96,892.0
1975-76	24,061.6	2,605.3	15,906.6	437.1	2,433.7	51,326.2	96,747.4	0	96,747.4
1976-77	17,966.8	958.8	10,198.4	2.3	8,356.1	63,919.7	101,399.8	0	101,399.8
1977-78	13,503.6	726.3	3,684.4	953.0	8,201.8 <sup>1</sup>	69,967.8	94,567.9	0	94,567.9
1978-79	12,021.8	3,093.8	6,824.1	807.2	10,387.7 <sup>1</sup>	87,618.3	119,933.7	0	119,933.7
1979-80	14,608.9	4,453.5	15,010.9	490.7	9,230.3 <sup>1</sup>	107,828.0	151,647.4	0	151,647.4
Subtotal	158,226.6	32,288.5	107,832.2	65,463.8	46,993.5	493,138.8	901,176.0	27,736.0	928,912.0
Average	15,822.6	3,228.9	10,783.2	6,546.4	6,713.4	49,313.9	90,117.6	5,547.2	92,891.2
1980-81	20,448.6	5,080.6	19,053.6	1,478.4	11,543.8	129,948.5	89,668.8	0	189,423.3
1981-82	24,237.6	3,147.5	5,231.1	2,843.0	13,772.5	33,591.4	85,291.4	0	85,291.4
1982-83	8,729.2	1,627.7	1,616.2	9,708.1	13,447.3	3,001.2	38,497.8	0	38,497.8
1983-84	111.4 <sup>2</sup>	CLOSED	1,810.0	10,109.6	11,701.9	CLOSED	25,463.1	0	25,463.1
1984-85	22.2 <sup>2</sup>	CLOSED	1,521.1	5,508.7	4,701.3	4,182.4	17,115.2	0	17,115.2
1985-86	63.6 <sup>2</sup>	CLOSED	1,968.2	11,931.0	2,959.8	4,174.9	20,405.4	0	20,405.4
1986-87	146.5 <sup>2</sup>	CLOSED	1,869.2	13,510.2	1,262.1	11,393.9	17,308.5	0	17,308.5
1987-88	67.2 <sup>2</sup>	CLOSED	1,383.2	3,190.0 <sup>3</sup>	2,200.9	12,289.1	19,130.4	0	19,130.4
1988-89	2.8 <sup>2</sup>	CLOSED	1,545.1	9,571.1 <sup>4</sup>	1,488.3	7,387.8	19,955.1	0	19,955.1
1989-90	*	CLOSED	1,852.2	9,251.9 <sup>4</sup>	1,428.2	10,264.8	22,657.8	0	22,657.8
1990-91	*	CLOSED	1,718.8	9,606.3	1,725.3	20,362.3	33,412.7	0	33,412.7
1991-92	0	CLOSED	1,447.7	6,128.7 <sup>4</sup>	3,372.1	17,177.9	28,126.4	0	28,126.4
Subtotal	54,047.6	9,855.8	41,016.4	92,837.0	69,003.5	253,773.9	517,112.6	0	517,112.6
Average	4,503.9	3,285.3	3,418.0	7,736.4	5,750.3	21,147.8	43,092.7		43,092.7

\*Confidential catch

<sup>1</sup>Fishing year - July 1 through June 30

<sup>2</sup>Brown crab

<sup>3</sup>Through January 31

<sup>4</sup>Calendar year

Table 5. Westward Region historic Tanner crab *C. bairdi* and *C. opilio* catch (in pounds) for Alaska since 1965.

Year <sup>1</sup>	Kodiak	Chignik <sup>2</sup>	South Peninsula	Eastern Aleutians	Western Aleutians	Bering Sea		Total U. S. Harvest	Total Foreign Harvest
						<i>C. opilio</i>	<i>C. bairdi</i>		
1965	0	0	0	0	0	0	0	0	3,936,000
1966	0	0	0	0	0	0	0	0	7,290,000
1967	110,961	0	5,000	0	0	0	0	115,961	24,000,000
1968	2,560,687	0	131,700	0	0	0	17,900	2,710,287	30,940,000
1969	6,796,477	0	644,400	0	0	0	1,008,900	8,449,777	47,668,000
1970	7,749,859	0	2,022,427	0	0	0	1,014,700	11,259,447	47,828,000
1971	7,436,414	152,256	2,140,755	0	0	0	166,100	9,875,888	39,886,000
1972	11,898,054	23,343	3,618,883	0	0	0	107,761	15,662,354	31,186,000
1973	31,113,459	747,788	5,615,563	62,128	168,354	0	231,668	38,008,640	27,886,000
1974	25,479,717	4,202,671	9,503,366	498,836	71,887	0	5,044,197	43,409,968	27,912,000
1975	17,535,844	3,649,444	5,195,800	77,164	3,350	0	7,284,378	33,225,873	18,456,000
1976	23,446,245	6,926,161	11,201,941	534,295	62,180	0	22,341,475	64,818,920	19,286,000
1977	20,720,079	5,672,919	6,773,838	1,301,654	0	0	51,455,221	86,405,326	21,520,173
1978	33,271,472	4,693,830	7,446,270	2,624,016	237,512	1,716,124	66,648,954	116,014,238	33,057,796
1979	29,173,807	2,536,105	8,684,408	1,092,311	197,244	31,102,832	42,547,174	116,411,771	32,914,536
1980	18,623,875	3,517,920	3,961,251	879,807	337,297	39,344,323	36,614,315	103,507,133	15,636,125
1981	11,748,629	3,653,723	3,294,106	654,514	220,716	50,483,055	29,732,086	102,056,808	0
1982	13,756,159	3,240,526	4,589,042	739,694	838,627	29,351,474	11,008,779	63,542,301	0
1983	18,927,061	3,497,370	2,863,798	547,830	448,399	26,128,410	5,273,881	57,686,749	0
1984	14,789,903	659,043	1,789,883	239,395	191,954	26,813,074	1,208,223	45,691,225	0
1985	12,024,553	385,838	2,561,868	165,529	66,549	65,998,875	3,151,498	82,900,497	0
1986	8,974,520	184,907	3,763,761	166,939	72,441	97,984,539	0	109,674,455	0
1987	4,833,473	195,060	2,400,784	160,292	42,761	101,903,388	0	109,535,758	0
1988	3,888,906	183,111	3,328,809	309,918	169,289	134,060,185	2,210,394	144,150,612	0
1989	5,208,999	323,120	1,055,082	328,696	53,181	149,455,340	7,012,965	163,437,891	0
1990	3,456,314	0	0	171,785	48,746	161,742,748	24,549,299	189,968,822	0
1991	1,917,713	0	0	50,038	14,779	328,647,269	40,081,555	370,711,294	0
TOTAL	335,443,157	44,445,135	92,587,735	10,585,172	3,245,266	1,245,382,946	358,711,423	2,090,526,447	429,402,630
AVERAGE	13,417,726	2,339,218	4,025,553	557,114	180,293	88,955,925	16,035,065	83,621,057	26,837,664

<sup>1</sup>Calendar year

<sup>2</sup>Chignik and South Peninsula catches combined 1967 through 1970

Table 6. Alaska Westward Region historic Dungeness crab catch (in pounds) by district since 1962.

Calendar Year	Kodiak	Alaska Peninsula	Aleutians	Total
1962	1,904,567	0	0	1,904,567
1963	2,487,512	0	0	2,487,512
1964	4,162,182	0	0	4,162,182
1965	3,311,571	0	0	3,311,571
1966	1,148,600	0	0	1,148,600
1967	6,663,668	0	0	6,663,668
1968	6,829,061	1,259,000	0	8,088,061
1969	5,834,628	1,056,000	0	6,890,628
1970	5,741,438	13,000	0	5,754,438
1971	1,445,864	11,000	0	1,456,864
1972	2,059,536	65,000	0	2,124,536
1973	2,000,526	194,500	0	2,195,026
1974	750,057	0	60,517	810,574
1975	639,813	0	4,408	644,221
1976	87,110	0	0	87,110
1977	113,026	0	0	113,026
1978	1,362,306	0	0	1,362,306
1979	1,313,650	102,320	1,101	1,417,071
1980	2,011,736	0	0	2,011,736
1981	5,566,463	42,296	0	5,608,759
1982	4,546,311	779,600	36,034	5,361,945
1983	4,752,148	1,200,978	8,975	5,962,101
1984	5,304,921	647,497	91,736	6,044,154
1985	4,153,877	462,258	16,750	4,632,885
1986	965,095	179,367	10,897	1,155,359
1987	1,450,983	182,706	26,627	1,660,316
1988	2,125,032	179,022	22,634	2,326,688
1989	3,077,937	<sup>1</sup>	11,124	3,089,061 <sup>2</sup>
1990	2,879,955	65,806	17,365	2,963,126
1991	1,414,499	80,248	7,412	1,502,159
TOTAL	86,104,072	6,520,778 <sup>2</sup>	315,580	92,990,430 <sup>2</sup>
AVERAGE (years fished)	2,870,136	386,516 <sup>2</sup>	24,275	3,280,927 <sup>2</sup>

<sup>1</sup> Catch confidential

<sup>2</sup> Except 1989 Alaska Peninsula confidential catch

ANNUAL MANAGEMENT REPORT FOR THE  
SHELLFISH FISHERIES OF THE KODIAK AREA, 1991

MARCH 1992

BY

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## KODIAK AREA

### Introduction

The Kodiak Shellfish Management Area is located in Southcentral Alaska, south of the latitude of Cape Douglas (58°52' N. lat.) on the Alaska Peninsula, east of the longitude of Cape Kumlik (157°27' W. long.) and west of 148°50' W. longitude. The Management Unit varies slightly for shrimp, where it extends from the latitude of Cape Douglas to the longitude of Kilokak Rocks on the Alaska Peninsula (156°19'25"W. long.). This report reviews the 1991 seasonal shellfish fisheries within the area and provides a synopsis of all landings from within the Kodiak area.

Tanner crab, Dungeness crab, and scallops were the principal commercial species fished during 1991. A small harvest of octopus and sea urchins also occurred. The Kodiak Area has had historically important red king crab and trawl pink shrimp fisheries, but current population levels are depressed to the point of not allowing commercial harvests of those species.

Catches are reported by fishermen from individual statistical areas (Figure 1) and summarized by districts or sections (Figures 2, 3 and 4). At the Port of Kodiak, 7.6 million pounds of shellfish were landed during 1991, down from the 15 million pounds the previous year. The 1991 ex-vessel value of shellfish to the Port of Kodiak equaled 12.6 million dollars (Table 1). This included shellfish harvested from other management areas, principally the Bering Sea, and landed in Kodiak. The single most valuable shellfish species delivered was *bairdi* Tanner crab worth 5 million dollars.

A discussion of each shellfishery appears in individual sections of this report. Vessels fishing for shellfish in the Kodiak area during 1991 ranged in size from less than 20 feet to over 120 feet in keel length (Table 2). During 1991 a total of five emergency orders were issued for king crab and Tanner crab fisheries in the Kodiak Management Area (Table 3). Over 37,000 pots were utilized in the last year for Tanner and Dungeness crab fishing (Table 4.)

Table 1. 1991 landings and values of fisheries to the Port of Kodiak.

Species	Pounds <sup>1</sup>	Ex-Vessel Value <sup>2</sup>
Tanner		
<i>C. bairdi</i>	3,184,721	5,226,596
<i>C. opilio</i>	1,512,868	1,059,008
Dungeness	1,494,703	2,047,743
Red King Crab	628,077	1,947,039
Scallops	589,535	2,252,024
Sea Urchins	30,472	28,034
Octopus	129,355	138,410
Groundfish	190,970,581	33,876,000
Halibut	11,285,000	21,667,200
Salmon <sup>3</sup>	87,516,380	31,483,465
Herring <sup>4</sup>		
Sac Roe/Food/Bait	5,288,000	2,152,032
Total	302,629,692	101,877,551

<sup>1</sup> Represents pounds of product landed at the Port of Kodiak and may not have been harvested in the Kodiak Management Area.

<sup>2</sup> Dollar value to fishermen in season and does not reflect postseason settlements.

<sup>3</sup> Represents pounds of product harvested in the Kodiak Management Area.

Table 2. Keel length frequencies of Kodiak District shellfish vessels which made landings during the 1991 Tanner and Dungeness crab fishing seasons.

Vessel Keel Length (feet)	1990/91 Tanner Crab	1991 Dungeness Crab
<20	0	0
20-29.	3	10
30-39.	42	23
40-49.	51	9
50-59.	19	6
60-69.	7	13
70-79.	8	1
80-89.	4	0
90-99.	2	0
100-109.	0	0
110-119.	0	0
120-129.	1	0
130-139.	0	0
140-149.	0	0
≥150	0	0
<b>VESSELS</b>	<b>137</b>	<b>62</b>

Table 3. Shellfish emergency orders issued during 1991 for the Kodiak Management District.

Emergency Order	Effective Date	Explanation
Tanner Crab		
4-S-02-91	January 15, 1991	Closed the Southwest Section at 12:00 noon on January 15, 1991.
4-S-03-91	February 5, 1991	Closed the Northeast Section at 12:00 noon on February 5, 1991.
4-S-04-91	February 8, 1991	Closed the Eastside and Southeast Sections at 12:00 noon on February 8, 1991.
4-S-05-91	February 15, 1991	Closed the Westside Section at 12:00 noon on February 15, 1991.
King Crab		
4-S-14-91	September 25, 1991	Closed Kodiak red and blue king crab fishing for 1991/92 Season.

Table 4. Kodiak Management Area vessel and gear effort by fishery and registration year.

	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
<u>Tanner Crab</u>								
Avg. pots per vessel <sup>1</sup>	127	127	119	109	91	100	113	70
Total vessels	302	214	233	189	176	171	233	137
Total pots on grounds	38,354	27,178	27,370	20,601	16,016	17,100	26,229	9,560
<u>Dungeness</u>								
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
Average pots per vessel <sup>1</sup>	491	437	417	383	424	437	478	449
Total vessels	106	125	81	45	50	47	62	62
Total pots on grounds <sup>1</sup>	52,067	58,375	33,785	17,220	21,200	20,593	29,625	27,825

<sup>1</sup>Information from interviews at tank inspections.

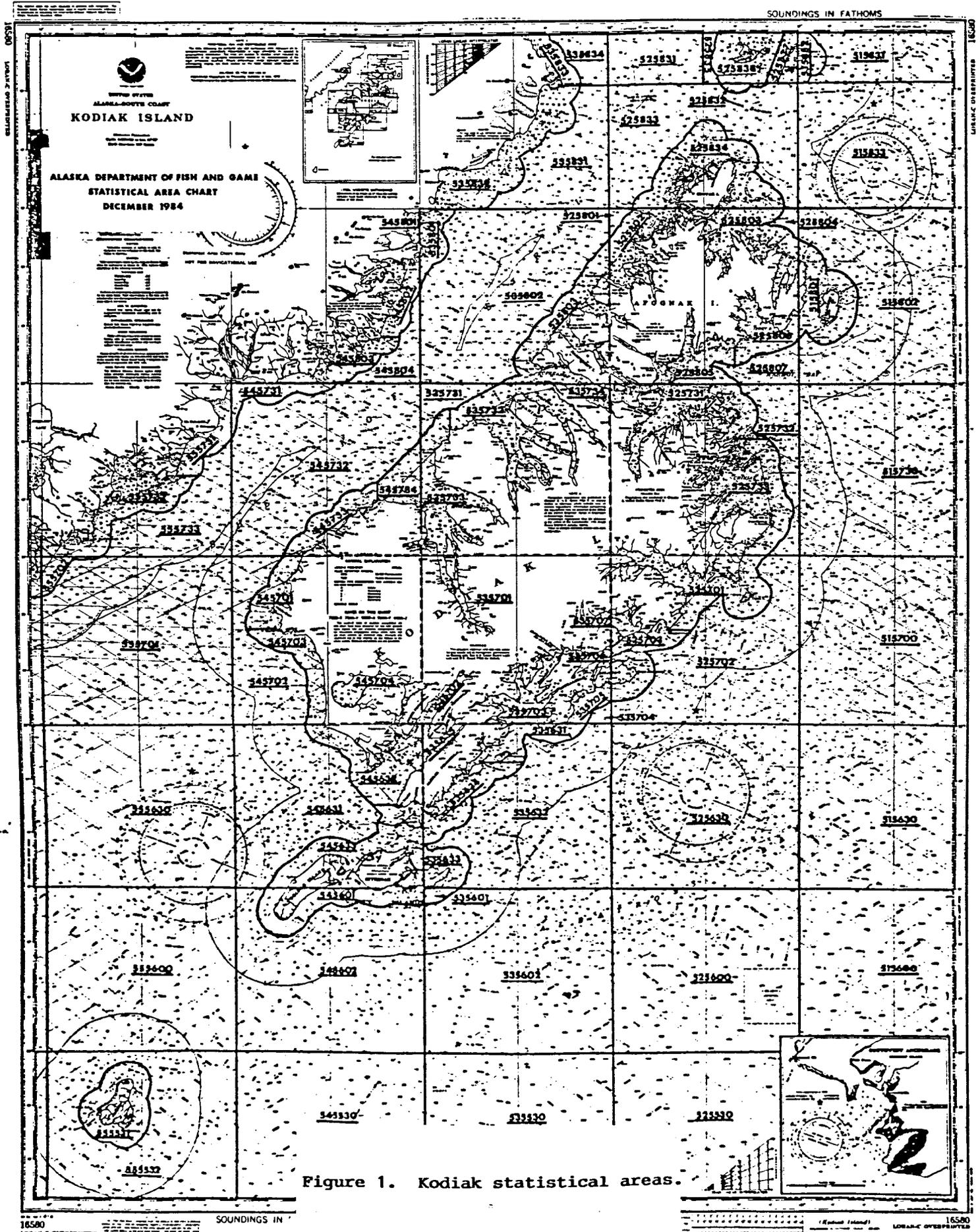


Figure 1. Kodiak statistical areas.



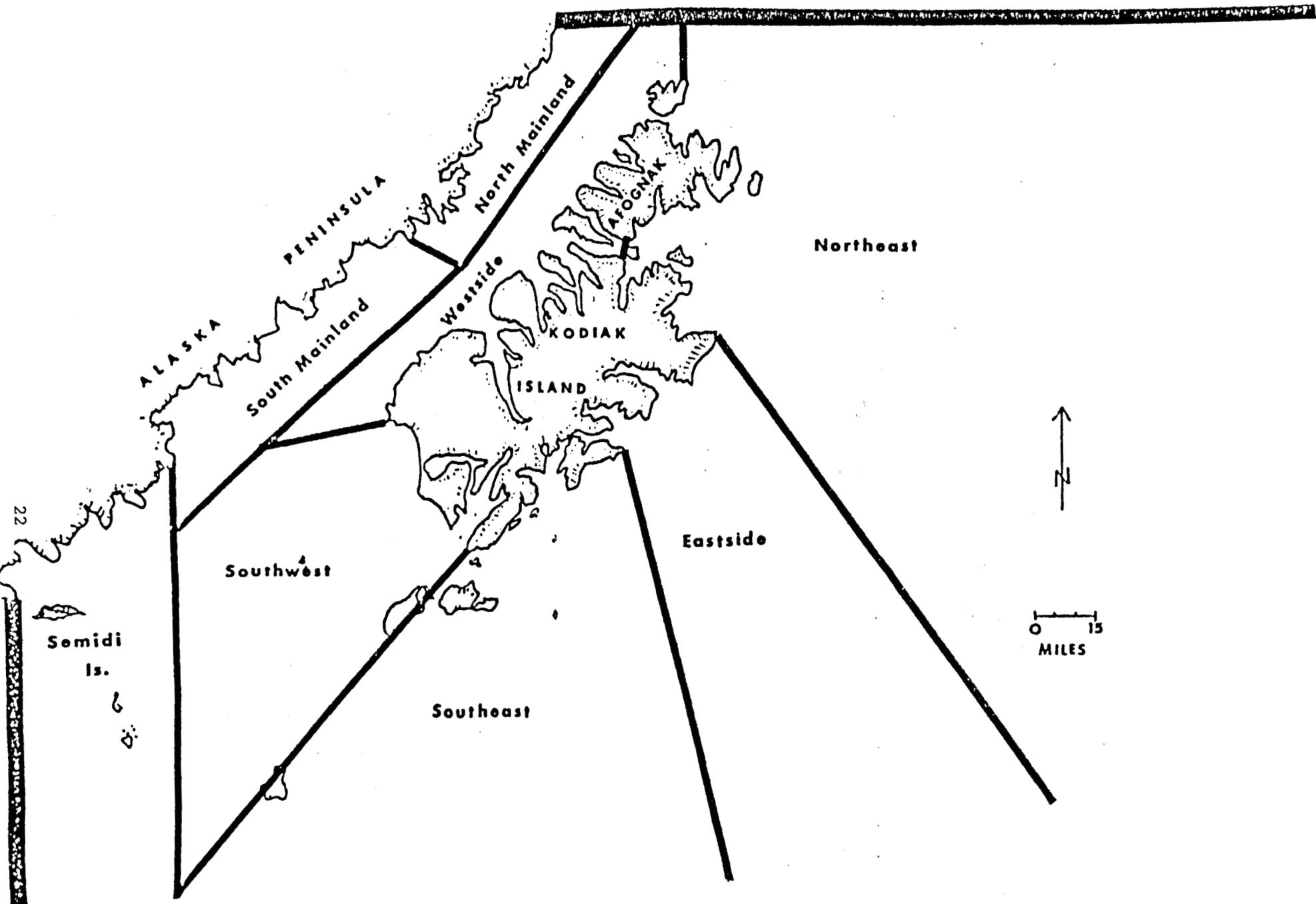


Figure 4. Kodiak District Tanner crab fishing sections.

## TANNER CRAB

The Westward registration area for Tanner crab encompasses the waters of the Pacific Ocean south of the latitude of Cape Douglas and west of the longitude of Cape Fairfield and all Bering Sea and Pacific Ocean waters east of the U.S. Russian Convention Line of 1867.

Within this registration area, the Tanner crab stocks are managed by districts. The six districts are Kodiak, Chignik, South Peninsula, Eastern Aleutian, Western Aleutian and Bering Sea. Three districts are managed by the shellfish staff stationed at the Kodiak office. The Kodiak District includes the Pacific Ocean waters south of the latitude of Cape Douglas and east of the longitude of Cape Kumlik. The Chignik District includes all Pacific Ocean waters west of the longitude of Cape Kumlik and east of a line from Kupreanof Point to Castle Rock and east of a line extending 135° from Castle Rock. The South Peninsula District includes the Pacific Ocean waters west of Kupreanof Point and east of the longitude of Scotch Cap Light. The remaining three districts are managed from the Dutch Harbor office.

### Historic Background

The domestic Tanner crab fishery for Kodiak and waters south of the Alaska Peninsula began in 1967 when less than the 200,000 pounds were landed. As king crab stocks declined in the late 60's interest increased in the Tanner crab fishery. During this period, fishermen were experimenting with crab pots to increase catches of Tanner crab and decrease incidental catch of king crab. This was accomplished by placing wooden slats in the tunnel eye of the pot to reduce the height of the opening to 4 inches or less and not allowing the larger king crab to enter the pot. A newly developed top entry pot had a round fiberglass tunnel opening and was reported to be selective for Tanner crab. While resembling the pot fished by the Japanese in the Bering Sea, this pot is larger and heavier and is not fished with a groundline. A hinged base allowed crab to be dropped directly into vessel live tanks.

Considering the abundance of Tanner crab and availability of fishing gear, the commercial fishery was slow to develop. Four factors attributed to this slow development:

- (1) Relatively low consumer acceptance of Tanner crab.
- (2) Competition on the U.S. market from imported Tanner crab meat.
- (3) A black encrustment on crab shell now known as black mat syndrome.
- (4) Uneconomical extraction of meat from the shell. Extraction of meat from Tanner crab legs using equipment and methods designed for the larger king crab required a high amount of labor per yield. Shell fragments in shoulder meat required considerable hand labor for removal.

By the 1972/73 season market conditions had improved and Tanner crab had established itself as a dominant winter and spring fishery.

In 1973 the Department initiated an experimental survey program which used king crab pots as the means of capture. Although the program was designed to assess red king crab populations, Tanner crab work was included due to the fact that they would readily enter king crab pots. The primary goals of these surveys were to estimate the annual relative abundance of crab and predict recruitment trends two to four years in advance of crab attaining commercial size. These estimates would allow the Department to establish annual harvest levels.

During 1974 and 1975 the Alaska Board of Fisheries set the first harvest levels on Tanner crab of 35 to 55 million pounds for Kodiak, Chignik and South Peninsula. Also in 1975, the Board adopted an April 30th closure to protect crab at the onset of mating.

In 1976 the Board established a 5½ inch minimum size limit. This would allow males at least one full breeding season before becoming available for commercial harvest.

The commercial fishery peaked during the 1977/78 season when over 45 million pounds were harvested.

In 1978 the Federal Government entered into joint management responsibilities with the State of Alaska on the domestic Tanner crab fishery.

Beginning December 6, 1978, the Tanner crab fishery in the Exclusive Economic Zone off Alaska was managed under a Fishery Management Plan or FMP. The commercial catch began to decline in the late 70's and early 80's. In 1980 the Alaska Board of Fisheries adopted into regulation a 250 pot limit for Kodiak, as the Board was attempting to reduce effort in the fishery. The Department began to develop alternative methods of assessing Tanner crab populations. Eight years of pot surveys had been completed by 1980.

It was evident from the catch variations in areas between surveys that the numbers of crab captured were not necessarily comparable. More importantly, small Tanner crabs ( $\leq 114\text{mm CW}$ ) did not enter pots in predictable numbers from survey to survey; thus, little could be determined regarding future recruitment trends. Due to problems in acquiring data on Tanner crab necessary to meet the management objectives from the pot survey, interest was generated in the use of trawls to survey the Tanner crab resource in the Gulf of Alaska as has been done by the National Marine Fisheries Service in the Bering Sea. An experimental program to test this possibility began in 1980. This trawl survey was done in conjunction with the traditional king pot survey.

The demand for Tanner crab increased as the price per pound of live crab went from 65 cents per pound to \$1.65 per pound. Vessel participation increased as the Tanner crab fishery became very profitable. In 1983, the Alaska Board of Fisheries adopted regulations to designate the South Peninsula and Chignik District as a super-exclusive area. This meant that vessels fishing this area for Tanner crab may not fish Tanner crab elsewhere in the State for that registration year. Additionally, the Board reduced the pot limit in the Kodiak District from 250 pots to 200 pots per vessels.

On February 8th, 1984 a federal judge issued a restraining order restricting the State of Alaska from enforcing the super-exclusive areas in the Chignik/South Peninsula Districts and the 200 pot limit in Kodiak outside of three miles. In order to make state and federal regulations consistent, on February 9 the Alaska Board of Fisheries issued an emergency regulation rescinding the pot limit for Kodiak and super-exclusive registration for Chignik/South Peninsula.

The joint Fishery Management Plan (FMP) was still in effect although there was considerable confusion over the enforcement of regulations and which regulations were in effect. The FMP was amended nine times in six years. To achieve conservation and management objectives and to effectively coordinate management with the State, the FMP adopted many of the management measures employed by the State. However, the FMP did not provide for management based on the best available scientific information or provide for timely coordination of management with the State. At its March 1986 meeting, the North Pacific Fishery Management Council voted to suspend the implementation of regulations for the Tanner crab FMP. The FMP was repealed at the request of the Council, effective April 1987. Once again, the State of Alaska had sole responsibility for the Tanner crab fishery in the Gulf of Alaska.

In 1990 the Alaska Board of Fisheries adopted a new pot limit for Kodiak. This pot limit was a sliding scale limit that decreased with decreasing harvest projections. When the harvest projection is in excess of 7 million pounds, the pot limit is 150 pots. If the harvest projection is between 3 million and 7 million pounds, the pot limit is 100 pots. The pot limit for harvest projections below 3 million pounds is 75 pots. As crab stocks decreased these pot limits reduced the amount of gear on the fishing grounds and made inseason management less complicated.

The Department has continued to conduct surveys in these areas and has most recently relied on trawl surveys to assess both king and Tanner crab populations. Legal crab populations are low or depressed in most areas, and recruitment for the next two years is not expected to increase. The Department has observed and recorded conditions of female egg clutches since the existence of the survey with no abnormalities observed. Successful reproduction is further substantiated by the high incidence of one and two year old crab captured in the trawl survey. The Department suspects that fish predation on small crab may be a major factor limiting Tanner crab from recruitment.

#### 1990/91 Fishery

The 1990/91 Tanner crab fishery opened by regulation on January 15, 1990 (Table 4). Due to price negotiations, most fishermen did not set baited pots on the fishing grounds until January 24th.

Tank inspections began on January 14th at 12:00 noon and were conducted in Kodiak, Port Lions, Old Harbor and Larsen Bay. A total of 137 vessels were registered, issued buoy stickers and inspected to fish Kodiak for Tanner crab.

Based on buoy sticker sales, a total of 9,560 pots were on the fishing grounds at the start of the season. This is a substantial decrease from the 27,000 pots the previous year.

In October 1990, the Department issued a news release announcing the harvest projections for the Kodiak Island District and fishing sections within the District. A harvest projection of 2.6 million pounds was projected for Kodiak. This news release also stated that the Southwest Section of Kodiak would remain closed to Tanner crab fishing. The closure was based on an estimated low population of legal male Tanner crab combined with the potential for a high effort level and an unmanageable fishery. All other sections of Kodiak Island would open on the scheduled January 15th opening date.

The Northeast Section had a preseason harvest projection of 500,000 pounds. The Department estimated that 51 vessels were fishing the Northeast Section at the start of the season with a total of 3,100 pots. This compares to last year when 78 vessels utilized 6,300 pots in the Northeast Section. Catch rates started at 46 crabs per pot and declined to 19 crabs per pot by the third day of fishing. On February 3rd, the Department announced that the Northeast Section would close to Tanner crab fishing on February 5th at 12:00 noon.

A total of 56 vessels landed 473,591 pounds of Tanner crab with an overall catch rate of 12 crabs per pot.

Based on survey results, the Eastside Section had a preseason harvest projection of 800,000 pounds. Interviews at tank inspection time indicated that 47 vessels would start fishing in the Eastside Section with a total of 3,500 pots. Last year, 71 vessels indicated that they would start fishing in the Eastside Section with a total of 8,300 pots. Catch rates for the Eastside started at 38 crabs per pot and declined to 22 crabs per pot on the second day of fishing. Catch rates then stabilized and averaged 18 crabs per pot through January 31st. On February 1st, the catch rate increased to 30 crabs per pot. This increase was due to larger vessels moving into unfished areas offshore.

On February 4th, the Department announced the Eastside Section to close on February 8th. A total of 49 vessels landed 756,849 pounds of Tanner crab with an overall catch rate of 16 crabs per pot.

The preseason harvest projection for the Southeast Section was 500,000 pounds. Interviews during tank inspections indicated there were 21 vessels fishing a total of 1,500 pots in the Southeast Section. Last year, 30 vessels started in the Southeast Section with a total of 3,400 pots. Catch rates this season for the Southeast Section started at 32 crabs per pot and declined to 13 crabs per pot on the 31st of January. On February 4th, the Department announced that the Southeast Section would close to tanner crab fishing on February 8, 1991.

Overall the Southeast Section had a total of 32 vessels landing 450,455 pounds with a CPUE of 16 crabs per pot.

The Westside Section was assigned a preseason harvest projection of 500,000 pounds based on survey results. Interviews at tank inspection time indicate that 12 vessels were starting fishing operations in the Westside Section. A total of 886 pots were expected to be on the fishing grounds. Last season, 14 vessels were starting fishing in the Westside Section with a total of 1,350 pots.

Catch rates this season started at 11 crabs per pot and declined to 6 crabs per pot. Last season catch rates started at 25 crabs per pot and declined to 5 crabs per pot late in the fishery. The harvest through February 10th was 55,018 pounds for the Westside Section.

It was apparent that the preseason projection would not be obtained due to poor fishery performance.

On February 11, the Department announced that the Westside Section would close to Tanner crab fishing at 12:00 noon on February 15, 1991.

A total of 16 vessels landed 79,747 pounds of Tanner crab with an overall CPUE of 6 crabs per pot.

The North Mainland Section remained open until the March 31st regulatory closure. A total of 5 vessels landed 157,072 pounds with an overall catch rate of 21 crabs per pot. This harvest was well below the preseason projection of 300,000 pounds and probably fell short of the projection due to the reduced effort level.

The South Mainland and Semidi Islands Sections also closed by regulation on March 31, 1991. The Department does not survey these areas and thus makes no projections on harvest. A very limited effort and catch did occur in the Semidi Islands. However, due to confidentiality this catch has been included with the North Mainland catch.

During the 1990/91 Kodiak District Tanner crab season, a total of 137 vessels landed 1,917,713 pounds of crab with an overall catch rate of 14 crabs per pot.

### Stock Status

The Department of Fish and Game conducts summer trawl surveys to assess king and Tanner crab populations. This survey was conducted aboard the R/V *Resolution* for a 45 day period between June and September.

Two hundred and twenty-seven (227) successful tows were made capturing a total of 36,691 Tanner crabs. A total of 22,550 male crabs were caught of which 4,964 were legal crabs and 5,140 were prerecruit-one in size (114mm - 138mm carapace width).

Results of this survey indicate an increase in legal crab abundance and a decrease in prerecruit-one abundance over last year.

The Department made harvest projections based on survey results. This projection was based on a 40% exploitation rate for legal male crab in the Northeast Section. A 20% exploitation rate for legal male crab in the Eastside Section

was utilized. This reduced harvest rate was based on the reduced number of prerecruit-one crab captured on the survey. Harvest projections for the 1991/92 Tanner crab fishery were:

Section	Millions of Pounds
Northeast	0.5
Eastside	1.8
Southeast	Closed
Southwest	Closed
Westside	Closed
North Mainland	Closed
South Mainland	Closed
Semidi Islands	Closed
Total	2.3

Table 1. Commercial catch and effort for the Tanner crab (*Chionoecetes bairdi*), Kodiak Management District, since 1967<sup>1</sup>.

Year	Vssls	Lndngs	Number of crab <sup>1</sup>	Number of lbs. <sup>1</sup>	Pots Lifted	CPUE	Avg. Wt.	Price Per #
1967	-	83	-	110,961	-	-	-	\$ .07
1968	-	817	-	2,560,687	-	-	-	.10
1969	85	955	-	6,827,312	72,748	43	-	.11
1969/70 <sup>2</sup>	67	833	3,237,244	8,416,782	78,266	42	2.6	.11
1970/71	82	453	2,686,067	6,744,163	60,967	44	2.5	.11
1971/72	46	505	3,878,618	9,475,902	65,907	59	2.4	.13
1972/73	105	1,466	13,609,688	30,699,777	188,158	67	2.3	.17
1973/74 <sup>3</sup>	123	1,741	11,857,573	29,820,899	217,523	59	2.5	.20
1974/75 <sup>3</sup>	74	471	5,459,940	13,649,966	73,826	83	2.5	.17
1975/76 <sup>4</sup>	104	1,168	10,748,958	27,336,909	199,304	64	2.5	.20
1976/77 <sup>5</sup>	102	998	7,830,727	20,720,079	164,213	48	2.6	.33
1977/78 <sup>6</sup>	148	1,483	12,401,243	33,281,472	251,621	49	2.6	.43
1978/79 <sup>7</sup>	218	1,225	10,702,829	29,173,807	275,455	38	2.7	.55
1979/80 <sup>7</sup>	211	1,385	6,813,128	18,623,875	282,946	24	2.7	.55
1980/81 <sup>8</sup>	188	771	4,398,631	11,748,629	174,351	25	2.7	.65
1981/82 <sup>9</sup>	221	950	5,413,467	13,756,159	230,403	24	2.5	1.65
1982/83 <sup>9</sup>	348	1,439	7,744,812	18,927,061	377,562	21	2.4	1.25
1983/84 <sup>9</sup>	303	1,229	5,891,968	14,478,066	303,764	10	2.5	1.20
1984/85 <sup>10</sup>	214	710	4,567,037	12,024,553	176,830	26	2.6	1.50
1985/86 <sup>10</sup>	233	601	3,457,930	8,996,151	160,808	21	2.6	1.90
1986/87 <sup>10</sup>	189	503	1,830,365	4,833,473	110,963	16	2.6	2.62
1987/88 <sup>10</sup>	176	557	1,614,874	3,888,906	101,488	16	2.4	2.40
1988/89 <sup>11</sup>	171	567	2,106,320	5,208,999	86,556	24	2.5	3.05
1989/90 <sup>11</sup>	233	548	1,435,477	3,456,314	97,333	15	2.4	2.40
1990/91 <sup>11</sup>	137	448	764,107	1,917,713	54,110	14	2.5	1.59
TOTAL	-	-	128,450,963	336,768,615	3,805,100	-	-	-
AVERAGE	165	877	5,838,680	13,470,745	165,439	34	2.5	-

<sup>1</sup>Data Source: Alaska Department of Fish and Game annual Board of Fish and Game Reports and annual Kodiak Area Management Report.

<sup>2</sup>Fishing year July 1 - June 30

<sup>3</sup>Legal season November 1 - June 30, Season terminated May 15 due to onset of mating period.

<sup>4</sup>Legal season November - April 30

<sup>5</sup>Legal season January 1 - April 30

<sup>6</sup>Legal season January 1 - May 15

<sup>7</sup>Legal season January 5 - May 15

<sup>8</sup>Legal season January 22 - May 15

<sup>9</sup>Legal season February 10 - May 15

<sup>10</sup>Legal season January 15 - May 15

<sup>11</sup>Legal season January 15 - March 31

Table 2. Tanner crab, *Chionoecetes bairdi*, catch in pounds by fishing seasons for the Kodiak Management District since 1981/82.

Section	1981/82 <sup>1</sup>	1982/83 <sup>2</sup>	1983/84 <sup>2</sup>	1984/85 <sup>3</sup>	1985/86 <sup>3</sup>	1986/87 <sup>3</sup>	1987/88 <sup>3</sup>	1988/89 <sup>4</sup>	1989/90 <sup>4</sup>	1990/91 <sup>4</sup>
Northeast	1,160,945	2,832,979	1,845,103	1,063,906	646,120	613,791	566,129	466,069	499,341	473,591
Eastside	1,362,308	3,124,031	4,460,775	5,070,112	4,137,703	1,814,094	273,821	606,875	1,049,868	756,848
Southeast	549,504	2,371,870	2,290,951	1,977,377	1,660,327	513,058	1,087,096	1,183,098	484,514	450,455
Southwest	5,188,309	5,587,149	2,240,332	889,176	721,443	475,122	1,143,306	1,703,723	307,427	Closed
Semidi Is.	1,210,671	907,952	288,998	30,176	40,457	16,336	12,290	*	*	*
N Mainland	2,205,260	2,042,885	1,449,068	1,717,556	1,445,135	710,730	388,751	*1,042,462	*824,106	*157,072
S Mainland	260,645	149,419	549,712	123,978	85,163	26,434	5,778	*	*	0
Westside	1,818,517	1,910,776	1,353,127	1,151,883	259,803	663,908	411,135	206,772	291,058	79,747
<b>TOTAL</b>	<b>13,756,159</b>	<b>18,927,061</b>	<b>14,478,066</b>	<b>12,024,553</b>	<b>8,996,151</b>	<b>4,833,473</b>	<b>3,888,906</b>	<b>5,208,999</b>	<b>3,456,314</b>	<b>1,917,713</b>

\*North Mainland catch includes South Mainland and Semidi Island catches to protect vessel confidentiality.

<sup>1</sup>Fishing season January 22 - May 15

<sup>2</sup>Fishing season February 10 - May 15

<sup>3</sup>Fishing season January 15 - May 15

<sup>4</sup>Fishing season January 15 - March 31

Table 3. *Chionoecetes bairdi* Tanner crab catch, landings, vessel effort, catch per pot (CPUE) and catch per month by statistical subarea for the Kodiak District, 1990/91. Average catch per pot unstandardized for soak period and gear type.

Stat Area	Vessels	Landings	Pounds Harvested	Avg. Wt.	CPUE	Catch in Pounds by Month		
						January	February	March
525630	7	12	141,212	2.5	22	33,690	107,522	0
525701	12	23	147,601	2.5	13	64,917	82,684	0
525702	14	25	253,241	2.4	18	72,978	180,263	0
525703	25	47	222,270	2.5	14	96,672	125,598	0
525731	18	57	68,414	2.5	8	60,117	8,297	0
525733	36	152	369,888	2.6	15	292,526	77,362	0
525806	3	4	13,543	2.3	8	6,379	7,164	0
535631	5	7	56,697	2.6	18	12,262	44,435	0
535632	3	3	14,815	2.4	12	2,712	12,103	0
535703	29	77	311,515	2.5	15	181,247	130,268	0
535706	6	8	21,512	2.5	14	11,232	10,280	0
535707	4	5	32,012	2.7	17	27,891	4,121	0
535732	7	12	47,005	2.5	6	11,853	35,152	0
535733	4	4	8,981	2.2	4	596	8,385	0
535801	3	5	68,886	2.4	23	0	14,416	54,470
535802	4	5	35,877	2.3	21	0	22,836	13,041
535803	3	4	9,406	2.2	7	0	9,406	0
545802	3	4	29,669	2.9	20	0	29,669	0
*****	14	17	65,169	2.4	0	14,286	37,911	12,972
	137	445	1,917,713	2.5	14	889,358	947,872	80,483

"\*" Stat area totals have been combined to protect vessel confidentiality.

Table 4. History of Kodiak District Tanner crab opening and closing dates since 1977.

Year	Opened	Closed
1977	Jan 1	April 30
1978	Jan 1	May 15
1979	Jan 5	May 15
1980	Jan 5	May 15
1981	Jan 22	May 15
1982	Feb 10	April 13
1983	Feb 10	March 14
1984	Feb 10	April 1
1985	Jan 15	Feb 18
1986	Jan 15	May 15
1987	Jan 15	Feb 28
1988	Jan 15	March 10
1989	Jan 15	March 31
1990	Jan 15	Feb 21
1991	Jan 15	March 31

PERCENT OF TOTAL CRAB MEASURED

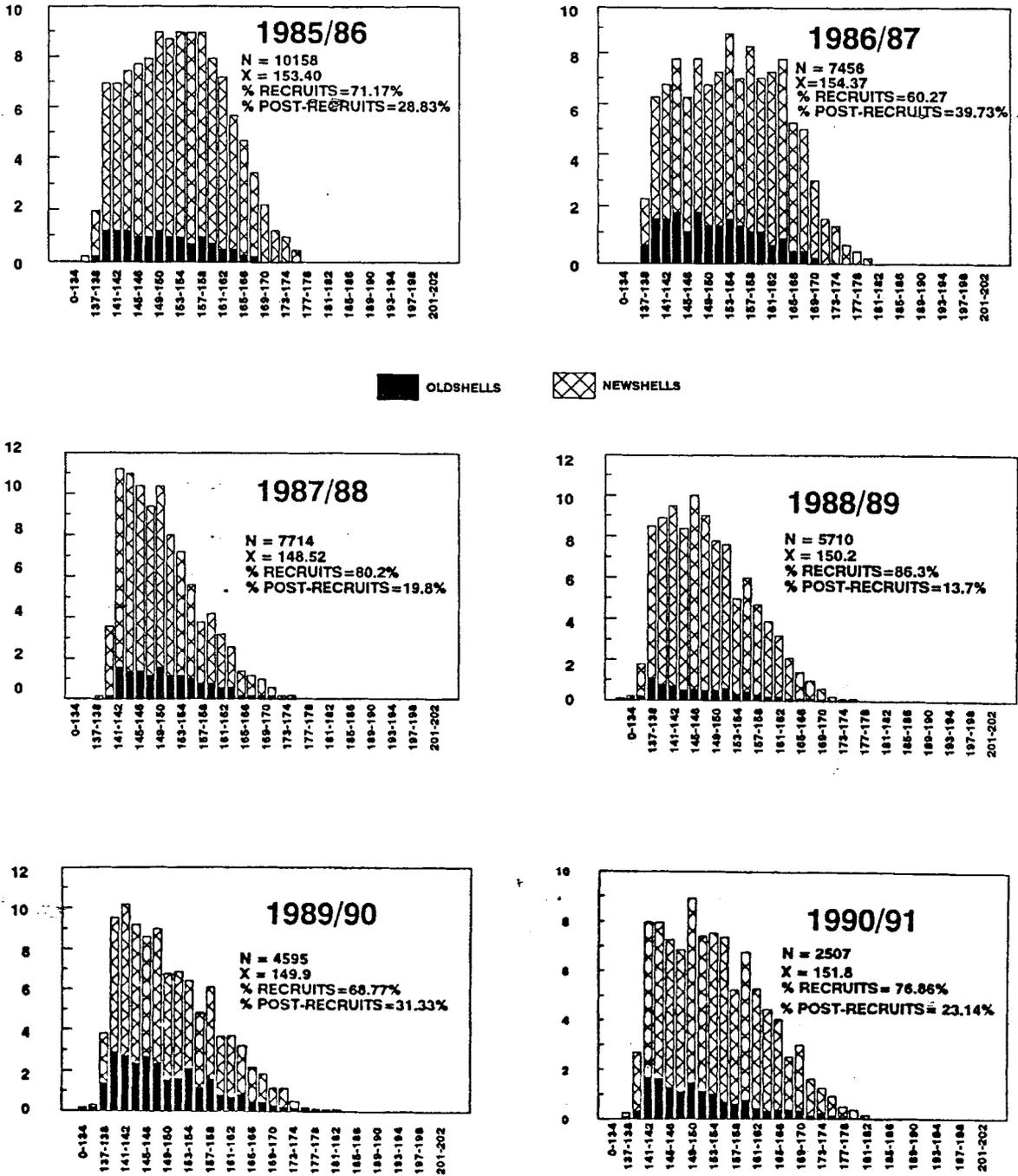


Figure 1. Tanner crab width frequencies from commercial fishery, Kodiak District, 1985/86 through 1990/91 fishing seasons.

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## DUNGENESS CRAB

### Historic Background

The first commercial Dungeness crab (*Cancer magister*) fishery in the Kodiak District was in 1962 with a catch of 1.9 million pounds (Table 1). As a result of favorable market conditions and unexploited stocks, commercial harvest increased to a peak in the four year period from 1967 through 1970 with an average annual harvest of 6.3 million pounds. In 1969 the south end of Kodiak Island (Figure 1) was closed from April 1 to June 15. This was due to the high incidence of female king crab in shallow water during this period of time. During the early 1970's the fishery declined due to biological factors accompanied sometimes by adverse marketing conditions. In the mid 1970's, weak markets and other more lucrative fisheries kept the Dungeness production at a low level. In 1977 the season dates were changed from year around to May 1 through December 31 for the northern portion of the Island. This closure period would require that crab pots be removed from the water and thus would help to reduce the amount of "derelict" gear. Declines in other fisheries and favorable market conditions during this decade encouraged Dungeness fishing.

The 1981/82 harvest of 5.6 million pounds was the largest harvest for the Kodiak area since 1970. Increased effort resulted in the removal of the major portion of postrecruit animals from the stock. As a result production declined to less than 1 million pounds in 1986 for the first time since 1977. The 1987 fishery experienced a modest increase in recruitment as the catch rose with fewer vessels participating. The production again peaked in 1989 with a large portion of the catch comprised of animals newly recruited to the fishery. The average catch per pot in 1989 was the highest since 1981. Although the number of vessels participating since that time has remained steady, the harvest declined to levels experienced during the mid-80's with a similar decline in catch per effort.

### 1991 Fishery

The regulatory opening of the commercial Dungeness crab fishing season was May 1 for the north end of the district and June 15 for the south end. Both areas remained open until December 31, 1991. A total of 62 vessels made landings harvesting 1,414,499 pounds of Dungeness crab. This is the lowest harvest since 1986 (Table 1). The 1991 season catch was valued at 1.9 million dollars with an average price of \$1.37 per pound.

The Southeast Section continued to produce the majority of the harvest (57%) with the 1991 catch at 0.8 million pounds. June, July and August were the most productive months (Table 3).

The Department of Fish and Game operated a limited dockside interview and sampling program during the 1991 season. Budget restrictions and personnel availability precluded the continuation of the program.

### Stock Status

No assessment of Kodiak Dungeness stocks is conducted independent of the commercial fishery. Animals newly recruited to the fishery continue to provide the bulk of the commercial harvest (Figure 2).

Table 1. Dungeness crab commercial catch and effort by fishing year for the Kodiak Management District.

Year	Lndgs	Vssls	---Commercial Catch---		Pots Lifted	Avg Lbs Per Lndg	CPUE	Avg Price Per Lb	Ex-Vessel Dollars
			No. Crab	No. Pounds					
1962 <sup>1</sup>	149	-	-	1,904,567	-	12,782	-	\$ .09	171,000
1963	354	-	-	2,487,512	-	7,026	-	.09	224,000
1964	395	29	-	4,254,565	-	10,537	-	.09	375,000
1965	351	25	-	3,311,571	-	9,434	-	.12	397,000
1966	144	12	-	1,416,174	-	7,976	-	.13	149,000
1967	439	18	-	6,663,668	-	15,179	-	.13	866,000
1968	536	43	-	6,829,061	-	12,741	-	.14	956,000
1969	455	29	-	5,834,628	190,967	12,823	12	.16	934,000
1970	318	33	-	5,741,438	249,800	18,005	9	.14	804,000
1971	173	24	515,653	1,445,864	90,913	8,358	6	.18	260,000
1972	316	34	766,960	2,059,536	140,921	6,517	6	.40	824,000
1973	487	42	879,484	2,000,526	251,467	4,108	3	.50	1,000,000
1974	172	23	337,839	750,057	104,062	4,361	3	.47	353,000
1975	154	15	307,272	639,813	76,411	4,154	4	.61	390,000
1976	6	4	38,072	87,110	4,410	14,518	9	.15	13,000
1977 <sup>2</sup>									
1978	173	20	618,357	1,362,306	93,633	7,875	6	.75	1,022,000
1979	237	28	595,850	1,311,275	137,951	5,543	4	.75	943,000
1980	197	21	968,829	2,011,736	107,261	10,212	9	.45	905,000
1981/82 <sup>3</sup>	466	50	2,614,545	5,566,463	295,138	11,945	9	.70	3,897,000
1982/83 <sup>4</sup>	991	111	2,004,075	4,546,311	481,542	4,588	4	.75	3,410,000
1983/84 <sup>4</sup>	1,079	103	2,044,505	4,752,148	503,464	4,408	4	1.05	4,989,000
1984/85 <sup>4</sup>	1,163	106	2,393,974	5,303,052	627,441	4,564	4	1.45	7,689,000
1985 <sup>5</sup>	1,243	125	1,791,446	4,160,435	599,291	3,347	3	1.20	4,992,522
1986	577	81	439,738	967,423	199,881	1,667	2	1.15	1,112,500
1987	379	45	747,117	1,450,983	150,067	3,828	5	1.26	1,828,000
1988	363	50	1,064,387	2,125,114	203,217	5,854	5	1.06	2,253,000
1989	359	47	1,428,973	3,077,937	185,242	8,574	8	1.10	3,385,730
1990	519	62	1,294,241	2,937,306	296,168	5,660	4	1.54	4,435,000
1991	732	62	695,470	1,414,499	279,872	1,932	2	1.37	1,938,000
Average	431	45	1,026,763	2,880,481	229,375	7,841	7	.61	1,688,689

<sup>1</sup>Season open year round 1962 - 1976

<sup>2</sup>Open May 1 through December 31, 1977 - 1980

<sup>3</sup>Open February 27, 1981 through February 1, 1982

<sup>4</sup>Open May 1, 1982 through February 1, 1983

<sup>5</sup>Open May 1, 1985 through December 31, 1985

Table 2. Dungeness crab commercial harvest (in pounds) by fishing section, Kodiak Management District.

Section	1984/85 <sup>2</sup>	1985 <sup>3</sup>	1986 <sup>3</sup>	1987 <sup>3</sup>	1988 <sup>3</sup>	1989 <sup>3</sup>	1990 <sup>3</sup>	1991 <sup>3</sup>
Northeast	330,977	346,252	93,428	102,997	149,992	113,211	65,703	266,187
Eastside	1,332,175	1,564,019	364,635	173,438	177,523	193,200	170,081	141,053
Southeast	2,137,968	1,156,447	253,179	751,793	1,126,298	2,323,771	2,479,534	805,459
Southwest	204,714	392,233	57,231	84,352	190,280	165,401	101,376	50,183
N Mainland	430,536	342,001	90,783	106,449	97,924 <sup>5</sup>	*	18,723	36,831 <sup>5</sup>
S Mainland	259,649	37,377	6,222	9,990	*	0	0	*
Westside	607,033	320,691	101,945	221,964	383,097	282,354 <sup>6</sup>	101,889	114,786
Semidi Is. <sup>4</sup>	0	1,415	0	0	0	0	0	0
Total	5,303,052	4,160,435	967,423	1,450,983	2,125,114	3,077,937	2,937,306	1,414,499

<sup>1</sup>Fishing season February 27, 1981 through February 1, 1982

<sup>2</sup>Fishing season May 1 through February 1

<sup>3</sup>Fishing season May 1 through December 31

<sup>4</sup>Area added to Kodiak District by Board of Fisheries, 1983

<sup>5</sup>North Mainland and South Mainland catches combined to protect vessel confidentiality

<sup>6</sup>North Mainland and Westside Section catches combined to protect vessel confidentiality

Table 3. Kodiak Dungeness crab catch, landings, vessel effort, catch per pot (CPUE) and catch per month by statistical subarea for the Kodiak District 1991. Average catch per pot unstandardized for soak period and gear type.

STAT AREA	NO. VSSLS	NO. LNDGS	POUNDS HARVESTED	AVG. WT.	CPUE	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
525701	13	93	108,303	2.0	2	1,584	21,971	26,395	14,785	19,615	20,640	3,063	250
525703	5	12	17,166	1.9	2	0	0	4,394	11,752	522	498	0	0
525731	8	50	38,207	1.8	2	255	71	11,271	10,649	8,063	3,880	3,121	897
525733	25	386	227,088	2.0	3	18,857	40,900	38,433	50,646	33,141	21,914	10,380	12,817
535631	4	6	10,761	2.0	2	0	0	819	5,750	0	4,192	0	0
535701	4	26	91,578	1.8	2	465	3,421	6,679	5,950	16,244	30,761	16,971	11,087
535703	7	27	60,512	2.0	3	0	10,812	8,057	20,279	10,543	2,717	4,532	3,572
535705	4	10	26,036	2.0	3	0	1,997	5,761	6,837	2,607	4,216	4,618	0
535706	4	7	8,834	2.0	3	0	0	5,268	905	521	498	0	1,642
535732	6	11	8,547	1.9	2	0	428	170	1,832	1,535	795	3,698	89
535733	3	6	12,940	2.0	2	0	438	0	4,457	0	6,365	1,680	0
545601	17	76	591,161	2.1	3	0	107,830	278,183	81,847	53,720	34,807	30,640	4,134
545602	6	13	116,989	2.2	2	0	63,342	35,501	5,802	0	12,344	0	0
545632	7	17	38,971	2.0	2	0	1,625	18,689	6,318	2,986	9,353	0	0
545633	3	3	11,212	2.4	3	0	477	6,993	0	0	3,742	0	0
*****	9	33	46,194	1.9	4	0	7,787	5,387	6,048	5,561	9,240	7,707	4,464
TOTAL	62	732	1,414,499	2.0	2	21,161	261,099	452,000	233,857	155,058	165,962	86,410	38,952

\*\*\*\*\* Stat area totals have been combined to protect vessel confidentiality.

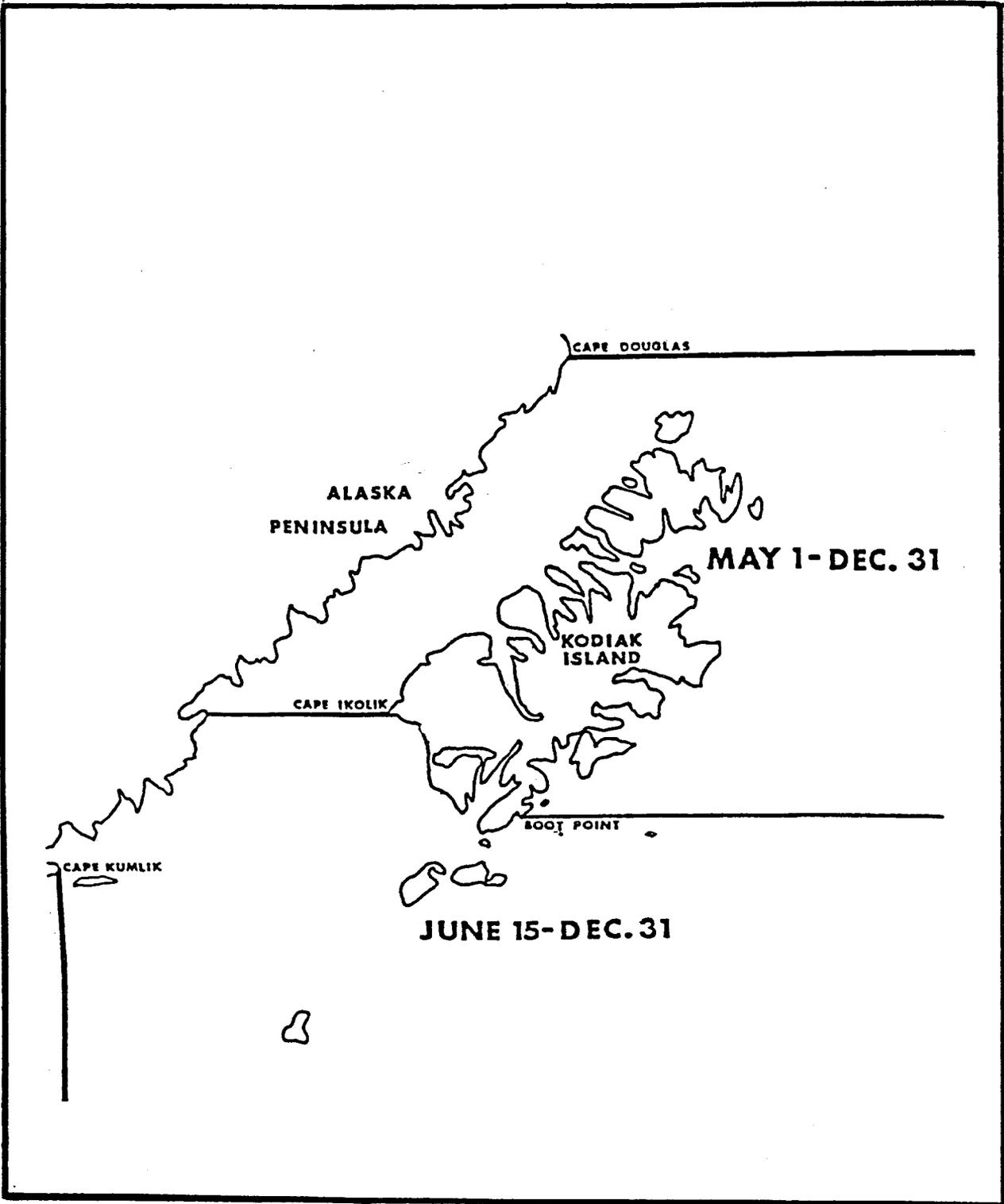


FIGURE 1. KODIAK DISTRICT COMMERCIAL DUNGENESS CRAB FISHING SEASONS.

Percent of Crabs Measured

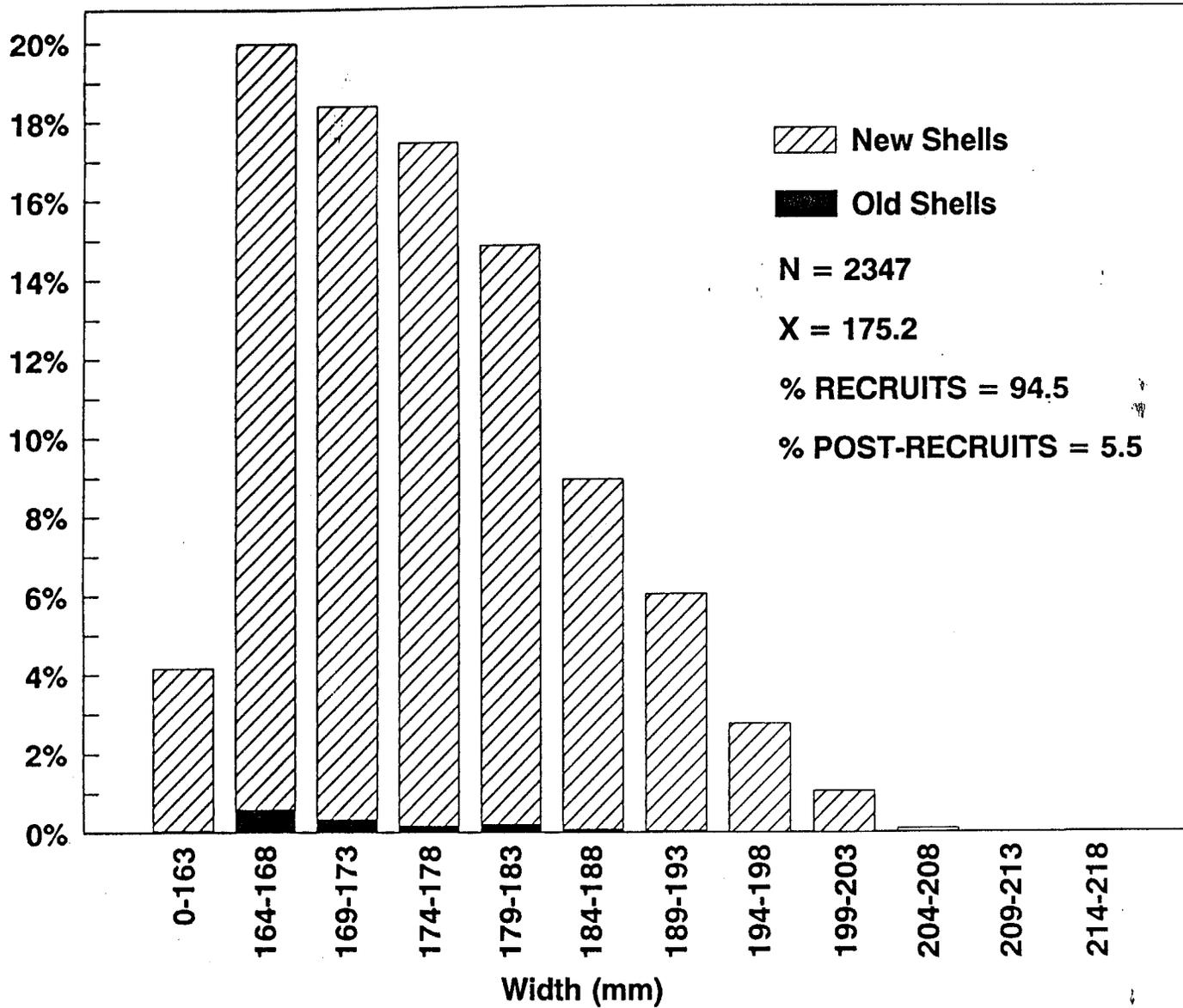


Figure 2. Kodiak District commercial Dungeness crab width frequencies, 1991.

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## KING CRAB

### Introduction

This report will cover the commercial king crab fishery for Kodiak and the Alaska Peninsula. The Kodiak Management Area has its northern boundary at the latitude of Cape Douglas and a western boundary at the longitude of Cape Kumlik. The Alaska Peninsula Management Area is bordered on the east by the longitude of Cape Kumlik and on the west by the longitude of Scotch Cap Light.

Although this discussion will focus on the development of the commercial fishery and regulatory process in the Kodiak Management Area, the management strategies for the Alaska Peninsula, as well as other areas of the State, were tailored after those developed for the Kodiak Area.

### Historic Background

The Kodiak king crab fishery was pioneered by salmon fishermen. Beginning in 1936 small amounts of king crab were landed, but catches were not officially recorded until 1950. This period in the history of the fishery was exploratory in nature. Fishermen were locating crab, determining abundance and testing gear types. Once the resource was determined abundant enough to support fishermen, markets had to be developed to sell the product.

During the exploratory period, the Bureau of Commercial Fisheries (now National Marine Fisheries Service) was the management agency. Regulations in effect during this period provided for retaining only males with a minimum width of 5½ inches. In 1949 the size limit was increased to 6½ inches.

In 1950, 60,000 pounds of king crab were landed, and the fishery was on its way to becoming a major force in the economy of the Alaska fishermen. From 1950 to 1959 the catch increased from 60,000 to 21 million pounds. During this period, a pot limit of 15 pots for Cook Inlet and area registration were instituted. Also in 1959 pots and ring nets were classified as the only legal gear and a pot limit of 30 pots per vessel was established for Kodiak. As Alaska gained Statehood, management authority was transferred to the Alaska Department of Fish and Game.

In 1960 the king crab season was opened year around. Eight processors bought 21 million pounds of king crab at 8 cents per pound from 106 vessels. The months of January and February accounted for approximately 50 percent of the harvest. In 1961 the Department recommended that more research was needed to determine the various stocks breeding habits, age and size of maturity before more regulations were instituted. In 1963 the size limit was increased to 7 inches based on Kodiak area growth rate studies and to allow male king crab to breed at least one year before being available to the fishery. The early sixties saw continued growth in the fishery until 1964 when the Good Friday earthquake slowed production. Even with the earthquake, the 1964 harvest equalled the 37 million pound harvest of 1963.

In 1965 the 30 pot limit was no longer in the regulations. A new shell crab closure went into effect from April 1 to June 15. There were 19 shellfish processors in Kodiak paying 10 cents per pound. The Department had completed king crab tagging studies and had defined four major, separate stocks of crab. Also in 1965, the staff report to the Fish and Game Board stated that the stocks could not continue to support the large harvests that were then occurring. The staff recommended the implementation of a quota system to curtail the harvest. No numbers were provided by the staff and no action was taken by the Board.

The development period which began in 1950 peaked in 1966, when 177 vessels delivered 90 million pounds to 32 processors in a ten-month fishing season. Catches in January and February accounted for 40 percent of the harvest. From 1965 to 1966, vessel effort had increased over 7 percent. Average vessel length had increased, and there were 37 percent more processors. All these factors combined to produce the peak harvest. In 1966 the Department issued the first emergency order to protect new shell and breeding crab and added its first shellfish management position. After examining 12,000 female king crab, of which only three to five percent were barren, the Department stated that Kodiak king crab stocks were biologically sound.

From 1967 to 1970 the king crab fishery expanded to offshore areas, in an attempt to maintain the catch levels of previous years. In 1967 the Department started a test fishing program to locate concentrations of prerecruit crab and to estimate future years' production. The first catch projections predicted a continuing decline in future catches. The 1967/1968 season catch dropped to 43 million pounds, 30 million pounds less than the prior year. Also in 1968, females examined from eight different areas showed that 16 percent were not carrying eggs.

During the 1968/1969 season the catch dropped to 18 million pounds, and the fishery was closed by emergency order on February 28. The Department determined that in areas with an intensive commercial harvest, there was a higher incidence of barren females. In some areas 25 percent of the females were barren, with a higher proportion of large females barren than small females. The fishery was still dependent on a weak recruit class.

In July of 1970, the Alaska Board of Fish and Game instituted a pot limit of 60 pots per vessel and established a catch quota system. The Department was directed to institute surveys for abundance estimates. The goals of the policy were twofold:

- 1) Develop and establish a stable fishery, to possibly eliminate extreme fluctuations that had characterized the fishery.
- 2) Develop and maintain a broad base of various age classes, insuring breeding success.

The Department was to present estimates of abundance to the Board, which set the quotas. Quotas were not to be increased unless the Board was notified two weeks in advance. The quotas set by the Board were intended not only to arrest the decline of the king crab fishery but also to return a degree of economic stability and cost effectiveness. Sometimes these quotas resulted in very low fishing mortalities of 20 to 30 percent and carried over large numbers of crabs

to following years. This stock pile affect caused extremely short, fast paced seasons. Many areas historically fished later in the year were left unharvested. In 1971 the Board increased the pot limit to 75 pots per vessel. By 1972 the decline had been reversed and harvests started increasing. The 1973 fishery lasted 10 days under a fixed quota system and the Southern District was reopened for an additional eight day fishery.

In 1974 the Board adopted an 8 inch size limit for a second season, as proposed by the Kodiak Advisory Committee. The purpose of the 8 inch season was to provide a harvest opportunity later in the season for areas that had produced larger crab but had not been fished in recent years. Also, the harvests during the 7 inch season were composed of a larger percentage of postrecruit crab because of the restrictive quotas. It was believed that many of these crab that escaped the 7 inch season would be lost through natural mortality. Since it was indicated that an increase in harvest could be made, the Board took a cautious approach and decided to increase exploitation on the older postrecruit crab. The Board also adopted a flexible system of harvest guidelines rather than fixed quotas. The Board directed the Department to continue to manage the fishery using a multi-age-class management strategy based on analysis of crab stocks.

The harvest guideline system provided a more liberal approach to the harvest strategy. During the 1975/76 fishery the Department tried to maximize the harvest within each district by dividing districts into schools and closing each school when a 33 percent fishing mortality was reached based on tag recovery.

In 1976 the Board adopted a fixed opening date of December 1 for the 8 inch season. The December 1 opening date provided an opportunity for all size vessels to participate in the second season. This second season was soon relied on by a large portion of the fleet, because the additional season allowed a second opportunity to fish and provided an extra stimulus to the local economies.

In 1978 the Board lowered the size limit of the second season from 8 inches to 7½ inches. The Department proposed the change because of the large amount of postrecruit crab available between 7½ and 8 inches that year. The 1978/79 second season recorded a harvest of 1.7 million pounds, similar to the 1.8 million pounds landed in previous years. The lowered size limit increased recruit harvest during the second season from less than one percent under an 8 inch size limit to 15 percent the first year that it was in effect. In 1979 the Board of Fisheries increased the pot limit to 100 pots per vessel. The Board adopted a management plan for Kodiak in 1981. The plan's direction was threefold:

- 1) Individual stocks of crabs are to be managed as a single unit, and small closures that leave a portion of a stock open should be avoided.
- 2) Utilization of stocks should be based on overall stock size while considering recruit and postrecruit population levels.
- 3) A second season for 7½ inch crab will be provided for with an opening between November 15 and December 15.

Also in 1981 the Board increased the pot limit to 150 pots per vessel. The 1981/82 season's harvest was the highest of the previous 14 years at 24.2 million pounds. This was followed by the 1982/83 season harvest of 8.7 million pounds,

the lowest in 24 years. Although this season's harvest was low, the value of the fishery was the second highest, worth 32.7 million dollars. The effort level for this fishery is also the highest on record with 309 vessels participating.

In 1983 the traditional red king crab fishery was not opened by the Department of Fish and Game due to poor stock condition. This was a result of poor recruitment for the previous two years combined with continued low recruitment forecast for the next three years. The population of adult male crab was the lowest the Department had recorded in 13 years of annual population assessments. The Department established threshold levels of legal males needed prior to considering any further fishery. The threshold of 10.3 million pounds of legal crab was nearly twofold the 5.5 million pound estimate of the 1983 survey. Additionally in 1983 the Alaska Board of Fisheries lowered the pot limit to 100 pots per vessel.

In 1984 and 1985 the estimate of legal males on the pot survey remained below the 10.3 million pound threshold level established for Kodiak Island. However, in 1985 the estimate of legal males in the Southwest District was 4.9 million pounds. This was above the threshold value of 3.4 million pounds of legal crab established for the District. The Department proposed a 450,000 harvest and presented this proposal to the Kodiak Advisory Committee. After the Committee's review of both Department and Industry views, the Kodiak Advisory Committee voted unanimously to oppose a fishery in the Southwest District. Their concerns were that a small area open with a large effort level would be destructive to the reproductive potential of the stock. The Commissioner of Fish and Game acknowledged the Advisory Committee's concerns, and the Kodiak king crab fishery was closed during 1985.

During 1986 the fishery again remained closed as the estimate of legal males was below threshold values. The Department revised the management plan from a threshold of legal males needed for a fishery to a number of fertilized females needed to maintain maximum reproductive potential of the stocks when populations are depressed. This threshold value for Kodiak Island is 5.1 million fertilized female king crab.

In 1987 a trawl survey was conducted island-wide for the first time to assess both king and Tanner crab stocks. Previous trawl surveys had been limited to Tanner crab assessment in the Shelikof and portions of the Northeast and Eastside Sections of Kodiak Island. Offshore areas of Chignik and Pavlof Bay in the South Peninsula had also been surveyed. This trawl survey estimated a population of 310,000 adult female king crab around Kodiak island of which 47% were not carrying egg clutches. Additionally the estimate of legal males was 177,000 crabs, the lowest estimate in the history of the survey. The 1987 survey results indicated a continuation of the decline in red king crab abundance that had been noted the past five years and the commercial fishery again remained closed.

During 1988 through 1991, the Department has continued trawl surveys to assess king and Tanner crab populations with the study areas expanded to encompass the Alaska Peninsula Management Area. The Alaska Peninsula and Kodiak Management Areas continued to remain closed due to abundance estimates of females well below threshold levels.

Complete information on the Westward Region trawl survey catches can be obtained from the Department in a series of Regional Information Reports.

The 1991/92 fishing season was closed prior to the scheduled September 25th opening.

### Stock Status

The Kodiak red king crab population remains at historic low population levels, but the 1991 survey captured more small crab than in recent years. Average carapace lengths of the male and female crabs captured declined as did the percent of males being legal size which fell from 55% in 1990 to 25% in 1991. Three hundred and two male and 210 female king crabs were captured with a mean length of 117.0 mm and 104.5 mm for males and females respectively (Figure 1). King crab were captured in 9% of the tows with two tows in Kalsin Bay accounting for 81% of the catch. Alitak Bay provided the most widespread king crab populations but in lower numbers than Kalsin Bay.

The Kodiak red king crab population is estimated at 0.22 million animals, up slightly from 0.16 million in 1990. Population estimates were derived for each commercial fishing area by various size and sex categories. Of the 116 mature female king crabs captured, 107 were judged to have 100% full clutches. None were barren.

### The Brown (Golden) King Crab Fishery

The brown (golden) king crab fishery in the Kodiak area is a permit fishery. This permit system, adopted in 1983 by the Alaska Board of Fisheries, provides the Department the flexibility to avoid conflicts with fair starts in other fisheries, as well as the ability to adjust the permit provision so that it is in the best interest of the industry and the resource.

At the March 1985 Board of Fisheries meeting, the Board reduced the legal size of brown king crab from 7 inches to 6½ inches in width of shell. This regulation became effective on June 28, 1985, the beginning of the new registration year.

The Department does no assessment work on brown king crab, and accurate stock size is unknown. However, the scope of the last seven years' commercial effort indicates the resource is not large.

There was no harvest of brown king crab during 1991 (Table 5).

Table 1. Historic commercial red king crab catch and effort for the Kodiak Registration Area 'K', 1960/61 through the current fishing season.

Fishing Year	Vessels	Landings	No. of Crab	No. of Pounds	Pots Lifted	CPUE	----Average----	
							Wt. Per Crab	Price Per #
1960/61	143	-	2,116,375	21,064,871	-	-	-	\$.085
1961/62	148	-	3,181,554	28,962,900	-	-	-	.95
1962/63	195	-	4,146,143	37,626,703	-	-	-	.10
1963/64	181	-	4,158,988	37,716,223	-	-	-	.10
1964/65	189	-	4,923,309	41,596,518	95,951	51	-	.10
1965/66	175	-	11,061,709	94,431,026	173,083	64	-	.128
1966/67 <sup>2</sup>	213	-	8,476,299	73,817,779	223,174	38	-	.11
1967/68	227	3,847	5,147,321	43,448,492	207,392	25	-	.26
1968/69	178	1,839	2,348,950	18,211,485	119,146	20	-	.26
1969/70 <sup>3</sup>	136	978	1,606,181	12,200,571	96,841	17	-	.28
1970/71	100	830	1,561,318	11,719,970	119,192	13	-	.30
1971/72	89	507	1,539,157	10,884,152	66,166	23	-	.39
1972/73	88	683	2,029,670	15,479,916	70,806	29	-	.55
1973/74	129	837	1,847,679	14,397,287	77,826	24	-	.45
1974/75	158	1,195	2,910,201	23,582,720	110,297	26	-	.45
1975/76	169	1,569	2,976,909	24,061,651	113,795	26	8.1	.66
1976/77	195	1,165	2,177,956	17,966,846	130,777	17	8.2	1.37
1977/78	179	1,186	1,590,477	13,503,666	145,867	11	8.5	1.34
1978/79	194	1,077	1,464,021	12,021,850	177,261	8	8.2	1.60
1979/80	247	1,346	1,979,394	14,608,900	207,991	9	7.3	.95
1980/81	164	1,175	2,787,199	20,448,654	201,531	14	7.3	1.05
1981/82	246	2,214	3,035,674	24,237,601	388,751	8	8.0	2.00
1982/83	309	1,373	1,011,109	8,729,761	283,795	4	8.6	3.75
1983/84			NO FISHERY	- SEASON CLOSED				
1984/85			NO FISHERY	- SEASON CLOSED				
1985/86			NO FISHERY	- SEASON CLOSED				
1986/87			NO FISHERY	- SEASON CLOSED				
1987/88			NO FISHERY	- SEASON CLOSED				
1988/89			NO FISHERY	- SEASON CLOSED				
1989/90			NO FISHERY	- SEASON CLOSED				
1990/91			NO FISHERY	- SEASON CLOSED				
1991/92			NO FISHERY	- SEASON CLOSED				
<b>AVERAGE<sup>4</sup></b>	<b>174</b>	<b>1,359</b>	<b>2,963,898</b>	<b>24,834,120</b>	<b>143,813</b>	<b>21</b>	<b>-</b>	<b>-</b>

<sup>1</sup> Fishing year defined as May 1 - April 30.

<sup>2</sup> July 1 - April 30 season established.

<sup>3</sup> August 15 - January 15 established.

<sup>4</sup> Average includes only years with open fishing season.

Table 2. Kodiak red king crab harvest composition and seasons; 1960/61 through the current fishing season.

Season	Open	Closed	Catch Million Pounds	Percent Recruits <sup>1</sup>	Percent Post- Recruits	Size Limit
1960/61	Jul 1	Jun 30	18.9	8	92	6½"
1961/62	Jul 1	Jun 30	29.0	36	64	6½"
1962/63	Jul 1	Jun 30	37.6	26	74	6½"
1963/64	Jul 1	Jun 30	35.0	33	67	7"
1964/65	Jul 1	Jun 30	41.6	48	52	7"
1965/66	Jul 1	Apr 30	94.4	35	65	7"
1966/67	Jul 1	Apr 30	73.8	28	72	7"
1967/68	Jul 1	Apr 30	43.4	27	73	7"
1968/69	Jun 15	Mar 31	18.2	61	39	7"
1969/70	Aug 15	Jan 15	12.2	59	41	7"
1970/71	Aug 15	Jan 15	11.7	38	62	7"
1971/72	Aug 15	Oct 29	10.9	75	25	7"
1972/73	Aug 15	Oct 13	15.5	47	53	7"
1973/74	Aug 15	Oct 25	14.4	49	51	7"
1974/75	Aug 15	Sep 21	20.9	52	48	7"
	Oct 15	Jan 15	2.2	3	97	8"
1975/76	Aug 15	Oct 20	21.6	48	52	7"
	Oct 20	Dec 1	2.5	3	97	8" <sup>2</sup>
1976/77	Sep 1	Oct 16	14.6	33	67	7"
	Dec 1	Jan 15	3.1	.5	99.5	8"
1977/78	Sep 15	Nov 30	11.7	37	63	7"
	Dec 1	Jan 15	1.8	.7	99.3	8"
1978/79	Sep 10	Nov 30	10.3	44	56	7"
	Dec 1	Jan 15	1.7	15	85	7½"
1979/80	Sep 10	Nov 30	13.4	70	30	7"
	Dec 1	Jan 15	1.2	30	70	7½"
1980/81	Sep 15	Nov 30	18.4	69	31	7"
	Dec 1	Jan 15	2.1	22	78	7½" <sup>3</sup>
1981/82	Sep 15	Dec 15	20.3	61	39	7"
	Dec 15	Jan 15	3.9	7	93	7½"
1982/83	Sep 1	Dec 10	7.5	46	54	7"
	Dec 10	Dec 19	1.2	19	81	7½"
1983/84			FISHERY CLOSED			
1984/85 <sup>4</sup>			FISHERY CLOSED			
1985/86			FISHERY CLOSED			
1986/87 <sup>5</sup>			FISHERY CLOSED			
1987/88			FISHERY CLOSED			
1988/89			FISHERY CLOSED			
1989/90			FISHERY CLOSED			
1990/91			FISHERY CLOSED			
1991/92			FISHERY CLOSED			

<sup>1</sup> Recruitment after 1963 based on 7" size limit.

<sup>2</sup> Marmot Bay, Chiniak Bay and Kupgeanof Strait did not open for 8" crab

<sup>3</sup> Uganik Bay, Kupreanof Strait, Marmot Bay, Chiniak Bay, Ugak Bay, South Sitkalidak Strait, Kiliuda Bay and Alitak Bay did not open for 7½" crab.

<sup>4</sup> Harvest of crab by test fishery - 33,743 pounds.

<sup>5</sup> Harvest of crab by test fishery - 13,393 pounds.

Table 3. Legal male red king crab, *Paralithodes camtschaticus*, estimates for the Kodiak area.

Year	Estimate in No. of Animals X 10 <sup>6</sup>
1973	4.874
1974	8.716
1975	7.622
1976	5.191
1977	3.764
1978	2.874
1979	5.629
1980	5.978
1981	5.873
1982	1.883
1983	0.400
1984	0.397
1985	0.418
1986	0.330
1987*	0.177
1988*	0.110
1989*	0.240
1990*	0.119
1991*	0.064

\*Trawl Survey

Table 4. Adult female red king crab, *Paralithodes camtschaticus*, thresholds by district for the Kodiak area (millions of animals).

	Threshold	1991 Trawl Estimate
District 1 (Northeast)	1.93	.044
District 2 (Southeast)	0.72	.0005
District 3 (Southwest)	2.28	.003
District 4 (Shelikof)	0.19	.000
TOTAL	5.12	.047

Table 5. Historic commercial brown king crab, *Lithodes aequispina*, catch and effort for the Kodiak Registration Area 'K', 1983 through the current fishing season.

Fishing Year	Landings	Vessels	No. of Crab	No. of Pounds	Pots Lifted	-----Average-----			Ex-Vessel Value (Millions)
						Crab Per Pot	Wt. Per Crab	Price Per Pound	
1983	36	12	16,349	111,398	8,490	2	6.8	3.00	.3
1984	8	6	3,513	22,066	1,950	2	6.3	2.50	.1
1985	19	4	10,005	63,641	2,693	4	6.4	1.95	.1
1986	31	4	21,862	146,478	5,463	4	6.7	3.00	.4
1987	38	5	9,484	67,191	3,187	3	7.1	3.44	.2
1988				Confidential					
1989				Confidential					
1990	6	3	1,214	7,314	1,090	1	6.02	3.00	.02
1991	0	0	0	0	0				
AVERAGE	20	5	8,814	59,090	3,181	3	-	-	-

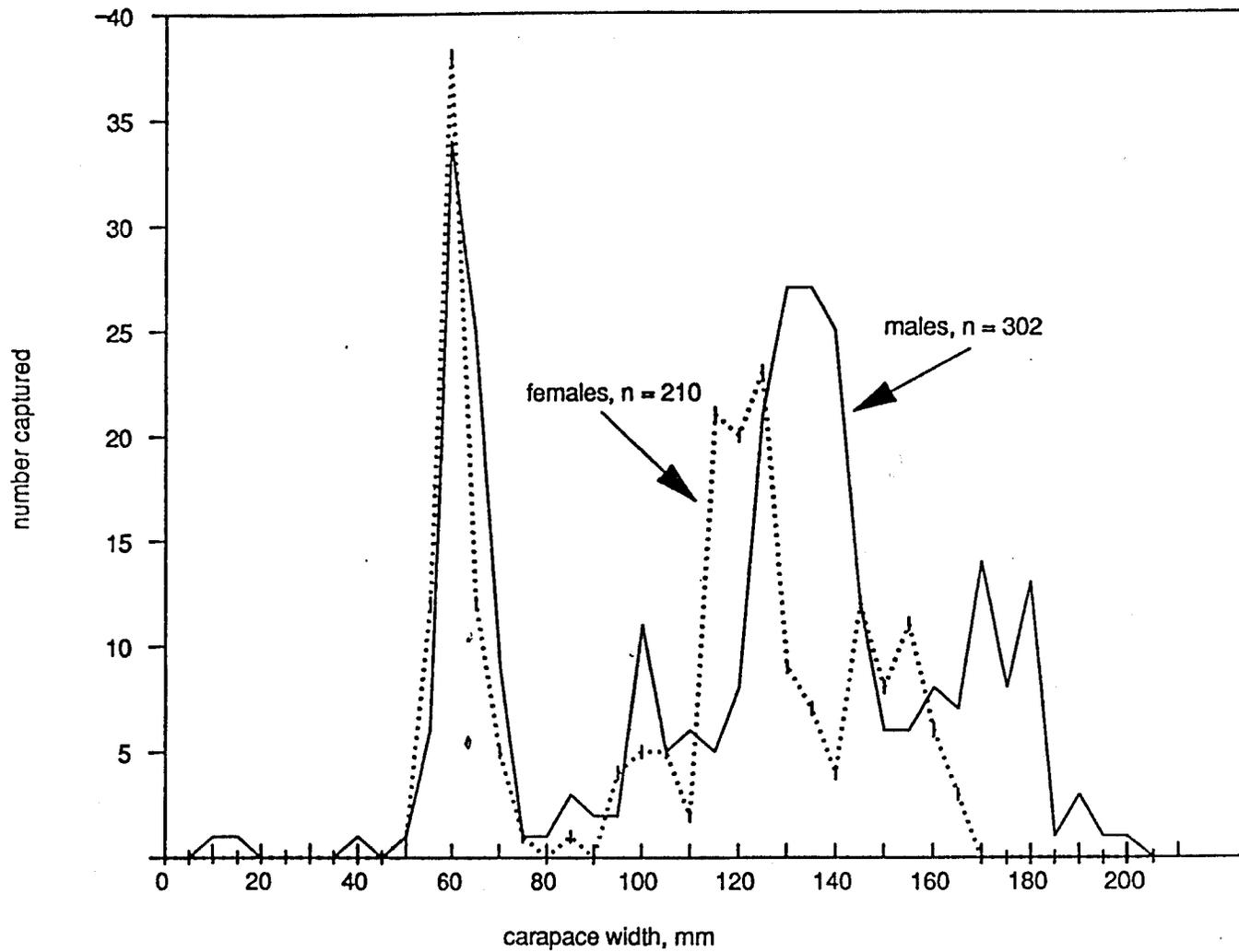


Figure 1. Carapace length frequency of male and female king crab, Paralithodes camtschaticus, captured during the Kodiak trawl survey, 1991.

## SHRIMP

### Historic Background Trawl Fishery

The Kodiak shrimp fishery began in 1958 with a harvest of 31,886 pounds. The fishery grew rapidly from an annual catch of 10 to 12 million pounds in the early 1960's. The fishery slowed when shore plants and the fishing fleet were badly damaged by the 1964 earthquake and tidal wave but then grew rapidly to a peak of 82.2 million pounds in 1971 (Table 1). As Kodiak shrimp catches declined in the 1970's; much of the vessel effort shifted into the Chignik and South Peninsula areas until those areas demonstrated similar declines in the late 1970's.

Vessels that have participated in the Kodiak fishery are of three types: vessels that fish with beam trawls, vessels that fish a single otter trawl and vessels that fish two otter trawls simultaneously. The single otter trawl vessels have participated in the fishery since 1958. Beam trawl vessels started fishing in 1970 (F/V *Taurus*, F/V *Sue*). The double rigged otter trawl vessels first fished Kodiak in 1969 (F/V *Pacific Challenger*) followed by more efficient stern ramp double otter trawls in 1970 (F/V *Dawn*). These double rigged vessels increased efficiency; at the same time, hold capacity also increased. Double rigged vessels have hold capacities to 200,000 pounds, while single rigged otter trawls are typically less than 120,000 pounds, and beam trawlers typically pack less than 20,000 pounds. The efficiency and ability to deliver larger loads is what enabled the double rigged otter trawlers to range over a much larger area than was customary. Along with the other innovations to the fishery, the double rigged vessel also introduced Gulf of Mexico style nets which were more efficient than the West Coast manufactured nets used previously. These new style nets were quickly adopted by the single rigged vessels. Gear continued to change as new materials and ideas were tried; wider nets, higher opening nets, different mesh size, longer nets and roller gear. Along with the increase in gear technology in the 1970's, electronics became more sophisticated and reliable as a tool to locate shrimp.

No regulatory measures were promulgated in the Kodiak shrimp fishery until 1970 when the Alaska Board of Fish and Game (later known as Alaska Board of Fisheries) adopted an egg hatch closure during March and April for some bays and nearshore areas. In 1971 a quarterly quota system was adopted to provide harvest throughout the year while not allowing unrestricted harvest. The allowable harvest for various fishing sections was divided into four periods. In 1972 the Board adopted a total egg hatch closure for the Kodiak Area during March and April. In the late 1970's, the quarterly quota system was reduced to a single opening for certain areas and staggered opening dates for many of the fishing sections, while others retained two fishing periods - fall and winter (September 1 - December 31 and January 1 - February 28). Beginning in 1979, the opening date was changed from May 1 to June 1. Most of the season date adjusting was due to industry's desire to spread harvest out over a longer time period while trying to prevent conflicts with vessels and processing in other fisheries. Also, during this period in the late 1970's, stocks in some areas were not large enough to support fisheries, and these areas were opened and closed by emergency order.

The Department of Fish and Game conducted a voluntary logbook program beginning in 1967. This database, plus trawl surveys conducted by the Department since the early 1970's, provided means for establishing harvest by the late 1970's. This database and harvest adjusting system was quite flexible during its developing stage. By 1981 industry demanded this flexible management scheme be defined. This led to the *Westward Region Shrimp Management Plan* which was presented to the Board of Fisheries in April 1982. This plan was reviewed by the Board, and amendments in certain areas were made at the Board's request. The objectives of this management plan are to maintain shrimp stocks at a level termed "representative biomass" (RBI) determined by survey "index" while allowing a fishery during rebuilding periods. Exploitation rates increase as the population level approaches or exceeds RBI and decline if the survey index is less than the RBI level. Additionally, a minimum level at which any harvest would occur was established ("minimum acceptable biomass index"). This MABI is 40 percent of the representative index level.

At the same meeting the Board endorsed the *Westward Region Shrimp Management Plan*; they provided for an "economic alternative". This was in the form of an alternative management strategy known as the *Mainland Shrimp Management Plan*.

"5 AAC 31.530. MAINLAND SHRIMP MANAGEMENT PLAN. (a) The Board of Fisheries recognizes that shrimp stocks in the Westward Area have drastically declined in recent years. The board agrees that the conservative management strategy proposed by the department in the 1982 Westward Region Shrimp Management Plan is appropriate, but recognizes that exact parameters governing the selection of harvest levels will probably change as more data becomes available. Alternative management strategies should be evaluated while safeguarding the viability of major shrimp stocks upon which future significant production will have to be based."

(b) The Board is adopting this management plan for all waters of the Alaska Peninsula in Statistical Area J from the latitude of Cape Douglas southwest to the longitude of Foggy Cape. These waters include the Mainland section of the Kodiak District and the Antakchak, Nakalilok and Chiginagak Bay Sections of the Chignik District. This management plan will be used to evaluate reactions of shrimp stocks in these sections to harvest levels and seasons differing from those used in the balance of the region and to provide an economic alternative to the shrimp industry.

(c) The Board recognizes that this management plan is not without biological risks to the shrimp resource, but thinks that with proper monitoring knowledge will be gained relative to the reactions of the stock to this management plan and that questions regarding stock distribution and variability will be answered. This will require that the information, including logbooks and accurate catch reporting, provided by the shrimp fishing fleet be of a quality needed to perform this evaluation. Without this information, along with biological surveys conducted by the Department, this experimental plan cannot succeed and will be terminated.

(d) The Department is directed not to close the sections covered by this management plan based on any shrimp stock population estimates. The Department may close any section covered by this management plan for the following reasons:

- (1) wastage of shrimp;
- (2) unlawful catch reporting;
- (3) predominant harvest of shrimp less than two years of age; or
- (4) in accordance with 5 AAC 39.185.

Since both of these management plans have been in effect, stocks have continued to decline. Under the *Westward Region Shrimp Management Plan* few areas have been open the past seven years. The Mainland fishery, while open, has steadily declined in both production and area fished.

#### 1991/92 Trawl Fishery

The trawl fishery opened in the Kodiak District on June 15, 1991. There has been no commercial harvest of shrimp by a trawl during the 1991/92 season.

The areas open to shrimp trawl fishing were the areas under the *Mainland Shrimp Management Plan*, undefined areas and North Afognak (Figure 1).

During 1989 the Department conducted a trawl survey for shrimp in the Westward Region. Population estimates for each section in Kodiak are listed on Table 2. All sections remained below the level to warrant an opening.

#### Stock Status

Stocks in the Kodiak District remain at very low levels. There appears to be little if any improvement in stock conditions overall. Areas fished during the previous years (1984-85) have declined to where those managed under the *Westward Region Shrimp Management Plan* were not opened this year. Areas under the *Mainland Shrimp Management Plan*, while remaining open, continue to have little or no production.

Until stock conditions improve the Kodiak Area harvest in all probability will remain less than one million pounds.

The Department is planning to conduct a shrimp survey of Kodiak during the fall of 1992.

#### Pot Shrimp Fishery

Currently, no assessment of stock size or condition is conducted by the Department other than information from the fleet.

No pot shrimp harvest occurred during 1991 (Table 4).

Table 1. Historic commercial shrimp catch and effort for the Kodiak District of Westward Statistical Area 'J', 1958 through 1991/92 seasons.

Calendar Year	Fishing Year	Vessels	Landings	Commercial Pounds	Harvest Price
1958		-	-	31,886	\$.035
1959		-	-	2,861,900	.035
1960		11	94	3,197,985	.039
1961		12	203	11,083,500	.04
1962		11	204	12,654,027	.04
1963		-	-	10,118,472	.043
1964		6	-	4,339,114	.04
1965		11	320	13,823,061	.04
1966		17	551	24,097,141	.045
1967		23	-	38,267,856	.045
1968		16	-	34,468,713	.04
1969		26	935	41,353,461	.055
1970		18	1,024	62,181,204	.04
1971		49	1,746	82,153,724	.04
1972		63	1,398	58,352,319	.04
1973		50	1,283	70,511,477	.055
	1973/74	63	1,029	56,203,992	.08
	1974/75	75	1,100	58,235,982	.08
	1975/76	58	884	49,086,591	.08
	1976/77	62	762	46,712,083	.10
	1977/78	58	653	26,409,366	.13
	1978/79	50	328	20,506,021	.165
	1979/80	37	242	12,863,536	.225
	1980/81	67	462	27,101,218	.29
	1981/82	55	298	19,112,367	.27
	1982/83	40	224	10,391,207	.27
	1983/84	14	63	2,779,030	.35
	1984/85	13	59	2,942,922	.33
	1985/86	5	26	1,145,980	.20
	1986/87		Confidential		
	1987/88		Confidential		
	1988/89	0	0	0	.00
	1989/90	0	0	0	.00
	1990/91	0	0	0	.00
	1991/92	0	0	0	.00
Fishing Year Averages		33	556	25,917,820	\$.12

Table 2. Kodiak District shrimp seasons, harvest and effort by section 1991/92 season.

Section	Regulatory Season	Actual Harvest Period	Harvest Goal (millions #s)	Pounds Harvested	1989 Survey Index	Vessels	Landings
Inner Marmot	Opened/Closed by EO	Closed	-	-	.327	-	-
Ugak Bay	Opened/Closed by EO	Closed	-	-	.254	-	-
Kiliuda Bay	Opened/Closed by EO	Closed	-	-	.647	-	-
Two Headed	Opened/Closed by EO	Closed	-	-	.105	-	-
Alitak Bay	Opened/Closed by EO	Closed	-	-	.185	-	-
Olga Bay	Opened/Closed by EO	Closed	-	-	-	-	-
Uyak Bay	Opened/Closed by EO	Closed	-	-	.238	-	-
Uganik Bay	Opened/Closed by EO	Closed	-	-	.475	-	-
W. Afognak	Closed Bottom Trawls	Closed	-	-	-	-	-
N. Afognak	Jun 15 - Feb 28	Jun 15 - Feb 28	*	0	-	0	0
Marmot Is.	Opened/Closed by EO	Closed	-	-	.987	-	-
Chiniak Bay	Opened/Closed by EO	Closed	-	-	.222	-	-
Alitak Flats	Opened/Closed by EO	Closed	-	-	-	-	-
Mainland	Jun 15 - Feb 28	Jun 15 - Feb 28	*	0	-	0	0
Undefined	Jun 15 - Feb 28	Jun 15 - Feb 28	*	0	-	0	0

\*No harvest guideline based on survey indexes.

Table 3a. Comparison of Kodiak District trawl shrimp harvest by fishing section for the 1978/79 through the 1983/84 fishing season. Sections with no catch are indicated by zero. Where dashes appear, no section existed that year.

Fishing Section	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Inner Marmot	473,700	0	0	1,958,074	0	0
Marmot Island	0	0	0	87,408	0	0
Chiniak Bay*	1,163,818	925,388	135,804	2,598,072	0	0
Kiliuda Bay	0	0	0	0	0	0
Two Headed Island	1,600	0	2,141,048	3,043,296	0	0
Southern	3,485,531	-	-	-	-	-
Alitak Bay	-	3,537,017	4,716,875	4,136,381	3,627,209	510,086
Alitak Flats	-	-	-	1,728,553	0	0
Olga Bay	1,794,091	2,259,906	1,164,641	760,179	944,067	820,675
Ugak Bay	0	533,598	1,052,092	104,161	0	0
Uyak Bay	1,003,946	0	426,800	0	0	0
Uganik Bay	367,838	0	0	0	0	0
West Afognak	879,082	478,327	1,177,302	230,582	1,000	20,704
North Afognak	1,149,071	1,430,362	2,204,871	748,639	1,206,275	6,617
Kukak Bay	586,496	534,187	1,167,805	549,323	**	**
Wide Bay	-	1,181,936	977,682	926,158	**	**
Puale Bay	-	1,841,223	663,954	1,597,845	**	**
Mainland	-	-	-	-	3,236,991	1,420,948
Portlock	-	-	-	-	-	-
Non-Section	9,600,848	141,592	11,272,344	643,066	0	0
Totals	20,506,021	12,863,536	27,101,218	19,112,367	10,391,206	2,779,030

\*Chiniak and Kalsin Bay combined

\*\*Areas combined in 1982/83 to form Mainland Section

Table 3b. Comparison of Kodiak District trawl shrimp harvest by fishing section for the 1984/85 through the 1989/90 fishing season. Sections with no catch are indicated by zero. Where dashes appear, no section existed that year.

Fishing Section	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90
Inner Marmot	0	0	0	0	0	0
Marmot Island	0	0	0	0	0	0
Chiniak Bay*	0	0	0	0	0	0
Kiliuda Bay	0	0	0	0	0	0
Two Headed Island	0	0	0	0	0	0
Southern	-	-	-	-	-	0
Alitak Bay	1,474,255	0	0	0	0	0
Alitak Flats	0	0	0	0	0	0
Olga Bay	399,882	1,397 <sup>1</sup>	0	0	0	0
Ugak Bay	0	0	0	0	0	0
Uyak Bay	0	0	0	0	0	0
Uganik Bay	0	0	0	0	0	0
West Afognak	5,209	0	0	0	0	0
North Afognak	0	0	Confidential	0	0	0
Kukak Bay	**	**	**	**	**	**
Wide Bay	**	**	**	**	**	**
Puale Bay	**	**	**	**	**	**
Mainland	466,694	918,277	447,675	Confidential	0	0
Portlock	-	-	-	-	-	-
Non-Section	596,882	226,306	5,793	-	0	0
Totals	2,942,922	1,145,980	455,468	10,841	0	0

<sup>1</sup>Test fishing survey

\*Chiniak and Kalsin Bay combined

\*\*Areas combined in 1982/83 to form Mainland Section

Table 3c. Comparison of Kodiak District trawl shrimp harvest by fishing section for the 1991/92 fishing season. Sections with no catch are indicated by zero.

Fishing Section	1990/91	1991/92
Inner Marmot	0	0
Marmot Island	0	0
Chiniak Bay	0	0
Kiliuda Bay	0	0
Two Headed Island	0	0
Southern	0	0
Alitak Bay	0	0
Alitak Flats	0	0
Olga Bay	0	0
Ugak Bay	0	0
Uyak Bay	0	0
Uganik Bay	0	0
West Afognak	0	0
North Afognak	0	0
Kukak Bay	0	0
Wide Bay	0	0
Puale Bay	0	0
Mainland	0	0
Portlock	0	0
Non-Section	0	0
<b>Totals</b>	<b>0</b>	<b>0</b>

Table 4. Pot shrimp catch statistics, Kodiak District of Statistical Area 'J', 1969 - 1991.

Year	Vessels	Landings	Pounds
1969		Confidential	
1970	-	20	12,302
1971*	-	-	-
1972		Confidential	
1973		Confidential	
1974	6	73	10,336
1975	7	77	12,782
1976		Confidential	
1977	3	26	2,565
1978		Confidential	
1979		Confidential	
1980	4	25	4,700
1981	4	6	2,511
1982	6	18	9,754
1983	12	31	18,686
1984	6	21	4,361
1985		Confidential	
1986		Confidential	
1987*	-	-	-
1988		Confidential	
1989		Confidential	
1990		Confidential	
1991*	-	-	-

*\*No commercial landings recorded for 1971, 1987 or 1991.*

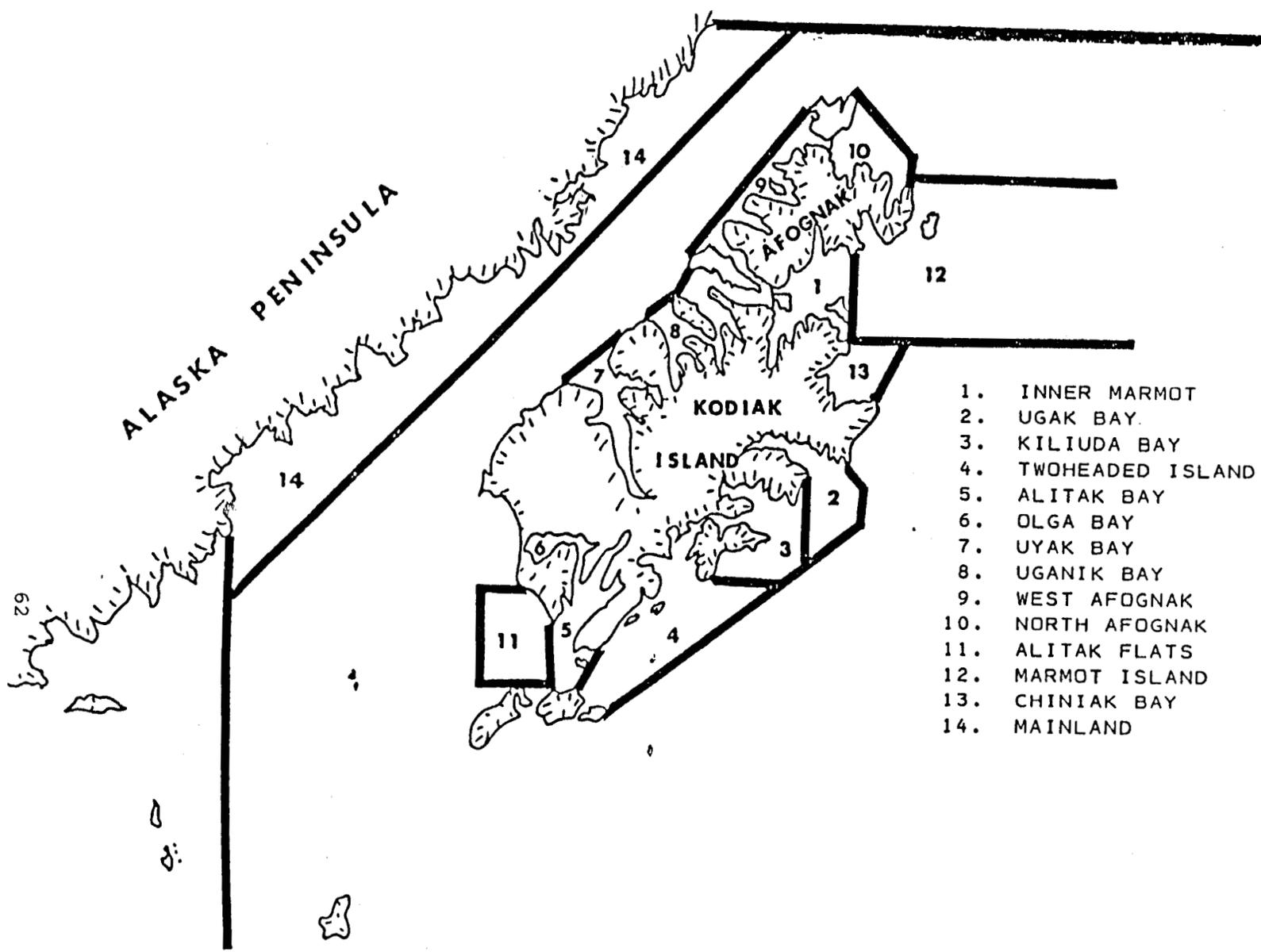


Figure 1. Kodiak District trawl shrimp fishing sections.

## THE SCALLOP FISHERY IN ALASKA AND THE WESTWARD REGION

The giant Pacific Weathervane scallop (*Patinopecten caurinus*) exists in varying abundance to depths of 100 fathoms (183 meters) in the Gulf of Alaska. Investigations by the National Marine Fisheries Service, the International Pacific Halibut Commission, and the Alaska Department of Fish and Game between 1954 and 1968 showed significant abundances of scallops distributed over wide areas between Cape Spencer and Kodiak Island with sporadic occurrences along the Alaska Peninsula. Commercial size beds appear to occur on sandy-gravel and muddy bottoms in the 30-70 fathom range (54-128 meters).

The commercial fishery began in 1967 when several vessels explored the east and northeast parts of Kodiak Island and harvested a few thousand pounds of unshucked scallops.

In 1968 the first full year of fishing, 19 vessels (comprised of New England type scallopers, converted Alaskan crab vessels, salmon seiners, halibut longliners and shrimp trawlers) entered the Alaskan scallop fishery. The 1968 catch came from two areas with 927,795 pounds harvested from Yakutat and 872,803 pounds in the Kodiak Area of the Westward Region.

The peak harvest of scallops in Alaska totaling 1,849,947 pounds, came in 1969 when 837,087 pounds were taken in Yakutat and 1,012,860 pounds in Kodiak (Table 1).

Kodiak's peak harvest occurred the following year in 1970 when 1,417,612 pounds of shucked meats were landed, while the Yakutat catch dropped to only 22,726 pounds.

The statewide harvest declined in the early 70's to an average of 800,000 pounds per year while the highly mobile fleet searched throughout the Gulf of Alaska for unexploited beds.

By the mid-1970's, fishing effort was reduced due to static price conditions, difficulty in gathering experienced crews and the pursuit of more lucrative fisheries by potential scallop vessels.

By 1978 production had further declined to the point where there was no commercial effort in that year.

In 1979 a small fishery resumed with the majority of the catch from around Kodiak Island.

The scallop fishery gained momentum in the early 1980's with the statewide harvest reaching a high of 887,335 pounds in 1981 by a near record 18 vessels. The Westward Region accounted for about half of that production. Since 1982, the Region has contributed the majority of the statewide catch with significant portions coming from previously unexploited scallop beds to the west of Kodiak.

By 1985 emphasis had shifted as far west as Unalaska Island, but recent production has again centered around Kodiak Island. In 1989, the Region catch totaled 464,421 pounds taken by six vessels.

Crab mortality by dredges and trawls has long been a concern of the Department of Fish and Game. In the late 1960's the Department initiated an observer program on scallop vessels to assess the problem. The conclusion of this program was that scallop dredges do catch crab. The mortality rates increased significantly on soft, recently molted crab while areas of schooling crab produced higher catch rates.

These factors led to the complete closure in 1969 of certain areas which were a major importance to crab breeding in the Kodiak and Alaska Peninsula areas. In other areas of known crab habitat the season for scallop fishing was set to avoid the crab soft shell period.

The season for Kodiak waters was set at June 1 to March 31 in the north end and Shelikof Strait. Alaska Board of Fisheries action in 1973 set the season at July 15 to March 31 off Kodiak's eastside.

The Alaska Board of Fisheries regulated further closures in the Alaska Peninsula Area in 1984 and around Unalaska Island in 1986 to protect dwindling crab stocks.

Waters closed to scallop fishing were again reviewed by the Alaska Board of Fisheries during the spring 1990 meeting. King and Tanner crab areas that had been closed to nonpelagic trawling were now closed to scallop dredging as well. This protected additional crab habitat from Kodiak's Westside bays to Unalaska Island. Areas currently closed to scallop fishing are shown in Figures 1 - 3.

The commercial catch in 1991 was 682,261 pounds harvested by seven vessels. Fishing activity during 1991 was concentrated in the Kodiak area, but fishing also occurred in the Aleutian Islands. Most of the vessels that fished in Kodiak operated as catch processors and froze their own product onboard.

The Department currently does no stock assessment work on scallops. Catches of shells on the crab trawl survey from commercially shucked scallops appears to indicate that scallopers are retaining smaller scallops in their catch than in past years.

Interest in harvesting scallops of the genus *Chlamys* arose during 1990. Although considerably smaller than the Weathervane scallops currently harvested, the development of mechanical shucking machines has increased the feasibility of such operations. This fishery was explored during 1991 and landings were made; however, the catch remains confidential.

Table 1. Historic catch, effort and value of Weathervane scallops, Alaska Westward Region.

Year	Vessels	Landings	Commercial Catch (#s)	Average Price Per Pound
1967		C o n f i d e n t i a l		
1968	8	89	872,803 <sup>1</sup>	.85
1969	11	86	1,012,860	.85
1970	7	102	1,417,612	1.00
1971	5	48	841,211	1.05
1972	5	68	1,038,793	1.15
1973	4	42	935,705	1.20
1974	3	14	147,945	1.30
1975	4	30	296,650	1.40
1976		C o n f i d e n t i a l		
1977	-	-	0	-
1978	-	-	0	-
1979		C o n f i d e n t i a l		
1980	7	33	371,018 <sup>2</sup>	3.60
1981	15	61	441,401	4.00
1982	8	82	641,336	3.25
1983	4	29	191,510	5.00
1984	7	37	309,502	4.00
1985	3	26	608,955	4.00
1986	6	58	587,242	4.25
1987	4	43	583,686	3.70
1988	4	37	302,738	4.00
1989	6	48	464,421	4.06
1990	8	86	898,277	3.53
1991	7	75	683,261	3.91

<sup>1</sup>718,671 pounds shucked - 154,132 pounds unshucked

<sup>2</sup>353,433 pounds shucked - 17,575 pounds unshucked

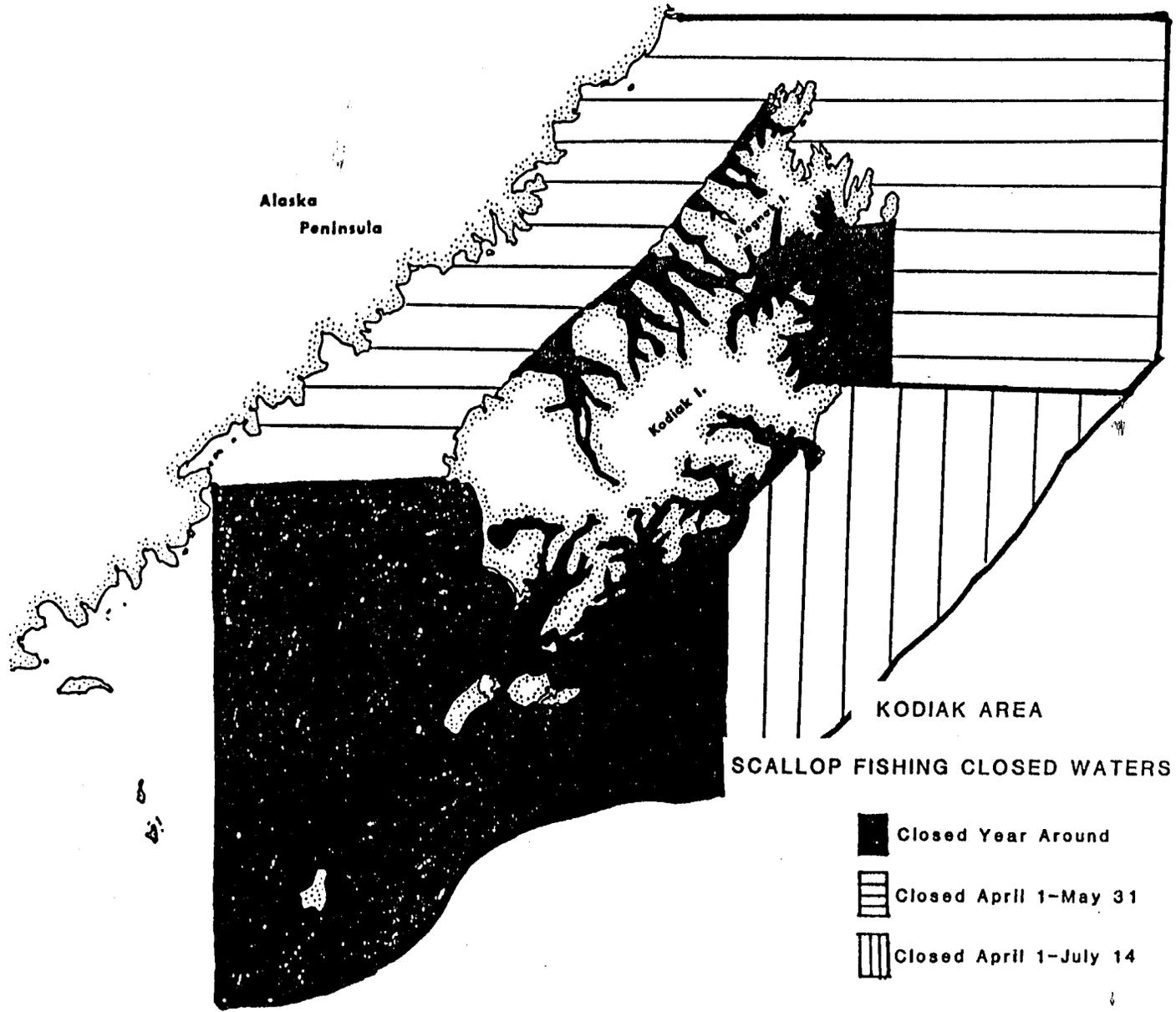


Figure 1. Kodiak Area scallop fishing closed waters.

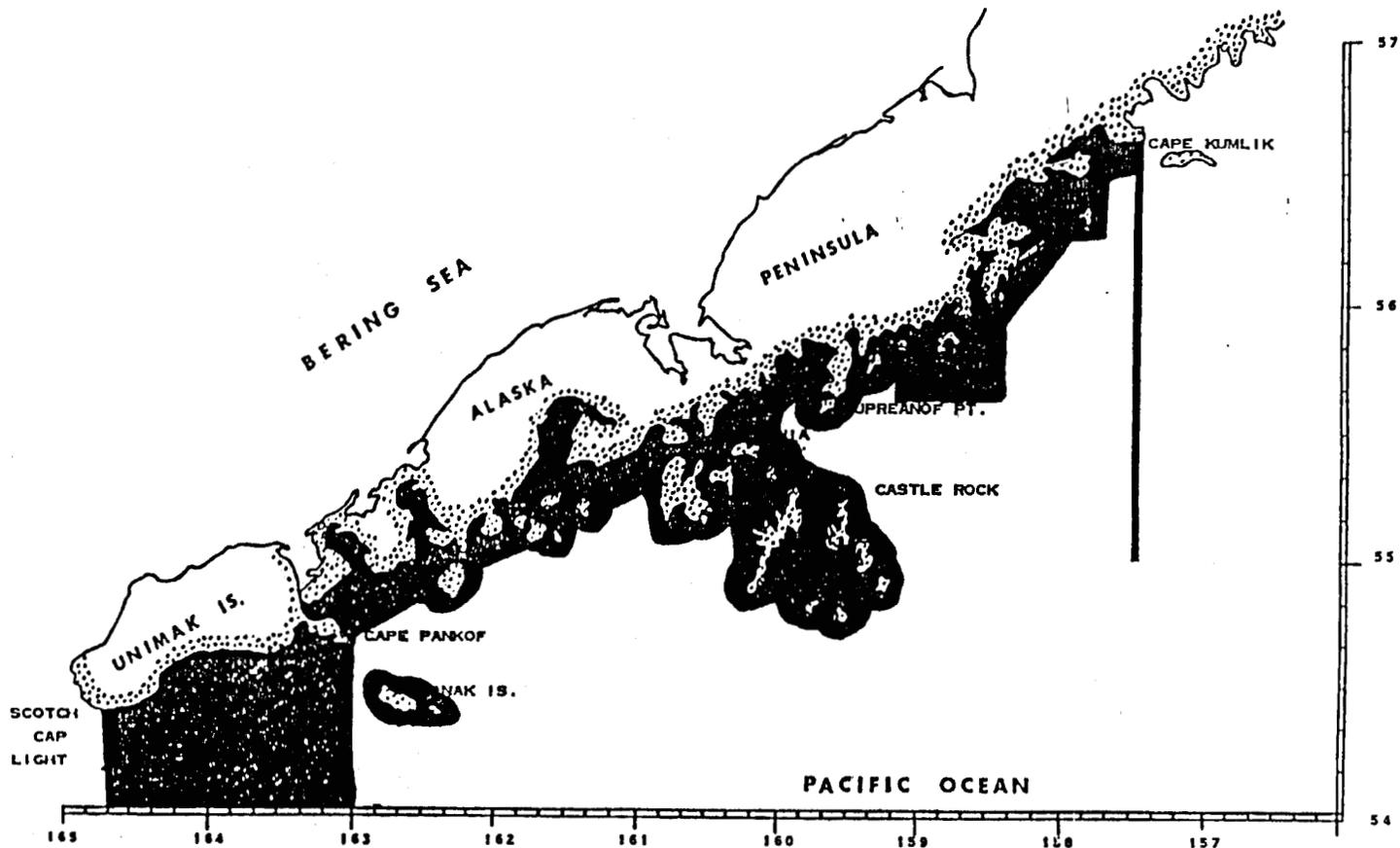


Figure 2. Alaska Peninsula Area scallop fishing closed waters.

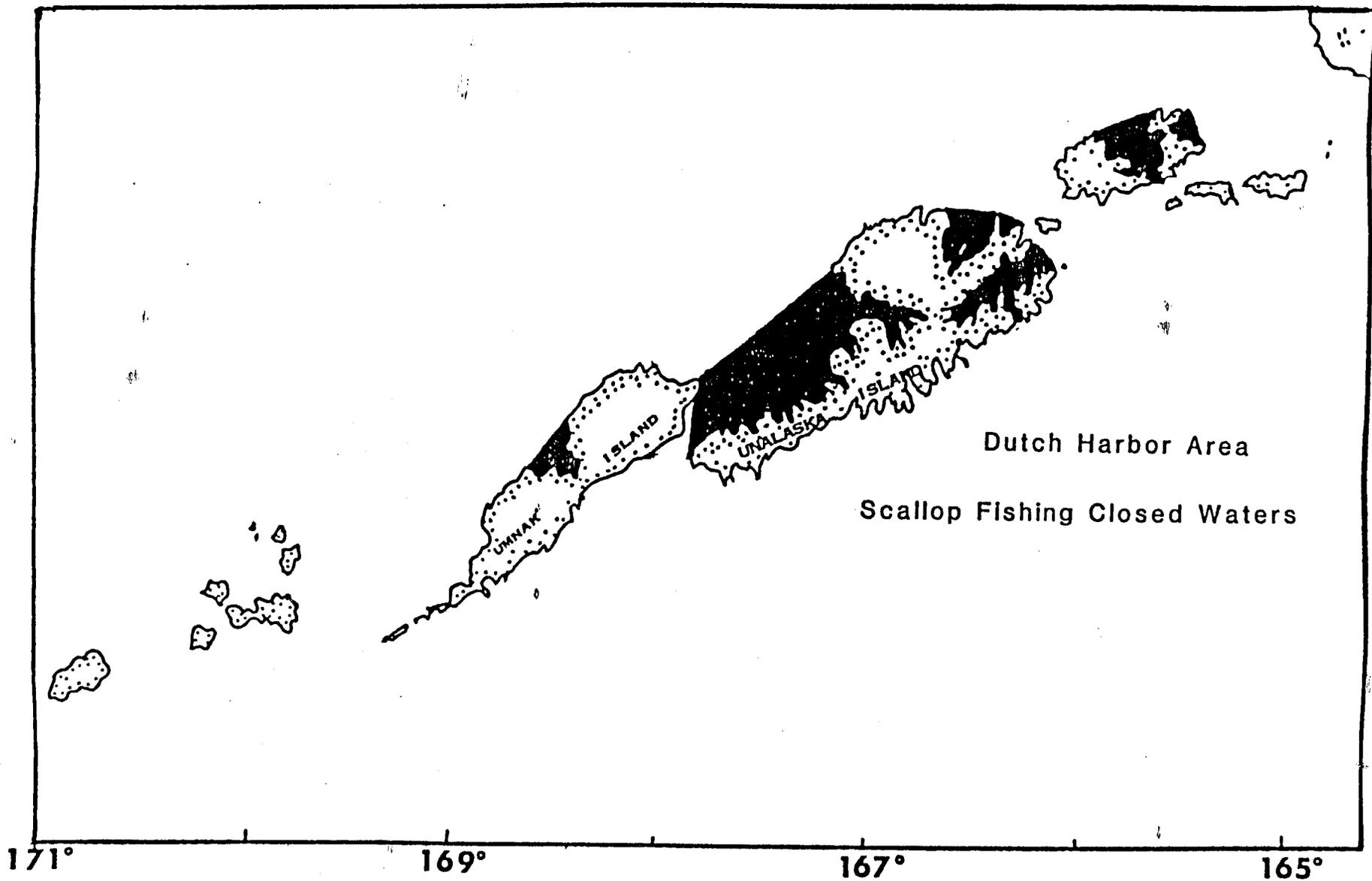


Figure 3. Dutch Harbor Area scallop fishing closed waters.

## SEA URCHINS

### Historic Background

The green urchin (*Strongylocentrotus droebachiensis*) was not harvested commercially in the Kodiak Area until 1980 when a small amount was taken to test marketability. There was little further interest in urchins until 1985 when a small harvest occurred. In 1986 the harvest increased with more divers participating (Table 1).

Sea urchins are harvested for their roe content and seem to be prime for harvest in the Kodiak area between September and December. However, it appears some urchin beds have commercial quality roe as late as mid-February. All urchins are harvested by the use of scuba and hookah diving gear.

In interviewing buyers of the raw product, there appears to be a variation in the quality of the product. Taste, texture, and color of green urchin roe appears to vary with water depth, diet and freshwater influence. Urchin size has an effect on quality and marketability of sea urchin roe. Kodiak buyers were encouraging divers not to retain urchins less than 2" in diameter.

All of the urchins harvested in the Kodiak area were placed in shipping boxes live and air freighted to Japan via Anchorage. The roe was then extracted and prepared for market.

### 1991 Fishery

A total of six divers landed urchins in the Kodiak area for 1991. The urchin harvest for 1991 was 30,472 pounds with an average price of 92 cents per pound. This total catch of urchins is preliminary due to delays in receiving fish tickets from a processor.

In late November, the Department received a letter coauthored by the City Council of Old Harbor, the Old Harbor Native Corporation and the Old Harbor Tribal Council. Their concern was in regard to over-harvest of urchins in the Old Harbor area that were utilized for subsistence harvest. There had been no documented commercial harvest of urchins in the area of concern. The Department drafted a letter and sent this letter to all registered divers. This letter advised the divers of the sensitive nature of the harvest of urchins near village locations and advised the divers to contact village officials prior to diving in these areas. This letter satisfied the concerns of the village officials, and the divers were satisfied to stay out of the areas around the village. No additional problems have occurred since.

### Stock Status

No assessment work is currently being done on sea urchins in the Kodiak area. Unutilized beds of urchins exist around Kodiak Island, and if a processing facility for urchins was available in Kodiak the Department would expect a dramatic increase in urchin harvest.

Table 1. Historic harvest of sea urchins in the Kodiak area.

Year	Permittee	Landings	Pounds Harvested (Live Weight)	Per/lb.
1980		Confidential		
1985		Confidential		
1986		Confidential		
1987	12	78	104,139	.69
1988	28	260	190,509	.80
1989	29	81	44,862	.82
1990	25	83	84,004	.84
1991	6	24	30,472*	.92

*\*Preliminary total.*

## OCTOPUS

The giant Pacific octopus (*Octopus dofleini*) exists throughout Alaskan waters and is quite numerous in the Kodiak District. Most recorded catches have been incidental to other commercial fishing activities such as crabbing and bottomfishing. The harvest increased through the years to a peak of over 19,000 pounds in 1980 (Table 1). Reduced catches after 1980 were the result of shortened Tanner crab seasons.

Interest in the fishery has been increasing due to the demand by longline fishermen for bait octopus. The octopus fishery experienced a dramatic increase in 1990. Caught incidentally to cod fish in the rapidly expanding pot cod fishery, the harvest increased to record levels. The 1990 catch was 69,607 pounds worth approximately \$80,000. The harvest for 1991 continued to increase and was 129,355 pounds worth \$138,410.

### Stock Status

Although the octopus is numerous, no estimate of abundance is available. The Department currently has no directed study concerning octopus.

Table 1. Commercial catch, effort, and value for octopus in the Kodiak Management Area, 1977 - 1991.

Year	Number of Vessels	Number of Landings	Commercial Catch (Pounds)	Avg. Price Per Pound	Est. Value Ex-Vessel (dollar)
1977	5	9	1,000	.71	1,136
1978	11	21	3,336	.75	2,502
1979	20	43	6,978	.74	5,164
1980	27	61	19,342	.75	14,506
1981	21	46	5,872	.70	4,110
1982	12	29	3,854	.70	2,697
1983	12	20	3,764	.70	2,634
1984	17	43	6,487	.70	4,341
1985	10	12	4,812	.78	3,753
1986	5	8	643	.70	450
1987	8	15	14,151	1.08	15,300
1988	4	4	1,949	1.08	2,105
1989			Confidential		
1990	31	131	69,607	1.08	80,000
1991	70	342	129,355	1.07	138,410

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## RAZOR CLAMS

### Historic Background

Razor clams, *Siliqua sp.*, have been harvested in the Kodiak Management Area since the early 1920's (Table 1). Though many Kodiak Island beaches were explored with some success, the principal commercial harvest occurred in Kukak Bay, Hallo Bay, Big River and the Swikshak Beach Regions about 70 miles northwest of Kodiak. Digging continued somewhat on a regular basis until the early 1960's when a combination of increasing Federal and State regulations in processing the product, poor market conditions, and the earthquake of 1964 brought a decline. Commercial harvesting of clams for human consumption has never become re-established and the fishery has been strictly hand-digging for use as bait in the Dungeness crab fishery. The certification program ended in July of 1980. In 1990 there were no clam beaches in the Kodiak Area certified by the Alaska Department of Environmental Conservation as safe for human consumption.

Many of the principal harvest areas along the Alaska Peninsula are adjacent to the Katmai National Monument which includes all the land above mean high water from Cape Douglas to Cape Kubugakli. Commercial activity within the Monument is restricted. Current policy of U.S. Park Service dictates a ban on camping in the monument in support of a business enterprise.

In 1986 the Alaska Board of Fisheries adopted a regulation prohibiting hydraulic mechanical dredges from harvesting clams in the Kodiak Area east of Kilokak Rocks.

### Stock Status

The potential for a razor clam harvest in the Kodiak Management Area has been established by historic catch records and studies conducted by the Department. These studies, however, were conducted in the mid 70's and of little benefit in judging stock status at this time due to environmental changes which have occurred. Based on success by diggers the past few years, it appears the clam populations have drastically declined in the Swikshak - Big River Area, which historically produced a large portion of the razor clam harvest.

### 1991 Fishery

During 1991 no landings of clams were made from the Kodiak area.

Table 1. Historic commercial razor clam catch effort and value for Kodiak Management Area, 1960 - 1991.

Year	Registered Diggers <sup>1</sup>	Lndgs.	Commercial Catch (Pounds)	Avg. Catch Per Lndg. (Pounds)	Average Price Per #	Est. Pric Ex-Vesse (Dollars)
1960	76		420,636		\$ .105	44,000
1961	95		381,971		.105	40,000
1962	66		297,516		.105	31,000
1963	39		323,757		.11	35,600
1964	2		0		.00	-
1965	4		20,000		.25	5,000
1966	29		15,429		.38	6,000
1967	9		2,155		.40	900
1968	19		6,384		.40	2,600
1969	5	6	12,029	2,005	.40	4,812
1970	6	32	132,261	4,133	.40	53,000
1971	73	82	190,394	2,322	.30	57,000
1972	95	128	152,116	1,188	.35	53,000
1973	64	140	165,282	1,181	.40	66,000
1974	58	74	198,381	2,681	.50	99,000
1975	18	5	6,188	1,238	.50	3,000
1976	9	0	0	0	.00	-
1977			Confidential			
1978			Confidential			
1979	-	0	0	0	.00	-
1980	-	8	8,006	1,001	.79	6,325
1981	-	5	8,186 <sup>2</sup>	1,637	1.00	8,186
1982	-	11	11,608 <sup>3</sup>	1,055	1.00	11,608
1983	-	7	7,920	1,131	1.00	7,920
1984	-	21	33,972	1,613	1.00	33,972
1985	-	11	16,945 <sup>4</sup>	1,540	1.00	16,945
1986	-	4	3,993	998	1.00	3,993
1987	-	-	-	-	-	-
1988	-	-	-	-	-	-
1989	-	-	-	-	-	-
1990	-	-	-	-	-	-
1991	-	-	-	-	-	-

<sup>1</sup> Represents registered diggers not actual diggers - no data available after 1977 due to statewide issuance of Interim Use Permits.

<sup>2</sup> Additional 985 pounds of hardshell clams harvested.

<sup>3</sup> Additional 1,506 pounds of hardshell clams harvested.

<sup>4</sup> Additional 1,496 pounds of hardshell clams harvested.

ANNUAL MANAGEMENT REPORT FOR THE  
SHELLFISH FISHERIES OF THE ALASKA PENINSULA AREA, 1991

MARCH 1992

BY

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## ALASKA PENINSULA

### Introduction

The Alaska Peninsula Management Area includes the waters of the Pacific Ocean west of the longitude of Cape Kumlik and east of the longitude of Scotch Cap Light.

Commercial shellfish fisheries have traditionally occurred in the Alaska Peninsula on king crab, Tanner crab, Dungeness crab, shrimp, scallops and octopus.

Most recently shellfish stocks are considered depressed and no commercial fishery has occurred on king crab, Tanner crab or shrimp. Limited effort has occurred on Dungeness crab, scallops and octopus.

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## ALASKA PENINSULA KING CRAB

### Introduction

The red king crab fishery in the Alaska Peninsula Registration Area 'M' began in 1947, when 141,000 pounds were landed (Figure 1). The historic high catch of 22.6 million pounds occurred in 1966 (Table 1). Thirteen million pounds of that harvest came from the Unimak Bight District (Table 2).

Of the three Area 'M' king crab districts, (Figure 1), the major portion of the harvest in the last decade has come from the Central District (Table 3), which was closed seven of ten years with Pavlof Bay being the major producer. The annual catch in the Unimak Bight District during the same period averaged less than half the Central District annual harvest. Catches in the Chignik District during this period have varied somewhat depending on effort but did not exceed 386,000 pounds (Table 4).

During the 1980/81 season the Area 'M' harvest reached just over five million pounds, the highest catch since the 1968/69 season (Table 1). The catch was the result of strong recruitment from 1978 through 1980. Recruitment has declined severely since that time. The fishery was closed for the first time during the 83/84 season.

### 1991/92 Season Summary

As has been the case since 1983/84, the 1991/92 commercial fishery in Area 'M' was not opened. The closure was announced by Emergency Order 4-S-15-91 on September 10, 1991 (Table 6).

### Stock Status

This is the fourth year that the Department has used a trawl exclusively to assess the crab populations in the Alaska Peninsula.

The 1991 survey was conducted aboard the R/V *Resolution* during August and September. One hundred forty-six (146) successful tows were completed in the Alaska Peninsula District to assess both king and Tanner crab populations.

The total population of king crab in the Alaska Peninsula is estimated at 64,000 crabs: 46,000 males and 18,000 females. The number of legal males estimated is 7,000 (Table 5). The 1991 population estimate of king crabs has decreased substantially compared to the 1989 estimate of 400,000 king crabs.

Further details on survey information can be obtained in *A Bottom Trawl Survey of Crab and Groundfish in the Kodiak Island and Alaska Peninsula Areas June through September 1991*.

### Brown King Crab

Occasionally fishermen express an interest in exploring Area 'M' for brown king crab (*Lithodes aequispina*). In 1983 five vessels registered but no catch was recorded.

Presently, male brown king crab 6 inches or greater in shell width may be taken from January 1 through December 31 under a permit issued by the Commissioner.

### 1991 Season

No vessels registered to fish for brown king crab in Area 'M' during 1991.

### Stock Status

Stock status is unknown, and no commercial quantities have been located to date.

Table 1. Catch and effort statistics for king crab in Area 'M', the Alaska Peninsula.

Year	No. Vssls	No. Lndgs	No. Crab	No. Pounds	Pots Lifted	CPUE	Avg. Wt.	Price Per Lb.
1947	NA	NA	18,800	141,000	NA	NA	7.5	NA
1948	NA	NA	518,500	3,363,000	NA	NA	6.5	NA
1949	NA	NA	205,500	3,476,000	NA	NA	12.0	NA
1950	NA	NA	270,000	2,124,000	NA	NA	7.9	NA
1951	NA	NA	86,500	599,000	NA	NA	6.9	NA
1952	NA	NA	32,400	298,000	NA	NA	7.6	NA
1953	NA	NA	38,400	380,000	NA	NA	10.0	NA
1954	NA	NA	31,666	316,660	NA	NA	10.0	NA
1955	NA	NA	164,069	1,640,688	NA	NA	10.0	NA
1956	NA	NA	421,651	4,221,496	NA	NA	10.0	NA
1957	NA	NA	668,709	6,687,092	NA	NA	10.0	NA
1958	NA	NA	724,595	7,245,947	NA	NA	10.0	NA
1959	NA	NA	568,303	6,166,974	NA	NA	10.9	NA
1960	NA	1,496	677,100	6,700,000	NA	NA	9.9	NA
1961	NA	959	419,354	3,900,000	NA	NA	9.3	NA
1962	NA	657	287,624	2,273,013	NA	NA	7.9	NA
1963	27	1,037	970,739	6,539,129	NA	NA	6.7	.09
1964	40	1,297	1,906,018	14,354,060	NA	NA	7.5	.10
1965	36	1,081	1,813,728	14,713,501	NA	NA	8.1	.10
1966	37	1,255	2,494,949	22,577,587	NA	NA	9.0	.10
1967	39	1,062	1,943,463	17,252,307	NA	NA	8.9	.19
1968/69	34	885	1,273,567	10,944,472	NA	NA	8.6	.34
1969/70	33	415	558,800	4,137,000	51,300	11	7.7	.25
1970/71	25	339	446,042	3,425,760	38,995	11	7.7	.25
1971/72	26	364	597,394	4,123,130	41,759	14	6.9	.28
1972/73	29	301	610,300	4,069,362	34,408	18	6.7	.NA
1973/74	36	389	658,632	4,260,674	53,642	12	6.9	.72
1974/75	36	318	644,054	4,572,101	44,951	14	7.1	.43
1975/76	37	248	367,221	2,605,310	35,104	11	7.2	.41
1976/77	26	122	125,778	958,069*	17,748	7	7.7	.61
1977/78	15	73	119,641	726,382	10,551	11	6.1	1.00
1978/79	33	226	520,168	3,093,859	31,142	17	5.9	1.27
1979/80	68	288	738,859	4,453,557	41,753	18	6.0	.92
1980/81	51	358	821,071	5,080,632*	54,114	15	6.2	.96
1981/82	56	341	515,882	3,168,689	51,776	10	6.1	1.40
1982/83	63	157	271,237	1,683,654	30,894	9	6.2	3.20
1983/84			N O	F I S H E R Y				
1984/85			N O	F I S H E R Y				
1985/86			N O	F I S H E R Y				
1986/87			N O	F I S H E R Y				
1987/88			N O	F I S H E R Y				
1988/89			N O	F I S H E R Y				
1989/90			N O	F I S H E R Y				
1990/91			N O	F I S H E R Y				
1991/92			N O	F I S H E R Y				

\*Combined 6 1/2 inch and 7 1/2 inch seasons  
 NA = Not Available

Table 2. Comparison of 6½ inch season king crab data in the Unimak Bight District.

Year	Lndgs	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Avg. % Recruits	Length (mm)
1971/72	54	175,154	1,310,886	9,226	7.5	19	16	163.2
1972/73	22	97,825	741,881	3,726	7.6	26	13	163.6
1973/74	34	166,103	1,280,397	8,618	7.7	19	17	162.3
1974/75	40	186,028	1,538,554	9,906	8.3	19	13	168.4
1975/76	29	97,493	757,955	7,028	7.8	14	19	166.5
1976/77	4	7,216	55,586	700	7.7	10	11	167.1
1977/78	3	1,868	13,292	820	7.1	2	N O	D A T A
1978/79	8	31,169	198,660	4,026	6.4	8	63	149.6
1979/80	50	274,336	1,699,954	12,242	6.2	22	57	151.3
1980/81	37	304,949	1,849,636	10,141	6.1	30	52	153.0
1981/82	22	90,338	571,905	6,615	6.3	14	32	156.0
1982/83	4	2,767	18,017	1,172	6.5	2	N O	D A T A
1983/84			N O	F I S H E R Y				
1984/85			N O	F I S H E R Y				
1985/86			N O	F I S H E R Y				
1986/87			N O	F I S H E R Y				
1987/88			N O	F I S H E R Y				
1988/89			N O	F I S H E R Y				
1989/90			N O	F I S H E R Y				
1990/91			N O	F I S H E R Y				
1991/92			N O	F I S H E R Y				

Table 3. Comparison of 6½ inch season king crab data in the Central District.

Year	Lndgs	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Avg. % Recruits	Length (mm)
1971/72	310	422,240	2,812,244	32,533	6.7	13	41	154.0
1972/73	271	494,610	3,194,229	29,170	6.5	17	57	150.6
1973/74	319	447,535	2,882,437	36,937	6.4	12	54	149.3
1974/75	263	445,412	2,935,707	33,057	6.6	14	57	151.9
1975/76	205	251,440	1,715,545	26,657	6.8	9	48	156.0
1976/77	82	80,088	557,790	9,613	7.2	8	40	155.2
1977/78	48	90,670	512,448	6,588	5.7	14	69	145.5
1978/79	201	471,825	2,757,088	25,432	5.8	19	79	147.2
1979/80	209	447,227	2,604,300	27,328	5.8	16	70	147.5
1980/81	225	449,597	2,692,815	32,014	6.0	14	67	149.8
1981/82	174	392,889	2,329,170	27,679	5.9	14	66	148.0
1982/83	143	261,387	1,609,681	27,142	6.2	10	66	149.5
1983/84			N O	F I S H E R Y				
1984/85			N O	F I S H E R Y				
1985/86			N O	F I S H E R Y				
1986/87			N O	F I S H E R Y				
1987/88			N O	F I S H E R Y				
1988/89			N O	F I S H E R Y				
1989/90			N O	F I S H E R Y				
1990/91			N O	F I S H E R Y				
1991/92			N O	F I S H E R Y				

Table 4. Comparison of 6½ inch season king crab data in the Chignik District.

Year	Lndgs	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Avg. % Recruits	Length (mm)
1972/73	9	17,865	133,252	1,512	7.5	12	23	NA
1973/74	37	44,994	385,305	8,087	8.6	6	41	169.2
1974/75	15	12,614	97,840	1,988	7.8	7	36	162.0
1975/76	13	18,288	131,810	1,419	7.2	13	5	160.4
1976/77	6	9,859	76,406	673	7.8	15	26	167.1
1977/78	22	27,103	200,692	3,143	7.4	9	33	159.6
1978/79	17	17,174	138,111	1,684	8.0	10	23	160.9
1979/80	29	20,472	168,368	2,183	8.2	9	29	161.5
1980/81	36	24,314	194,095	3,403	8.0	7	15*	167.8
1981/82	3	1,359	12,280	318	9.0	4	N O	D A T A
1982/83	11	7,083	55,580	2,580	7.9	3	32	156.1
1983/84			N O	F I S H E R Y				
1984/85			N O	F I S H E R Y				
1985/86			N O	F I S H E R Y				
1986/87			N O	F I S H E R Y				
1987/88			N O	F I S H E R Y				
1988/89			N O	F I S H E R Y				
1989/90			N O	F I S H E R Y				
1990/91			N O	F I S H E R Y				
1991/92			N O	F I S H E R Y				

\*Based on only one sample

Table 5. Comparative male king crab catch data, Alaska Peninsula abundance survey.

Year	Stations Fished	Pots Lifted	----Legals----	CPUE	---Sublegals---	CPUE
			Number		Number	
1975	110	610	815	1.4	4,776	7.8
1976	129	801	874	1.1	8,006	10.0
1977	75	354	3,610	10.2	16,986	48.0
1978	62	355	7,259	20.4	10,960	30.9
1979	69	330	4,411	13.4	7,141	21.6
1980	120	700	8,110	11.6	7,263	10.4
1981	127	750	4,545	6.1	2,538	3.4
1982	113	630	1,197	1.9	805	1.3
1983	77	307	317	1.0	216	0.7
1984	218	498	324	0.6	25	0.0
1985	138	410	36	0.1	18	0.0
1986	129	400	65	0.2	52	0.1
1987	145	434	11	0.1	17	0.0
1988 <sup>1</sup>	106		45		27	
1989	167		19		215	
1990	157		4		16	
1991	146		5		53	

<sup>1</sup>Trawl survey introduced in 1988. Catches and population estimates not directly comparable to pot survey results.

Table 6. King crab commercial fishing periods in the Alaska Peninsula (Area 'M') since 1974.

Year	Open	Closed
1974/75	August 15	January 15
1975	August 15	December 18
1976	August 15	October 1
1976/77	November 15	January 15
1977/78	August 15	January 15
1978/79	September 15	January 15
1979	September 15	December 31
1980/81	September 10	January 15
1981/82	September 10	January 15
1982	September 15	September 25
1983	Closed	
1984	Closed	
1985	Closed	
1986	Closed	
1987	Closed	
1988	Closed	
1989	Closed	
1990	Closed	
1991	Closed	

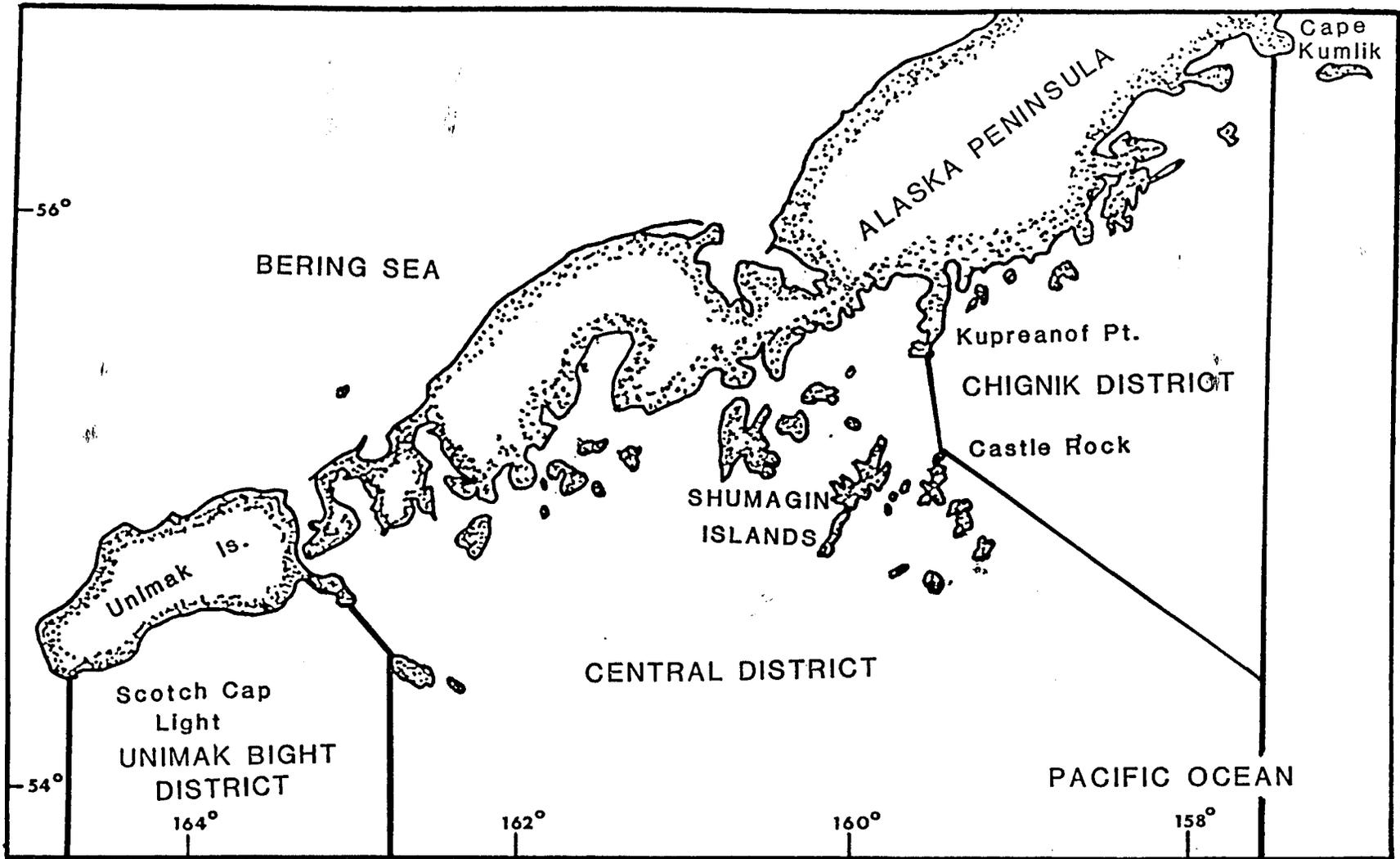


Figure 1. Alaska Peninsula (Area M) king crab districts.

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## CHIGNIK TANNER CRAB

### Introduction

The Chignik District of Area 'J' consists of the waters south of the Alaska Peninsula from Cape Kumlik west to Kupreanof Point (Figure 1).

The Chignik Tanner crab fishery began in 1968 when 21,000 pounds of crab were caught (Table 1). During the next four years, the market was uncertain and harvests were erratic. Other than a 14 day closure before each king crab season, and limiting gear to pots or ring nets, few regulations governed the early fishery.

In 1973, market conditions improved, and 15 vessels produced nearly 750,000 pounds (Table 1). There were 25 vessels the next year, and the catch grew to 4 million pounds. In 1975/76, 35 vessels landed the peak harvest of 7 million pounds (Table 1). By 1975 and 1976, the rapid growth of the fishery caused the Board of Fisheries to adopt several protective regulations. A system to register and inspect vessels was adopted. The harvest was restricted to male crabs with carapace widths 5.5 inches or more. The seasons were set to open November 1 and to close in May or June, to protect the mating and molting period of the crab. In addition, guideline harvest levels were established. Concern over lost pots led to the adoption of a regulation requiring that: "After July 1, 1978, each Tanner crab pot shall contain a mechanism that will destroy its fish catching and holding ability .... if lost or abandoned." For the next five seasons, the harvest was less variable, and catches ranged between 2.5 and 5.6 million pounds (Table 1).

Three other points characterized the first 14 years of the Chignik District fishery. First, the productive grounds included nearly all waters of the District. The offshore waters between Mitrofanina Island, Lighthouse Rocks, and the Semidi Islands were the most productive. Second, most of the fishing began in late March after the Kodiak and South Peninsula District fisheries closed. Third, no abundance surveys were conducted during this period. The 5-10 million pound guideline may have been based upon the harvests of 1974 to 1976/77. Even with the relatively liberal seasons, the guideline was rarely attained.

Since 1981, there have been several changes in the fishery. The Department conducted trawl surveys each summer from 1981 to 1984. The surveys predicted poor recruitment after the 1983 fishing season. Harvest projections were drastically reduced for the 1984 and 1985 fisheries. No funds have been available for the Chignik District surveys since 1984, and annual harvest projections have been based on the performance of the previous year's fishery.

As predicted, the commercial harvests dropped sharply each season from 1984 to 1986 (Table 1). After an a minor increase in 1987, the 1988 catch declined to 183,000 pounds; the lowest harvest in 16 years (Table 1). The catch did not decline uniformly over the grounds, but fell off first and most rapidly, in the popular offshore waters. The productive grounds shrank steadily until only Chignik Bay and a few other near shore areas produced crab in 1988.

The dwindling catches, along with attempts to make the District a superexclusive registration area, caused a reduction in the fleet size. In 1983, 48 vessels, including several large, Bering Sea type vessels, participated in the fishery. By 1988 the fleet consisted of four locally owned seine vessels, one boat from Sand Point, and one 65 foot vessel from Kodiak. Beginning with the 1981 season, the fleet has commenced fishing on the opening date of the season and continued fishing until the District was closed. The altered nature of the fishery prompted several changes to the opening date of the fishery: first to December 15, in 1981/82; then to February 10, for the 1983 and 1984 seasons. In part, the new dates were established to harvest the crab at peak quality. Further, some fishermen hoped the new dates would find the large vessels busy fishing in the Bering Sea thus reducing competition in the Chignik and South Peninsula Districts. However, in the adjoining South Peninsula District, seasons opening in February were found to extend into the crab molting period. Therefore, beginning in 1985, the opening date has been January 15. In 1988, the Board of Fisheries adopted a March 31 closure date because the molting period may begin before the former May 15 closure.

### 1991 Fishery

The 1991 Tanner crab fishery in the Chignik District did not open. Emergency Order 4-S-01-91 was issued on January 14, 1991 closing the Chignik District to Tanner crab fishing.

While a small harvest could have occurred in the Chignik District on Tanner crab, the Department did not open the District because of anticipated high effort and the inability to accurately monitor inseason catch levels.

### Stock Status

The Department has conducted a trawl survey in the Chignik District for the past three years. Population estimates of legal crab from this survey have declined since 1989 from 497,000 legal males to 236,000 in 1991. Prerecruit crab abundance appears weak, and the Department expects no increase of legal crab to levels of the late 70's, in the near future.

Further details regarding survey information in the Chignik District can be obtained in the 1989 through 1991 reports titled *A Bottom Trawl Survey of Crab and Groundfish in the Kodiak Island and Alaska Peninsula Areas*.

Table 1. Chignik District Tanner crab catch and effort statistics.

Year	Vssls	Number Lndgs	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Price Pound <sup>2</sup>	Percent Recruits <sup>3</sup>
1968	-	-	-	21,100	-	.-	-	.-	.-
1969	-	-	-	38,100	-	.-	-	.-	.-
1970	-	-	-	2,800	-	.-	-	.-	.-
1971	-	-	-	152,300	-	.-	-	.-	.-
1972				Harvest Confidential					
1973	15	56	297,363	747,788	8,080	2.5	51	.16	.-
1974	25	115	1,586,560	4,054,873	28,083	2.6	57	.20	.-
1974/75	25	91	1,438,508	3,649,444	22,675	2.5	63	.14	.-
1975/76	35	288	2,724,509	6,926,161	52,381	2.5	52	.185	.-
1976/77	21	141	2,098,226	5,672,919	40,604	2.7	52	.33	.-
1977/78	32	140	1,725,042	4,693,830	38,414	2.8	45	.42	.-
1978/79	39	126	926,253	2,536,105	28,378	2.7	33	.55	.-
1979/80	42	155	2,340,004	3,517,920	54,627	2.6	25	.54	.-
1980/81	24	112	1,534,847	3,653,723	44,022	2.4	35	.64	65.6
1981/82	45	174	1,343,500	3,240,576	47,830	2.4	28	1.21	64.7
1983	48	136	1,432,029	3,497,370	60,210	2.4	24	1.12	65.1
1984	17	41	269,724	659,043	14,665	2.4	18	1.09	33.5
1985	15	27	162,448	375,476	15,708	2.3	10	1.42	51.2
1986	6	12	85,697	188,162	7,435	2.2	12	1.97	85.3
1987	10	20	89,329	195,060	7,052	2.2	13	2.28	90.1
1988	6	11	87,148	183,111	6,544	2.1	13	2.33	91.3
1989	6	34	142,470	323,120	9,845	2.3	15	3.05	95.0
1990				NO OPEN SEASON					
1991				NO OPEN SEASON					

<sup>1</sup>Includes deadloss

<sup>2</sup>Computed only for live poundage where price information was available

<sup>3</sup>Recruits = newshell male crab from 137 to 163 mm carapace width

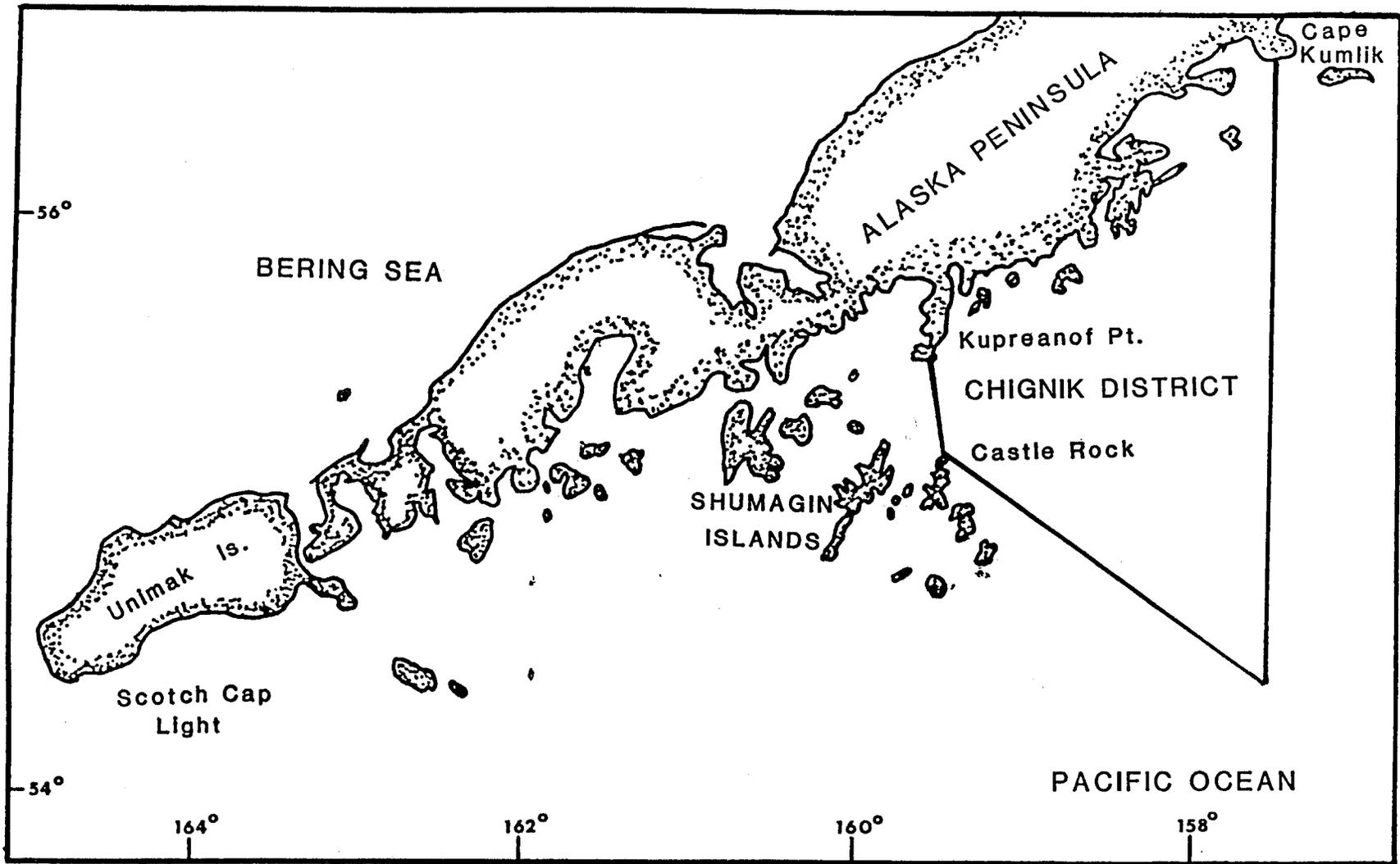


Figure 1. Chignik Tanner crab district.

## ALASKA PENINSULA SHRIMP

### Introduction

Shrimp fishing in the Alaska Peninsula began in 1968 when 5.9 million pounds were landed (Figure 1, Table 1). Catch levels remained relatively low until the 1972/73 season when 19.6 million pounds were harvested (Table 1). The historic high catch was reached in 1977/78 with 71.5 million pounds. Catches declined rapidly until all South Peninsula Sections were closed in 1980. Although the Sutwik Island Section and all offshore waters of the Chignik District remained open in 1981/82, only 70,948 pounds of shrimp were landed from the area.

### 1991/92 Season Summary

During the 1990/91 season, none of the inshore shrimp sections were opened to fishing in the Chignik and South Peninsula Districts. No vessels registered and no deliveries were made from the offshore sections open to fishing.

### Stock Status

The Alaska Department of Fish and Game conducted a trawl survey in the South Peninsula and Chignik Districts during 1989 on board the R/V *Resolution*. A total of 88 shrimp tows, 44 in the Chignik District and 44 in the South Peninsula District were completed in the 1989 survey. Population estimates from areas traditionally fished in the commercial fishery remained well below levels to warrant a commercial fishery. Survey results yielded only 32 pounds of shrimp per mile trawled in the Chignik District and 12 pounds of shrimp per mile in the South Peninsula District. No significant commercial fishery is expected until predator fish populations decline and shrimp populations recover. The next survey is scheduled for the fall of 1992.

Table 1. Historic shrimp harvest statistics.

Year	-----South Peninsula-----				-----Chignik-----			
	Vssls.	Lndgs.	No. Pounds	Price/Lb.	Vssls.	Lndgs.	No. Pounds	Price/Lb.
1968		Harvest	Confidential				1,153,721	\$ -
1969		Harvest	Confidential				419,830	-
1970	4	173	4,398,800	.04	-	-	890,705	-
1971		Harvest	Confidential			27	1,091,711	.04
1972/73	-	-	14,740,801	.07	-	-	4,829,117	-
1973/74	12	347	19,987,246	.07	33	277	51,673,788	.08
1974/75	22	387	26,145,720	.08	37	323	23,392,352	.08
1975/76	24	326	20,044,112	.09	50	334	24,435,480	.08
1976/77	19	424	37,148,932	.09	48	303	27,232,630	.10
1977/78	48	409	45,003,794	.13	50	271	26,512,791	.13
1978/79	23	108	9,418,276	.16	40	201	23,257,869	.17
1979/80	10	41	3,134,367	.21	35	195	23,722,330	.23
1980/81	-	-	CLOSED	-	54	148	12,843,270	.29
1981/82	-	-	CLOSED	-	3	4	70,948	.27
1982/83	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1983/84	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1984/85	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1985/86	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1986/87	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1987/88	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1988/89	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1989/90	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1990/91	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1991/92	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-

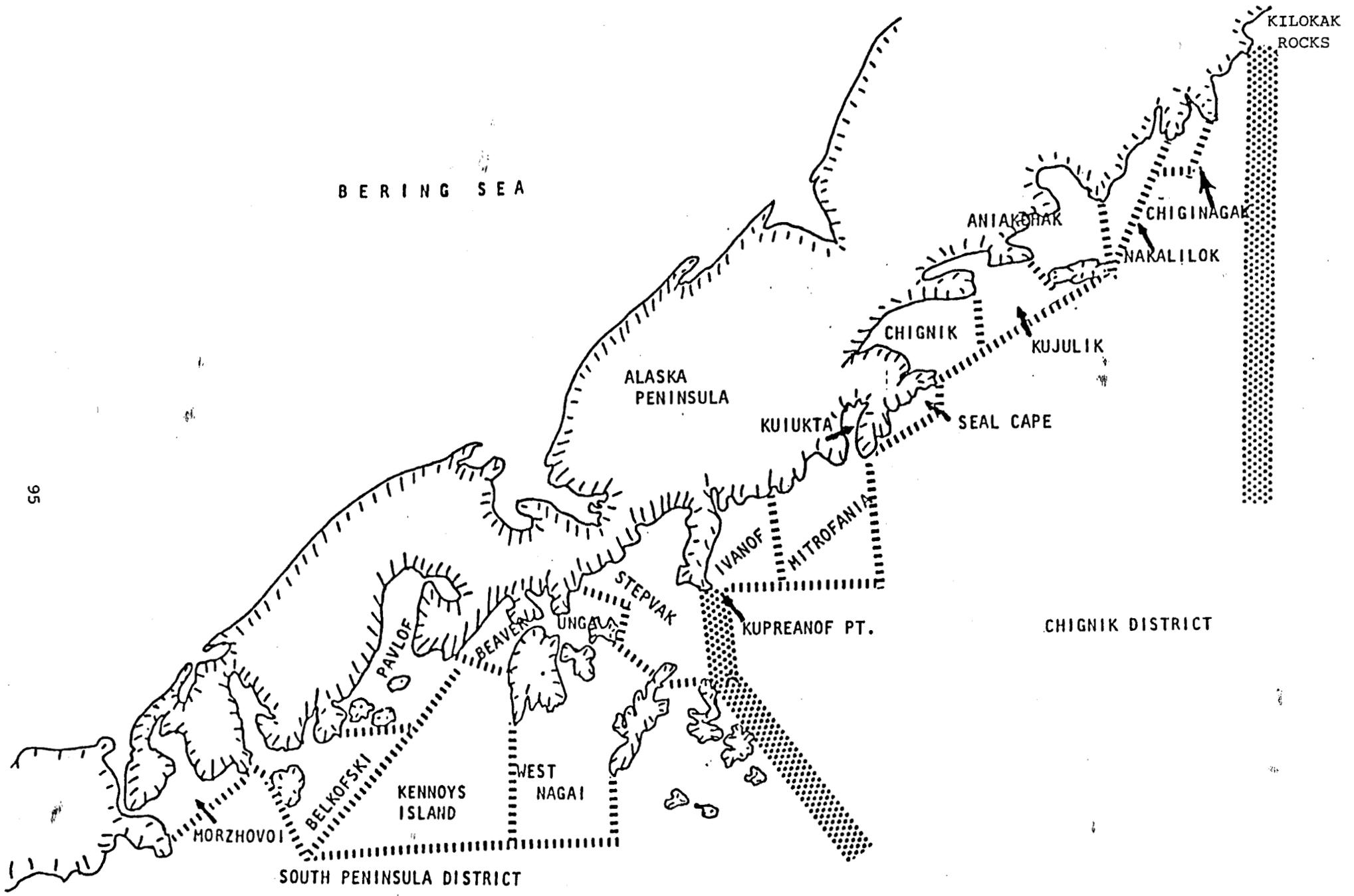


Figure 1. South Peninsula and Chignik shrimp sections.

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## SOUTH PENINSULA TANNER CRAB

### Introduction

The South Peninsula District of Area J includes all waters south of the Alaska Peninsula from Kupreanof Point to Scotch Cap Light on Unimak Island (Figure 1). The first harvest of Tanner crab from the area occurred in 1967 when 3,100 pounds were landed. The fishery grew quickly, and by 1973 harvests exceeded five million pounds (Table 1). In 1974 guideline harvest levels were established, and in 1975 seasons were imposed to protect the mating and molting period of the crab. In 1976, the minimum size limit of 5.5 inches across the carapace was established. During the six seasons from 1974 through 1978/79, harvests ranged from 5 to 8 million pounds (Table 1). The fishery peaked in 1978/79 when 9 million pounds of crab were caught (Table 1). From 1979/80 to 1984 the harvest and CPUE declined in response to low recruitment into the population (Table 1). The population reached a low level in 1984 and the fleet only produced 2 million pounds (Table 1). Recruitment improved in the years 1985 through 1988 and harvests have ranged from 2 million pounds to 3 million pounds. In 1989 the harvest decreased to 1 million pounds and recruitment is also expected to decrease.

### 1991 Fishery

The 1991 Tanner crab fishery in the South Peninsula District did not open (Table 3). Emergency Order 4-S-01-91 was issued on January 14, 1991 closing the South Peninsula District to Tanner crab fishing.

Although South Peninsula could have had a small harvest, the Department considered the risk too great due to the uncontrolled nature of effort and the inability of the Department to accurately monitor the removal of crab inseason.

### Stock Status

In 1991 the Department has conducted a trawl survey in the South Peninsula District to assess king and Tanner crab populations. Total estimated legal crab in the South Peninsula for 1991 was 354,000 crab, down from the 1988 estimate of 668,000 crab. Prerecruit crab abundance from the 1991 survey indicates that legal crab abundance in the South Peninsula should increase in the future.

The results of these surveys are published each year in *A Bottom Trawl Survey of Crab and Groundfish in the Kodiak Island and Alaska Peninsula Areas*.

Table 1. Tanner crab catch and effort statistics for South Peninsula District.

Year	Number Vssls.	Number Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Price Pound <sup>2</sup>	Percent Recruits
1967				3,100					
1968		155	36,835	110,610		3.0			
1969		173	221,946	606,178		2.7			
1970				2,093,600					
1971	17	242	813,610	2,140,585		2.6		.10	
1972				3,618,900					
1973	36	390	2,213,006	5,615,563	53,573	2.5	41		
1974	44	386	3,504,668	8,300,578	58,444	2.4	60		
1974/75	44	131	2,053,530	5,195,800	38,153	2.5	54	.14	
1975/76	36	288	2,724,509	6,926,161	52,381	2.5	52	.20	
1976/77	28	389	2,524,565	6,773,838	63,143	2.7	40	.32	
1977/78	36	374	2,847,948	7,446,270	70,587	2.6	40	.40	
1978/79	48	332	3,267,122	8,684,408	82,374	2.7	40	.51	65.8
1979/80	61	363	2,581,544	6,961,251	96,989	2.7	27	.54	39.5
1980/81	43	268	1,274,539	3,294,106	59,560	2.6	21	.58	34.7
1981/82	72	365	1,815,060	4,589,042	81,008	2.5	22	1.05	50.2
1983	82	230	1,144,096	2,863,798	70,524	2.5	16	1.20	55.4
1984	61	207	775,472	1,789,883	50,726	2.3	15	1.04	29.6
1985	52	184	1,097,182	2,549,686	47,465	2.3	23	1.42	73.0
1986	74	187	1,589,759	3,781,950	65,078	2.4	24	1.72	72.9
1987	54	106	950,300	2,400,784	37,511	2.5	25	2.03	56.1
1988	73	148	1,359,371	3,328,809	52,516	2.5	26	2.20	78.6
1989	65 <sup>3</sup>	87	433,112	1,055,082	27,958	2.4	16	2.70	52.9
1990				NO OPEN SEASON					
1991				NO OPEN SEASON					

<sup>1</sup>Includes deadloss

<sup>2</sup>Computed for live crab only

<sup>3</sup>One additional vessel was registered but did not fish in the District

Table 2. Historic vessel size and pot use, South Peninsula District Tanner crab fishery.

Season	Total Vessels	Vssl. length (ft)		Total Pots	-----Pots-----	
		Avg.	Min-Max		Avg/Vssl	Min-Max
1989	65	55.0	37-105	9,251	142	30-290
1988	73	60.5	37-180	11,688	160	70-500
1987	54	56.8	40-106	8,100	150	51-500
1986	75	67.4	40-150	10,804	144	50-325
1985	52	55.7	40-150	6,573	126	62-275
1984	61	56.2	38-150	8,275	135	57-300
1983	82	63.9	38-150	10,713	133	20-400
1981/82	72	69.0	38-135	11,992	166	52-400
1980/81	43	63.7	38-122	6,579	154	40-400
1979/80	62	69.0	41-146.5	NA	NA	NA
1978/79	53	69.4	36-132	6,890	130	30-300

Table 3. Tanner crab commercial fishing periods in the South Peninsula District since 1974.

Year	Open	Closed
1974/75	August 15	June 15
1975/76	November 1	June 30
1976/77	November 1	May 15
1977/78	November 1	May 15
1978/79	November 1	May 15
1979/80	November 1	May 15
1980/81	November 1	May 15
1981/82	December 1	March 13
1982/83	December 15	March 17
1984	February 10	March 10
1985	February 10	March 20
1986	January 15	March 10
1987	January 15	February 5
1988	January 15	January 26
1989	January 15	January 22
1990	Closed	
1991	Closed	

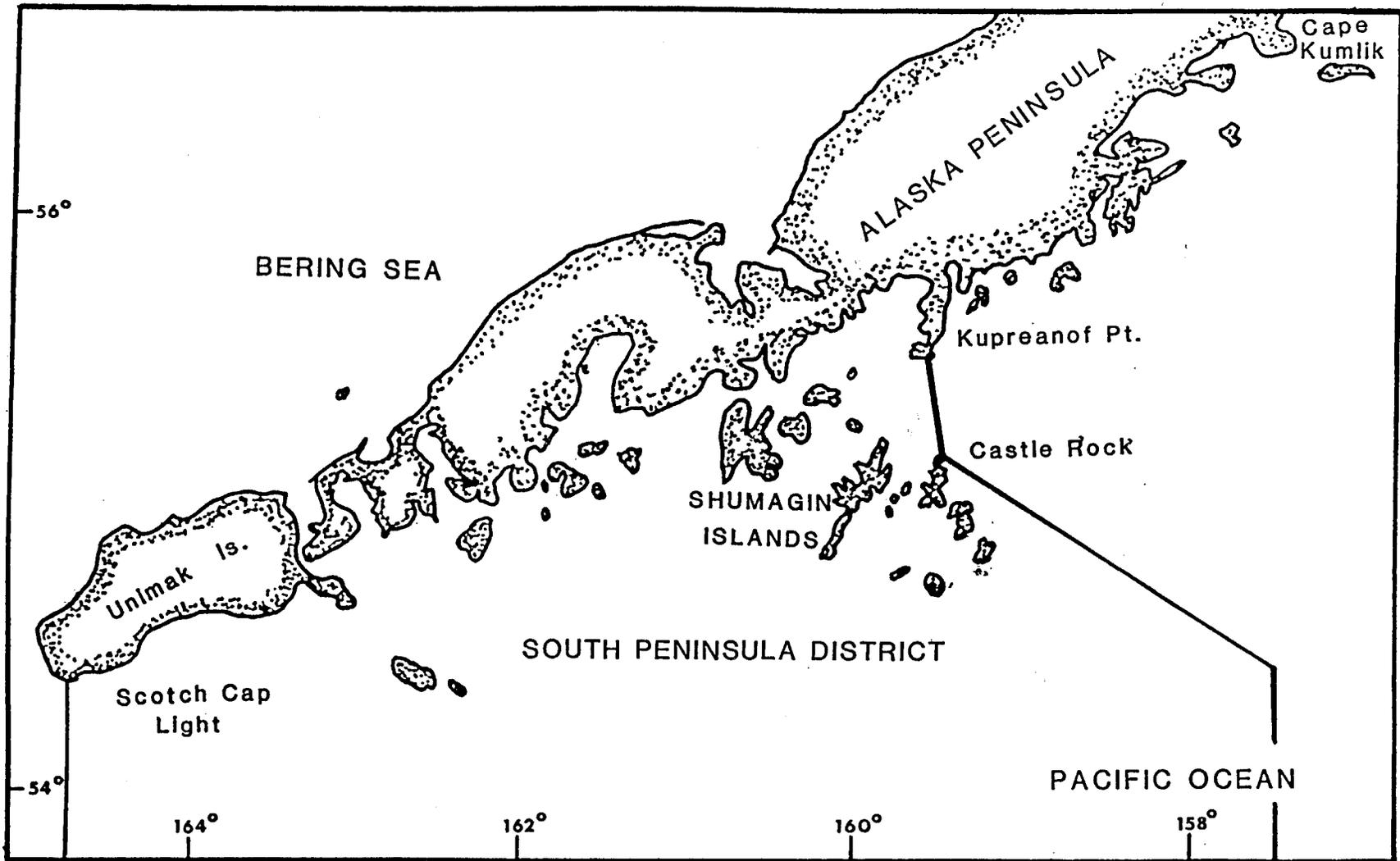


Figure 1. South Peninsula Tanner crab district.

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## ALASKA PENINSULA DUNGENESS CRAB

### Introduction

The Alaska Peninsula District is described as all waters of Statistical Area J west of the longitude of Cape Kumlik (157° 27' W. long.) and east of the longitude of Scotch Cap Light (164° 44' W. long.) (Figure 1).

Historically, Dungeness catches from the District have been sporadic with the highest catch recorded in 1968 when 1.26 million pounds were landed (Table 1). Subsequent effort and catches remained low for many years due to low prices and better prospects in other fisheries. During the early 1980's, the decline in king crab stocks and a stronger market for Dungeness generated a renewed interest in the fishery. Effort grew so quickly that the Board of Fisheries made the Alaska Peninsula District a superexclusive registration district in 1983. The superexclusive regulation seems to have reduced effort in the District. The poor catches of the last few seasons probably discouraged participation in the fishery as well.

Management of the Alaska Peninsula District Dungeness fishery has been by sex, size and season or the "3-S system". Only males greater than 6.5 inches in carapace width may be harvested from May 1 until January 1 or February 1 (the exact closing date has varied over the years). No research including abundance surveys have ever been conducted on the Dungeness of the area. Management activity has been limited to monitoring the deliveries and recording the harvest. Recently, the revival of the fishery and the poor condition of other crab fisheries, Department biologists have begun to scrutinize the current management strategy. However, data collected so far have not been adequate to support any changes to the management system.

### 1991 Fishery

The Alaska Peninsula Dungeness crab season opened May 1st. A total of seven vessels made 18 landings for a total catch of 80,248 pounds (Table 1).

### Stock Status

Limited data on the population size and structure in the Alaska Peninsula District are derived from skipper interviews and commercial catch sampling. The Chignik fishery appears to be a recruit fishery as over 92 percent of the 1988 catch, nearly 96 percent of the 1987/88 catch and 76 percent of the 1986/87 catch were recruit crab. (Recruits are assumed to be new-shell legal males less than 194 mm carapace width.) Small samples taken during the last few seasons make it difficult to draw conclusions about the age and size structure of the Chignik Dungeness population.

From 1982/83 to 1985 the South Peninsula and Chignik Dungeness populations appear stable (Table 1). The drastic declines of the 1986 and 1987 harvests indicate a loss of stability and a significant decline in the population of Dungeness

(Table 1). Over the last seven seasons, fishing pressure may have reduced the numbers of legal sized crabs that may have accumulated when there was low interest in the fishery. Although no samples were taken in 1987 and 1988, the 491 crab sampled in 1986 showed that 75 percent of the harvest was made up of recruit crab. Therefore, as in Chignik, the South Peninsula Dungeness harvest appears to be dependent upon yearly recruitment.

Since the Department does not survey the Dungeness population there is no way to predict harvests or recruitment for the 1991 fishery. Dramatic cycles of low and high abundance have been observed in other Dungeness fisheries. The Department has observed abnormally high catches of small Dungeness crab during the summer trawl survey in the Chignik area. If these crab survive and recruit into commercial sized animals, the commercial catch should increase in the near future.

Table 1. Dungeness crab harvest statistics, Alaska Peninsula District.

Year	Vssls	Lndgs	No. of Crab <sup>1</sup>	No. of Pounds <sup>1</sup>	Pots Lifted	CPUE	Avg. Wt.	Price Per #
1968	NA	NA	434,142	1,259,013	NA	NA	2.9	NA
1969	NA	NA	411,000	1,056,000	NA	NA	NA	NA
1970	NA	NA	4,200	13,000	NA	NA	NA	NA
1971	NA	NA	3,900	11,000	NA	NA	NA	NA
1972	NA	NA	29,400	65,000	NA	NA	NA	NA
1973			C o n f i d e n t i a l					
1974			N O E F F O R T					
1975			N O E F F O R T					
1976			N O E F F O R T					
1977			N O E F F O R T					
1978			N O E F F O R T					
1979			C o n f i d e n t i a l					
1980			N O E F F O R T					
1981/82			C o n f i d e n t i a l					
1982/83	16	79	357,955	779,600	59,265	6	2.2	\$ .75
1983/84	18	132	565,430	1,207,128	113,061	5	2.1	\$ .97
1984/85	13	99	294,191	647,497	106,056	3	2.1	\$ 1.38
1985/86	7	31	239,202	488,107	52,117	5	2.0	\$ 1.26
1986/87	6	28	87,925	180,261	30,280	3	2.0	\$ 1.05
1987/88	6	21	88,744	182,706	22,588	4	2.1	\$ 1.11
1988			C o n f i d e n t i a l					
1989			C o n f i d e n t i a l					
1990	4	10	31,074	65,806	5,225	6	2.1	\$ 1.53
1991	7	18	39,069	80,248	12,813	3	2.1	\$ 1.24

NA = Not Available

<sup>1</sup>Includes deadloss

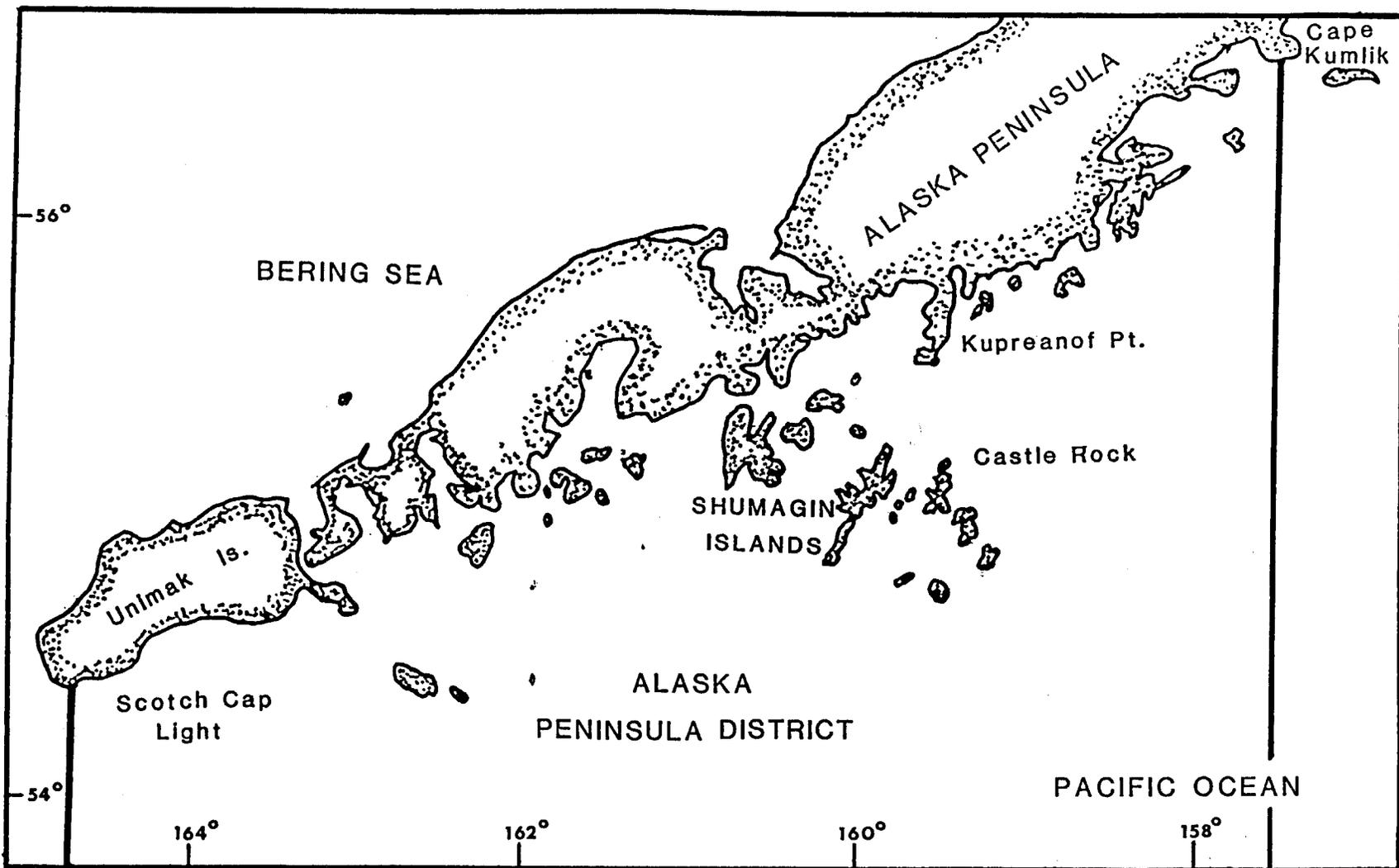


Figure 1. Alaska Peninsula Dungeness district.

## ALASKA PENINSULA MISCELLANEOUS SPECIES

### Introduction

Fishermen have occasionally plied the waters of the Alaska Peninsula for snails, pot shrimp, octopus, squid, hair crab, and other less commonly sought species. Octopus was the only species fished in 1991. A more thorough description of this fishery is found below. Discussions of other fisheries appear in previous years' issues of the *Westward Regional Shellfish Report To The Alaska Board Of Fisheries*, Alaska Department of Fish and Game, Kodiak, Alaska.

### Octopus

Octopus is the most frequently harvested of the "miscellaneous species" in the Alaska Peninsula District. Processors usually freeze the octopus for resale as halibut bait. Table 1 shows the historic delivery records of octopus in the Alaska Peninsula. The tables do not include the octopus caught and retained by fishermen for personal food and bait use.

Until 1988 octopus were usually taken incidentally during the Tanner crab fishery. Now the octopus are most often taken in trawls targeting on cod and other bottomfish. When trawls opened the octopus market to pot and longline gear, fishermen began to sell their incidental catch as well.

The 1991 catch of octopus was 21,812 pounds landed by 30 vessels. Scant population information is available for the Alaska Peninsula octopus.

Table 1. Historic deliveries of octopus in the Alaska Peninsula District.

Year	Vssls.	Lndgs.	Pounds	Avg. Price
1980		Harvest Confidential		
1981		Harvest Confidential		
1982		Harvest Confidential		
1983		Harvest Confidential		
1984		NO FISHING		
1985		Harvest Confidential		
1986		NO FISHING		
1987		NO FISHING		
1988	30	185	43,332	\$ .92
1989	27	122	14,890	\$1.00
1990	20	83	11,504	\$1.00
1991	30	106	21,812	\$1.00

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH  
FISHERIES OF THE EASTERN ALEUTIANS AREA, 1991

MARCH 1992

BY

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## DUTCH HARBOR RED KING CRAB

### Introduction

The Dutch Harbor area or Statistical Area '0', has as its eastern boundary the longitude of Scotch Cap Light on Unimak Island, and as its western boundary 171° West longitude. The 800 fathom depth contours are the seaward boundaries. Area '0' is further broken down into five fishing districts (Figure 1). Although red king crab is the primary target species, brown king crab production is on the increase.

### Historic Background

The Area '0' red king crab fishery began in 1961 and rapidly became one of the State's major production areas. During the development years of the fishery, the catch peaked at an all time high of 32.9 million pounds in 1966/67.

Since 1966/67 the fishery has fluctuated widely. A sharp decline characterized the fishery between 1967 and 1970 (Table 1). After the low 1969/70 catch of 8.9 million pounds, the fishery gradually rebuilt to a peak of 15.9 million pounds during the 1975/76 season (Table 1). The increase appeared to be largely a result of improved catches in the Egg Island District, and expansion into new grounds of the Western District.

For the second time in the history of the fishery, a sharp decline followed several years of increasing harvests, and the 1977/78 season marked a new low in the Area '0' fishery (Table 1). The decline was area wide, and all districts suffered poor catches.

By 1980/81 catches had reached the highest level in 13 years, and although populations had rebuilt somewhat in several of the districts, the bulk of the increase was due to the exploitation of previously unfished populations in the Unalaska and Western Districts (Table 1). In 1980/81 nearly 39 percent of the catch came from areas only lightly fished during previous seasons.

### 1990/91 Fishery

There was no fishery for the 1990/91 season due to low abundance of red king crab.

### Stock Status

During July and August of 1991, the Department of Fish and Game conducted a trawl survey of the Dutch Harbor area to assess crab stocks. The survey lasted ten days. Emphasis was placed on areas where historically significant fisheries have occurred and areas where juvenile and female king crab should have been concentrated.

The survey consisted of 38 tows and captured only two legal king crab, two sublegal male king crab and six mature females. The results indicate low king crab abundance in the Dutch Harbor area and no improvement in stock status from the previous year. Recovery is not expected for many years.

Based on continued low stock abundance observed during the 1987, 1990 and 1991 surveys, the Dutch Harbor Area will remain closed to commercial fishing for red and blue king crabs during the 1991/92 fishing season.

## DUTCH HARBOR BROWN KING CRAB

### Historic Background

Historically, Dutch Harbor brown king crab have been taken incidental to the red king crab fishery. Incidental catches of brown king crab were small and landings of red king crab included some brown king crab prior to the 1981/82 season, but the poundage was not recorded separately.

During the 1981/82 season, six vessels landed over 115,000 pounds during the red king crab season. Only one landing occurred during January 1982, and the season closed along with the area red king crab season on January 15 (Tables 1 and 2).

Interest in the fishery continued to grow and during the 1982 and 1983 seasons, 49 vessels landed over 1.1 million pounds in the area's first directed brown king crab fishery, (Table 2). As red king crab stocks continued to decline, effort and interest continued into the 1983/84 season, and 1.8 million pounds was landed by 47 vessels, (Table 2).

In 1984, the Board of Fisheries adopted staff proposals to lower the brown king crab size limit from 6.5 inches to 6.0 inches and established the area as a permit fishery to allow the fishery to expand into other areas outside the historical fishing grounds. During the 1984 permit season, prices and effort dropped, but 13 vessels managed to land 1.5 million pounds (Tables 1 and 2). Since the permit system was implemented, the fishery has averaged over 1.6 million pounds per year. All landings have occurred from historical grounds developed during the 1982/83 season.

During the 1988 spring shellfish meetings, the Board of Fisheries adopted the staff proposal removing the permit fishery designation and set an opening date for September 1.

### 1991/92 Fishery

The fishery opened at 12:00 noon, September 1. In past years, the St. Matthew blue king crab fishery had also opened on this date, but due to lack of survey information, the 1991 fishery had been delayed. Registrations and tank inspections were given in Dutch Harbor to 11 vessels, including five catcher processors, three more than the 1990/91 season.

The fishery occurs on grounds developed during the early eighty's and although some other grounds have been explored, no fishable populations have been found. By the end of September, over 807,000 pounds had been landed by the fleet, somewhat better than the 1990 September landings. Fishing began to drop off in October, and with the opening of the Bristol Bay red king crab season and the Adak king and Tanner crab seasons scheduled for November 1, effort began to prepare for those fisheries. Catches for October and November were 640,042 pounds (Table 3).

All vessel effort had left the area by mid-November. A total of 1.4 million pounds had been landed by this time, and the fishery was closed on November 15.

### Stock Status

The Dutch Harbor brown king crab stocks are not surveyed, but during September of 1991, the Department conducted a tagging study in the Adak and Dutch Harbor areas of Seguam and Amukta Passes. Over 4,800 tags were placed on sublegal and legal males in these areas. Fishermen were asked to document location and depths of tagged crab, and retain only the legal males. A report on this study will be presented by the research staff.

Table 1. Dutch Harbor, Area '0', historic red king crab catch.

Season	Opened	Closed	Vessels	Landings	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Min. Size	Avg. Price Per #
1968/69	01/01 <sup>2</sup>	03/15	NA	NA	NA	11,300,000	NA	NA	NA	7.0"	NA
1969/70	09/15	02/15	41	375	NA	8,950,000	72,683	NA	NA	7.0"	NA
1970/71	09/15	01/10	32	268	NA	9,652,000	56,198	NA	NA	7.0"	NA
1971/72	09/15	10/23	32	210	1,447,692	9,391,615	31,531	6.5	46	6.5"	NA
1972/73	10/01	10/24	51	291	1,500,904	10,450,380	34,037	7.0	44	6.5"	NA
1973/74	11/01	11/24	56	290	1,780,673	12,722,696	41,840	7.1	43	6.5"	\$ .65
1974/75	11/01	01/14	87	372	1,812,647	13,991,129	71,821	7.7	25	6.5"	\$ .37
1975/76	11/01	01/10	79	369	2,147,350	15,906,666	86,874	7.4	25	6.5"	\$ .42
1976/77	11/01	12/07	72	226	1,273,298	9,367,965	65,796	7.4	10	6.5"	\$ .64
	12/13	01/13	38	61	86,619	830,458	17,298	9.6	5	8.0"	\$ .79
1977/78	09/15	12/08	33	227	539,656	3,658,860	46,617	6.8	12	6.5"	\$ .99
	12/08	01/05	6	7	3,096	25,557	812	8.3	4	7.5"	\$1.35
1978/79	09/10	11/20	60	300	1,233,758	6,824,793	51,783	5.5	24	6.5"	\$1.35
1979/80	09/10	01/10	104	542	2,551,116	15,010,874	120,554	5.9	21	6.5"	\$ .90
1980/81	11/01	01/12	114	830	2,772,287	17,660,642	231,607	6.4	12	6.5"	\$1.02
	01/15	02/15	54	120	182,349	1,392,923	30,000	7.6	6	7.5"	\$1.03
1981/82	11/01	02/15	92	683	741,966	5,155,345	220,087	6.9	3	6.5"	\$2.30
1982/83	11/01	01/15	81	278	64,380	431,179	72,924	6.7	1	6.5"	\$3.43
1983/84					C L O	S E D					
1984/85					C L O	S E D					
1985/86					C L O	S E D					
1986/87					C L O	S E D					
1987/88					C L O	S E D					
1988/89					C L O	S E D					
1989/90					C L O	S E D					
1990/91					C L O	S E D					
1991/92					C L O	S E D					

<sup>1</sup> Includes deadloss

<sup>2</sup> Prior to 1968/69 fishery was open 12 months/year. 1968/69 season ran 1-1-68 to 3-15-69

Table 2. Brown king crab harvest composition, Area '0', Dutch Harbor.

Season	-----Season-----		No. Pounds <sup>1</sup>	Size Limit	Price Per Lb.
	Opened	Closed			
1981/82	11/01	01/15	115,715	6½"	\$-2.05
1982/83	11/01	02/15	1,284,971	6½"	\$ 3.00
1983/84	11/01	02/15	1,810,973	6½"	\$ 3.05
1984 <sup>2</sup>	07/01	12/31	1,521,142	6"	\$ 1.35
1985	01/01	02/15	177,995	6"	\$ 1.70
	07/01	10/31	1,799,656	6"	\$ 2.00
1986 <sup>2</sup>	07/01	12/31	1,869,180	6"	\$ 2.85
1987	07/01	09/02	1,383,198	6"	\$ 2.85
1988	09/01	12/04	1,545,113	6"	\$ 3.00
1989/90	09/01	02/15	1,852,249	6"	\$ 3.50
1990/91	09/01	11/09	1,718,848	6"	\$ 3.00
1991/92	09/01	11/15	1,447,732	6"	\$ 2.00

<sup>1</sup>Deadloss included

<sup>2</sup>Partial closure 9/27 west of 169°30'

Table 3. 1991/92 preliminary Dutch Harbor brown king crab catch by month.

Month	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds of Deadloss
Sept	11	24	186,150	807,690	19,059	4.3	10	12,600
Oct/Nov	11	26	149,497	640,042	21,545	4.3	7	32,500
Season Total	11	50	335,647	1,447,732	40,604	4.3	8	45,100

<sup>1</sup>Deadloss included



UNALASKA I TO AMUKTA I

ALASKA DEPARTMENT OF FISH AND GAME  
STATISTICAL AREA CHART  
DECEMBER 1984

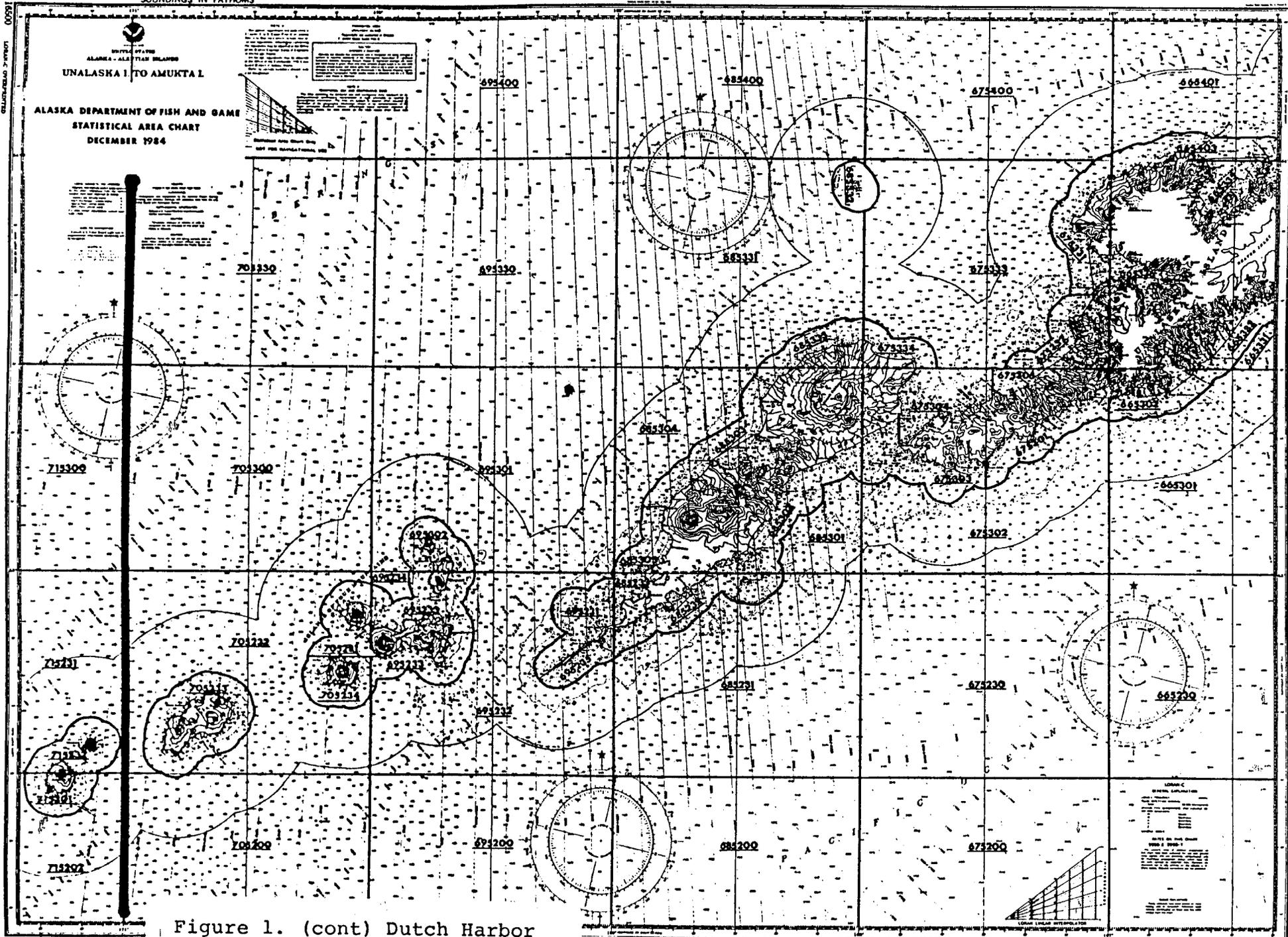


Figure 1. (cont) Dutch Harbor

Area "O"



## EASTERN ALEUTIAN TANNER CRAB

### Introduction

The Eastern Aleutian District is marginal habitat for *Chionoecetes bairdi*, evidenced by the presence of commercial quantities of crab in only a few major bays and inlets. The fishery has been rather small, and although the 1977/78 season produced a record 2.4 million pounds, seasonal catches have remained significantly less than one million pounds (Table 1). The fishery began in Akutan and Unalaska Bays but has since expanded to include all the known areas with Tanner crab.

### 1991 Fishery

The fishery opened at 12:00 noon January 15, with three vessels registering, substantially less than the 10 vessels that registered for the 1990 opening. The total fishing effort during January and February was concentrated in Unalaska Bay. By March the number of vessels fishing increased to five. Some of them began exploring different bays around Unalaska Island in an effort to find concentrations of *C. bairdi*, with minimal success. The Eastern Aleutian District closed to Tanner crab fishing by regulation on March 31, 1991.

The catch for the season was 50,000 pounds, the smallest catch since the fishery started in 1973, (Table 1). Seventy-nine percent of the catch came from Unalaska Bay with the rest coming from scattered locations around Unalaska Island.

There has been little variation in average weight of the crab since the fishery began; ranging between 2.2 and 2.5 pounds per crab. The catch per unit of effort has been stable since 1981 and about 11 crabs per pot after high rates of four and five times this level during the first seven years of this fishery.

### Stock Status

In August of 1991, for the second year in a row, a trawl survey was conducted in the Eastern Aleutian district to determine the number of crab in the area. This survey indicated that the *C. bairdi* population was at a low level and was very similar to the population during the 1990 survey. A quota has been established for the 1992 fishery of 80,000 pounds, up slightly from the 70,000 pound quota for 1991.

Table 1. Historic 5½ inch *Chionoecetes bairdi* fishery statistics from the Eastern Aleutian District.

Season	Opened	Closed	Vessels	Landings	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Average Weight	CPUE	Price per Pound
1973/74	10/1	7/31	6	14	210,539	498,836	NR <sup>2</sup>	2.4	60	\$ .NR
1974/75	1/18	10/15	C o n f i d e n t i a l							
1975/76	1/20	10/15	8	13	219,166	534,295	4,646	2.4	47	.196
1976/77	11/7	6/15	12	35	544,755	1,239,569	9,640	2.3	57	.30
1977/78	11/1	6/15	15	198	1,104,631	2,494,631	29,855	2.3	37	.38
1978/79	11/1	6/15	20	174	542,081	1,280,115	18,618	2.4	20	.52
1979/80	11/1	6/15	18	107	352,819	886,487	18,040	2.4	20	.52
1981	1/15	6/15	29	119	264,238	654,514	21,771	2.4	12	.58
1982	2/15	6/15	31	138	332,260	739,694	30,109	2.2	11	1.25
1983	2/15	6/15	23	107	250,774	547,830	22,168	2.1	11	1.20
1984	2/15	6/15	16	91	104,761	239,585	11,069	2.3	9	.98
1985	1/15	6/15	6	56	71,918	165,529	5,620	2.3	13	1.30
1986	1/15	6/15	9	37	73,187	167,339	10,244	2.3	7	1.50
1987	1/15	6/15	7	63	71,338	160,292	5,294	2.2	13	2.00
1988	1/15	4/10	19	130	129,468	309,918	11,011	2.4	12	2.10
1989	1/15	5/07	12	109	144,746	326,396	14,685	2.2	10	2.90
1990	1/15	4/09	10	75	73,269	171,785	6,858	2.3	11	1.85
1991	1/15	3/31	5	27	21,511	50,038	1,849	2.3	12	1.25

<sup>1</sup>Deadloss included beginning 1980

<sup>2</sup>No record

Table 2. *Chionoecetes bairdi* catch by month for the Eastern Aleutian District for 1991 season.

Month	Vssls	Lndgs	Crab	Pounds	Pots Lifted	Avg. Wt.	CPUE	Dead-loss (#s)
Jan	3	7	6,613	16,274	505	2.5	13	0
Feb	4	11	7,643	17,755	692	2.3	11	0
Mar	3	9	7,255	16,009	652	2.2	11	0
TOTAL	5	27	21,511	50,038	1,849	2.3	12	0

Table 3. *Chionoecetes bairdi* catch by statistical area for the Eastern Aleutian District, 1991.

Area	Lndgs	Crab	Pounds	Pots Lifted	Avg. Weight	CPUE	Deadloss (#s)
665332	3	4,305	9,734	277	2.3	16	0
665335	24	17,206	40,304	1,572	2.3	11	0
TOTAL	27	21,511	50,038	1,849	2.3	12	0

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## ALEUTIAN ISLANDS DUNGENESS CRAB

### Introduction

The Aleutian District includes all water of statistical Area 'J' west of the longitude of Scotch Cape Light and south of the latitude of Cape Sarichef and encompasses all the Aleutian Islands.

The islands in the Aleutian chain are separate from each other by deep passes and swift currents and are closely bordered on the north and south by deep trenches. Red and brown king crab are found in the deep waters adjacent to the "Chain", but the Dungeness crabs prefer the shallower bays. The shallow areas suitable to Dungeness populations are few, helping to explain the low effort and small Dungeness populations in the district.

### Historic Background

The Aleutian District fishery is primarily a small vessel, summer fishery occurring in the vicinity of Unalaska Island and within Unalaska Bay. Some larger vessel effort has occurred in other bays on the Island. Effort in these areas has been sporadic throughout the history of the fishery.

Interest and activity in the fishery has been very erratic from year to year, with the first reliable reports made in 1970. The greatest catch reported prior to the 1984/85 fishery was 60,517 pounds reported in 1974, (Table 1). Since 1974, deliveries have ranged from zero in 1976, 1977, 1980, and 1981 to over 91,000 pounds reported in 1984/85, (Table 1).

### 1991 Fishery

The Eastern Aleutian District opened to Dungeness crab fishing on May 1. Four vessels registered for the fishery. All the effort occurred during August and September. All of the catch came from Unalaska Bay. The crab were purchased locally by one processor and one grocery store.

Table 1. Historic Dungeness crab catch and associated data in the Aleutian District.

Year	Season	Vessels	Landings	Crab	Pounds	Pots Lifted	Avg. Wt.	CPUE	Price Per Pound
1974	1-1/12-31		Confidential						
1975	1-1/12-31		Confidential						
1976	5-1/12-31		N O C A T C H						
1977	5-1/12-31		N O C A T C H						
1978	5-1/12-31		Confidential						
1979	5-1/12-31		Confidential						
1980	5-1/12-31		N O C A T C H						
1981	5-1/2-1		N O C A T C H						
1982/83	5-1/2-1		Confidential						
1983/84	5-1/2-1		Confidential						
1984/85	5-1/2-1	4	50	40,128	91,739	13,555	2.3	3	\$1.15 - \$1.50
1985	5-1/12-31		Confidential						
1986	5-1/12-31		Confidential						
1987	5-1/12-31	5	43	13,247	26,627	2,987	2.0	4	\$ .95
1988	5-1/12-31	6	45	10,814	22,634	2,581	2.1	4	\$ .90
1989	5-1/12-31	4	31	5,165	11,124	2,078	2.1	2	\$ .90
1990	5-1/12-31	3	11	8,379	17,365	1,345	2.1	6	\$ .90
1991	5-1/12-31	4	14	3,654	7,412	732	2.0	5	\$1.25

## ALEUTIAN ISLANDS/BERING SEA SCALLOPS

### Historic Background

Two scallop vessels pioneered the scallop fishery in the Aleutian Islands in 1985. The fishery peaked in 1986 and has since declined with minimal effort, (Table 1). Weathervane scallops were the species harvested through 1990.

### 1991 Fishery

In 1991 a new vessel entered the fishery. It deployed mechanical shuckers and was designed to target *Chlamys* scallops. Two additional vessels fished Weathervane scallops. By the end of 1991 all three vessels had left the fishery.

Table 1. Historic scallop fishery statistics for the Eastern Aleutians District.

Season	Vssls	Lndgs	Pounds	Drags	Avg. Lbs./Drag	Avg. Price/#
1985			C o n f i d e n t i a l			
1986	5	37	406,642	8,754	46	\$3.50
1987			C o n f i d e n t i a l			
1988			C o n f i d e n t i a l			
1989			C o n f i d e n t i a l			
1990			C o n f i d e n t i a l			
1991			C o n f i d e n t i a l			

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ANNUAL MANAGEMENT REPORT FOR THE  
SHELLFISH FISHERIES OF THE WESTERN ALEUTIANS AREA, 1991

MARCH 1992

BY

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## ADAK BROWN KING CRAB

### Historic Background

The Adak (Area 'R') brown king crab registration area has its eastern boundary at 171°W. Longitude, its western boundary at the U. S. Russian Convention Line of 1867 and its northern boundary at 55°30' N. Latitude. The Adak brown king crab fishery began during the 1975/76 season when 25,000 pounds were caught. Occurring incidentally to the red king crab fishery, catches of brown crab were low during the 1975/76 to 1980/81 seasons (Table 1).

Fishermen began to target on brown king crab for the first time during the 1981/82 season when 14 vessels made 76 landings totaling 1.2 million pounds (Table 1). When the fishery first began, most of the catch came from the North Amlia and Petrel Bank Districts, and lately the Western Aleutian District has become a significant producer as well. Lacking the large inter-island passes where brown king crab are most numerous, the other three districts in Area 'R' produce much lower catches. In July 1985, the size limit was reduced from 6.5 to 6.0 inches.

### 1990/91 Fishery

The fishery opened concurrently on November 1 with the red king crab and Tanner crab seasons. Registrations and tank inspections were given to four catcher processors, three of which intended to target on red king crab first. One of these vessels fished only red king crab and left the area a few weeks into the season. After the closure of the Bristol Bay red king crab season several catcher only vessels also registered for the area, but returned to the Bering Sea *C. opilio* fishery in mid-January.

From November through May, the effort remained relatively constant at seven boats. By July, there were a total of 11 boats fishing (Tables 1 and 2). The boats averaged 568 pots each and were all longliners. Some vessels registered over 1,000 pots each. Most of the fishing was concentrated in a few small areas and when effort increased in July, gear conflicts increased dramatically.

The 1990/91 brown king crab harvest was about half of the previous season harvest and the smallest since the 1984/85 season (Table 1). The low catch can probably be attributed to overfishing during previous years.

Consistent with the new harvest strategy of Amendment 1 to the Bering Sea/Aleutian Islands king and Tanner crab Management Plan (FMP) and the adoption of a statewide policy statement by the Board of Fisheries on all king and Tanner crab stocks, the area east of 175° West longitude was closed to the taking of brown king crab on August 7.

Data collected by observers and studies by National Marine Fisheries Service on size at maturity indicated a possible harvest of legal males in excess of 80 percent during previous years. This data also indicated a small difference between mature and legal sizes for crab in this area, therefore, the size limit

provided very little protection of overfishing of mature crab. In-season data also indicated a possible over harvest of the area that was equal to or exceeded that of previous years.

Further analysis of the observer and fishery data is being implemented and in conjunction with the tagging done during the fall of 1991 in this area, will be used to further evaluate the effect of fishing on the reproductive potential of these stocks.

### Stock Status

The Adak area stocks remain unsurveyed, and no population estimates are available. During September of 1991, 671 legal and 1,745 sublegal male brown king crab were tagged in the Seguam and Amchitka Pass areas. Re-capture information obtained from fishermen and industry on these crab will lead to better management.

Table 1. Historic brown king crab catch in Adak, Area R.

Season	-----Season-----		Vssls	Lndgs	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Percent Newshell	Avg. Lngth	Min. Size	Price/Pound	Deadloss
Opened	Closed													
1975/76	11/01	12/18			Harvest	Confidential				NA	NA	6.5"	NA	NA
1976/77	01/07	04/15			Harvest	Confidential				NA	NA	6.5"	\$ .75	NA
1977/78	02/20	03/20			Harvest	Confidential				NA	NA	6.5"	\$1.30	NA
1978/79	02/21	10/01	0	0	0	0	0					6.5"		0
1979/80	01/15	04/01			Harvest	Confidential				NA	NA	6.5"	\$ .65	NA
1980/81	01/15	03/28	4	4	11,523	58,914	700	5.1	17	97.6	158.4	6.5"	\$ .90	5,000
1981/82	11/01	06/15	14	76	217,700	1,194,046	24,627	5.5	9	90.5	159.6	6.5"	\$2.06	22,064
1982/83	11/01	04/15	99	501	1,509,001	8,006,274	150,103	5.3	10	92.4	158.2	6.5"	\$3.01	220,743
1983/84	11/10	04/15	157	1,002	1,534,909	8,128,029	226,798	5.3	7	87.8	NA	6.5"	\$2.92	171,021
1984/85	11/10	07/08	38	85	643,597	3,180,095	64,777	4.9	10	87.5	156.7	6.5"		125,073
1985/86 <sup>2</sup>	11/01	08/15	49	386	2,052,048	11,124,759	202,401	4.5	12	86.3	151.3	6.0"		5,304
1986/87	11/01	08/15	62	525	2,923,947	12,798,004	392,185	4.4	7	69.1	149.5	6.0"	\$3.00	276,736
1987/88	11/01	08/15	46	386	1,908,989	8,001,177	267,705	4.2	7	91.7	146.9	6.0"	\$3.00	165,415
1988/89	11/01	08/15	74	455	2,165,508	9,080,196	280,732	4.2	8	91.2	149.1	6.0"	\$3.20	122,251
1989/90	11/01	08/15	64	505	2,520,786	10,162,400	324,153	4.0	8	95.3	148.5	6.0"	\$3.00	100,724
1990/91 <sup>3</sup>	11/01	08/15	13	167	1,312,116	5,250,687	160,960	4.0	8	91.5	144.5	6.0"	\$3.00	176,583
1991/92 <sup>4</sup>	11/01													

<sup>1</sup>Deadloss included  
<sup>2</sup>Size limit reduced to six inches  
<sup>3</sup>Partial closure August 7  
<sup>4</sup>Season in progress

Table 2. 1990/91 Adak, Area 'R', brown king crab catch statistics by month.

Mo.	No. Vssls	No. Lndgs	No. Crab <sup>1</sup>	No. Lbs. <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
Nov	6	17	105,509	437,744	7,864	4.2	13	0
Dec	7	16	104,597	423,503	8,731	4.1	12	7,000
Jan	7	12	77,882	318,900	8,259	4.1	9	8,500
Feb	6	13	103,112	413,113	12,026	4.0	8	20,755
Mar	7	16	169,922	684,177	16,130	4.0	10	21,528
Apr	7	16	141,171	549,890	16,643	3.9	8	15,000
May	7	13	139,787	556,338	15,944	4.0	8	39,500
Jun	9	18	167,625	635,184	22,651	3.9	7	11,100
Jul	11	26	163,400	658,136	31,694	4.0	5	21,200
Aug	11	20	139,111	555,702	21,018	4.0	6	32,000
Total	13	167	1,312,116	5,250,687	160,960	4.0	8	176,583

Table 3. Preliminary 1991/92 Adak Area 'R' brown king crab catch statistics by month.

Mo.	No. Vssls	No. Lndgs	No. Crab <sup>1</sup>	No. Lbs. <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
Nov	5	10	109,394	453,548	6,963	4.2	15	5,500
Dec	7	18	114,315	468,277	14,217	4.1	8	5,200
Jan	4	7	85,983	316,036	7,573	3.7	11	11,000
Total <sup>2</sup>	7	35	309,692	1,273,861	28,753	4.0	11	21,700

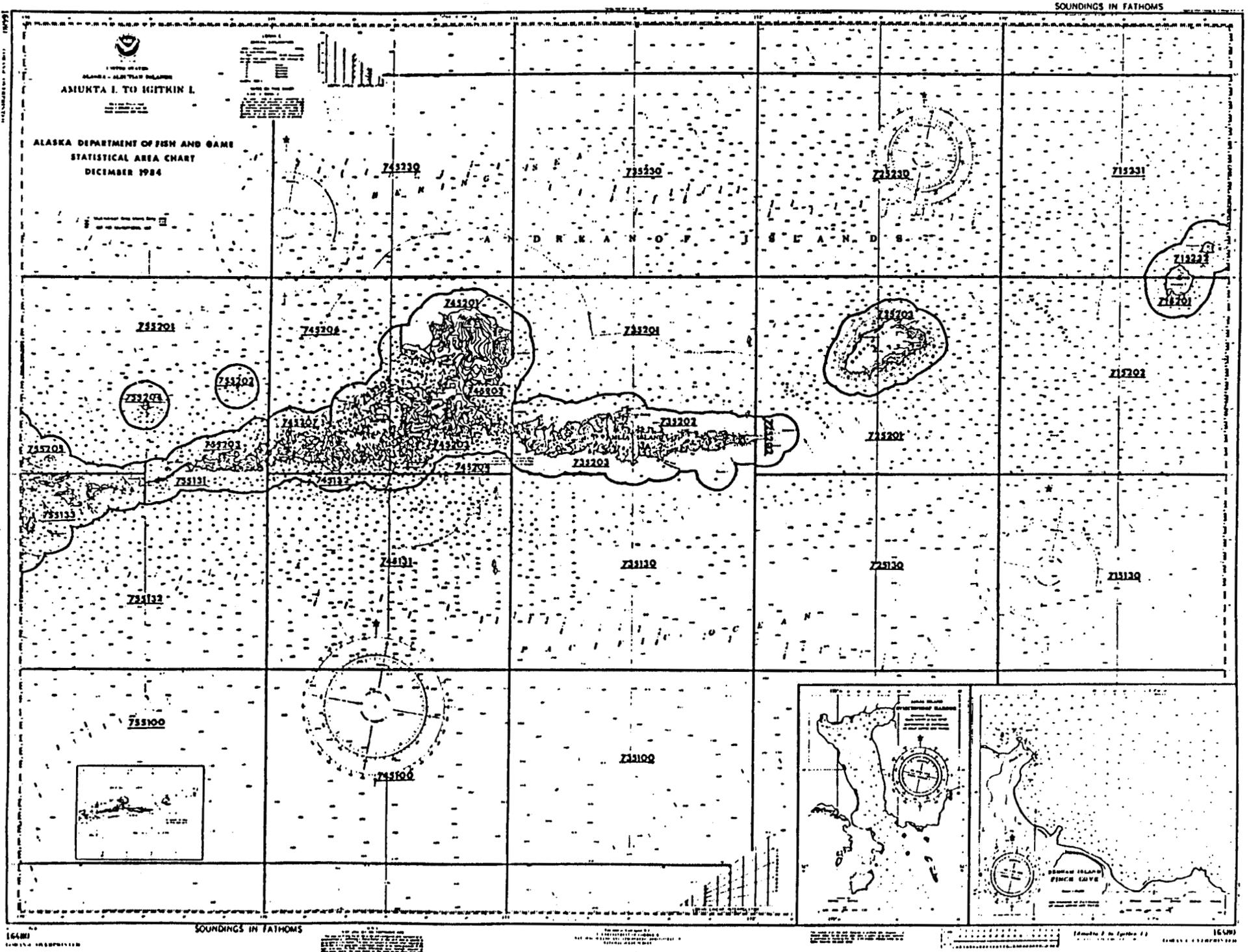
<sup>1</sup>Deadloss included

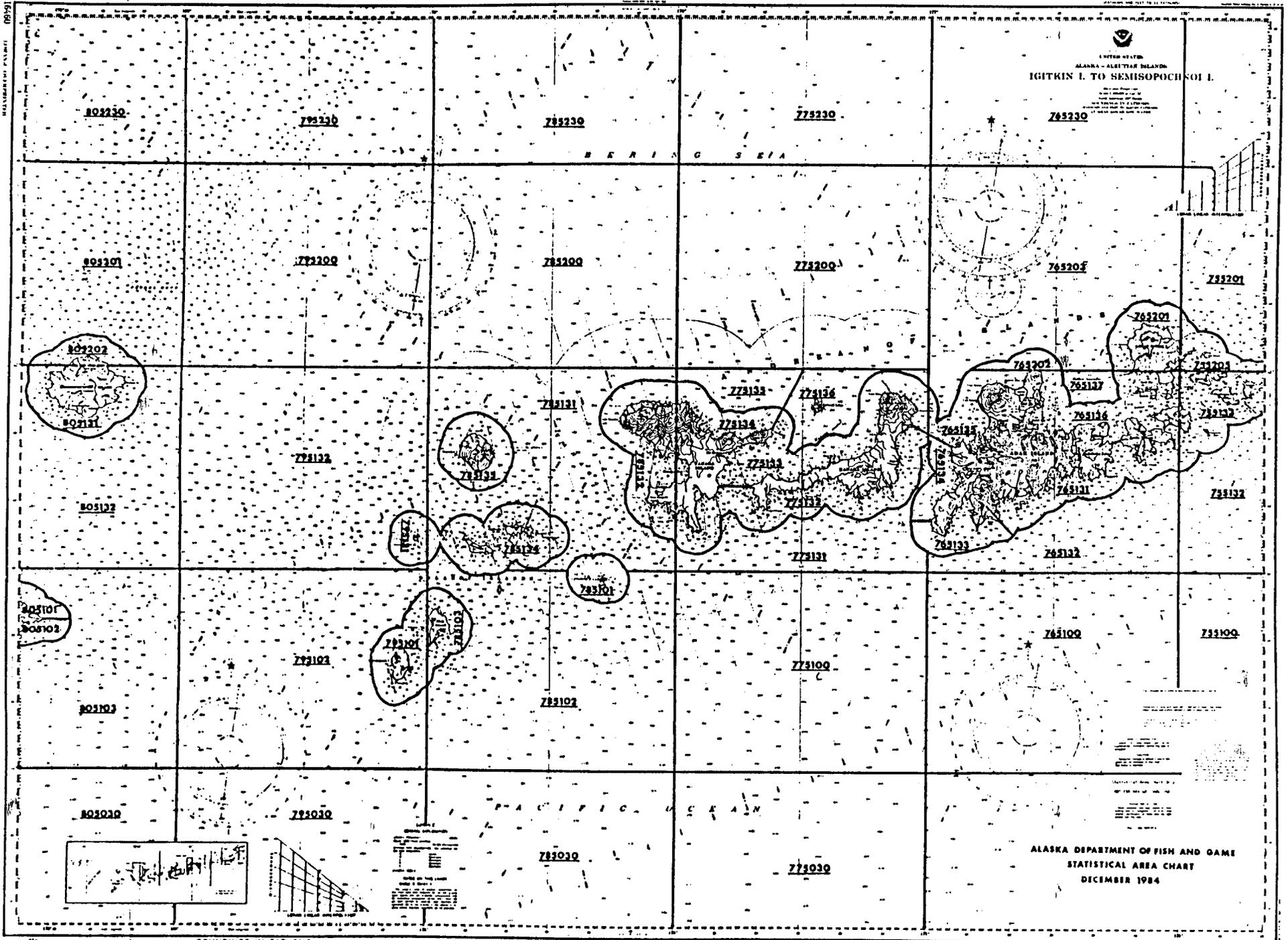
<sup>2</sup>Preliminary figures - season in progress

Table 4. 1990/91 Adak brown king crab catch by statistical area.

Stat. Area	No. Lndgs.	No. Crab	No. Lbs.	Pots Lifted	Avg. Wt.	CPUE	Dead-loss #
715202	11	143,709	580,249	23,208	4.0	12	50,430
715231	13	182,339	729,675	14,902	4.0	12	60,803
725201	8	93,882	378,363	7,758	4.0	12	12,250
725230	4	54,755	219,061	4,209	4.0	13	3,100
735201	5	7,849	30,336	524	3.9	15	0
735230	8	37,205	158,290	10,628	4.3	4	1,000
765132	4	14,532	62,078	2,264	4.3	6	9,333
785102	5	21,660	87,811	1,698	4.1	13	0
785131	11	59,534	249,992	8,465	4.2	7	14,167
795102	10	37,624	152,534	3,364	4.1	11	0
795132	13	29,239	119,120	2,948	4.1	10	0
795200	27	27,529	117,382	4,369	4.3	6	0
795230	6	6,529	26,045	903	4.0	7	0
805103	13	21,017	81,114	3,253	3.9	6	3,500
805132	48	121,157	494,641	14,052	4.1	9	3,500
805201	18	12,596	52,971	1,714	4.2	7	0
815100	8	9,066	35,302	1,224	3.9	7	0
815131	13	11,948	46,098	2,340	3.9	5	0
825132	10	8,976	35,775	5,243	4.0	2	0
825201	17	20,321	76,892	2,778	3.8	7	0
835130	9	6,559	25,267	960	3.9	7	0
835200	23	44,908	173,210	4,481	3.9	10	0
845130	20	20,838	78,027	2,376	3.7	9	0
845201	4	2,749	10,624	284	3.9	10	0
845202	35	113,229	434,509	12,221	3.8	9	0
845230	8	17,412	65,515	1,362	3.8	13	0
855200	18	24,556	93,327	4,195	3.8	6	0
855231	17	24,367	93,575	2,715	3.8	9	0
865203	8	5,120	20,007	1,006	3.9	5	0
875200	4	3,052	11,129	592	3.6	5	0
875232	7	10,735	38,919	2,198	3.6	5	0
885300	4	22,736	96,722	9,749	4.3	2	0
OTHERS	43	94,388	376,127	13,977	3.9	6	18,500
TOTAL	167	1,312,116	5,250,687	160,960	4.0	8	176,583

Figure 1. Adak king crab registration Area 'R'.

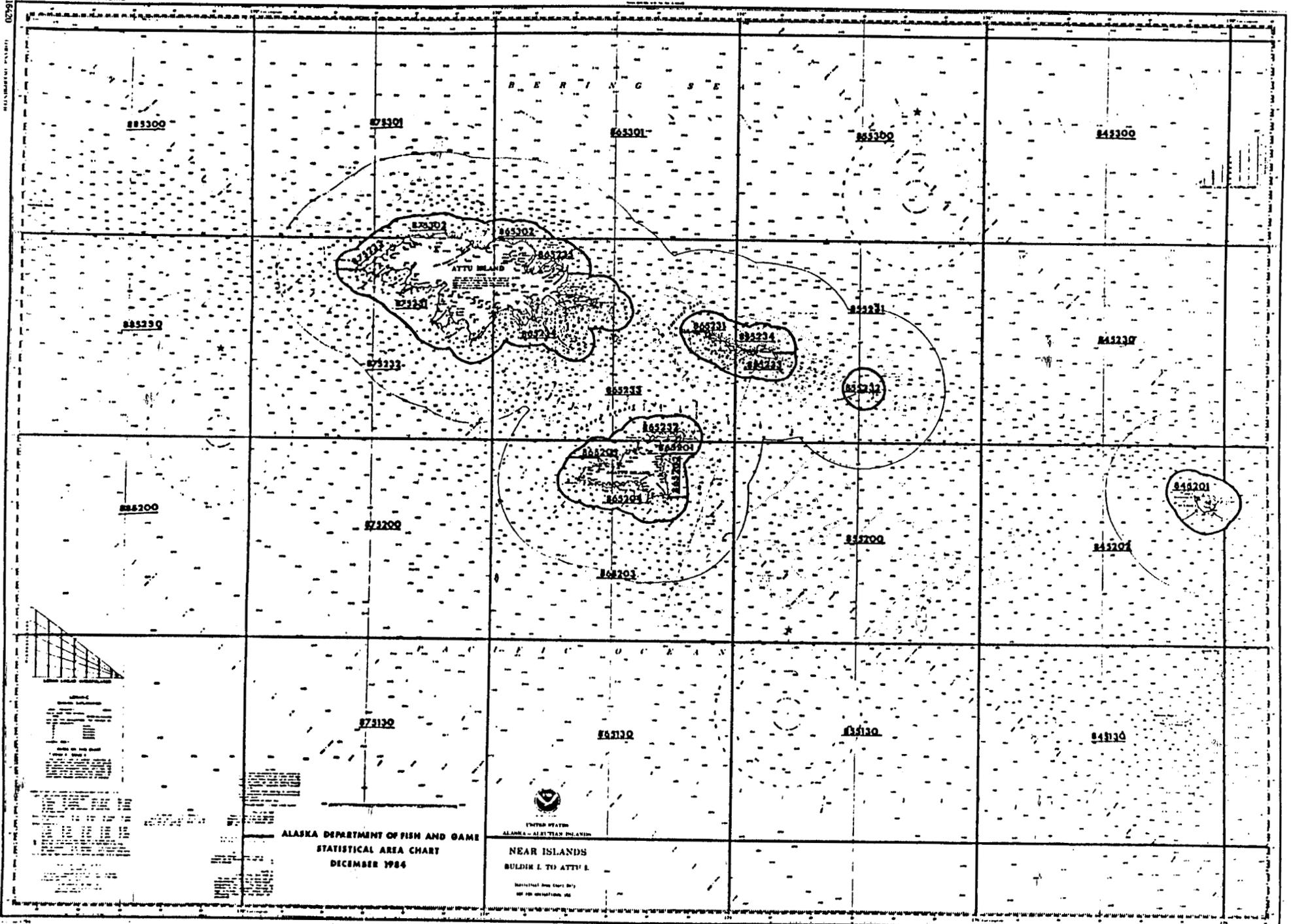




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Figure 1. Adak king crab registration Area 'R' (continued page 2).





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Figure 1. Adak king crab Registration Area 'R' (continued page 4).

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## ADAK RED KING CRAB

### Introduction

Adak, Area 'R', is comprised of all continental shelf waters west of 171° W. longitude and east of the U.S./U.S.S.R. Convention Line (Figure 1).

### Historic Background

The Adak red king crab fishery began in 1961 when four vessels harvested two million pounds. As the fleet exploited the virgin populations, catches increased rapidly to a peak of 21 million pounds by the 1964/65 season (Table 1). For a short time the expanding Dutch Harbor king crab fishery diverted effort, and Area 'R' catches dropped to 6 million pounds by the 1966/67 season.

From 1967/68 to the 1972/73 seasons, catches were relatively stable at 14 million to 19 million pounds (Table 1). The large catches were maintained by several years of strong recruitment and by the exploitation of populations discovered east of Adak Island. In addition to the eastward exploration, some vessels moved into the waters of the Petrel Banks, Amchitka Islands and other westward islands creating the separate Western Aleutians, Area 'S', fishery in 1967/68. The catch in Area 'S' was not large, and in 1978 management was simplified by eliminating Area 'S' to form the Petrel Bank and Western Aleutian Districts of Area 'R'.

After the 1972/73 season, the harvest declined so sharply that the Alaska Board of Fisheries did not open the 1976/77 season. Catches made since 1976/77 have been extremely low compared to those of previous seasons, and any indications of recovery have been slight (Table 1). ADF&G surveys conducted in 1975, 1976, and 1977 concluded that several years of poor recruitment were the cause of the decline. A shell disease and an unusually high natural mortality in the North Amlia District was also blamed for the decreased populations.

In recent years, fleet effort increased because of high prices paid for red king crab and the growth of the Adak brown king crab fishery (Table 1). With the increased effort on brown king crab stocks, fewer vessels are concentrating on the less abundant red king crab. With the implementation of longlining pots for brown king crab and not for red king crab, gear type has separated effort for both species. In the past, before longlining, vessels fished for both species with the same gear but on different grounds.

### 1990/91 Fishery

The red king crab fishery opened on November 1, concurrent to the Bristol Bay season. Also opening on November 1 were the Adak brown king crab and *C. bairdi* Tanner crab fisheries.

Directed vessel effort on red king crab was low and can be attributed to the concurrent opening of the Bristol Bay area to red king crab and the opening of *C. bairdi* seven days after the closure of the red king crab season.

Catches again came from the Petral Banks area around Semisopochnoi Island, primarily during November, (Tables 3 and 5). Incidental catches continued throughout the remainder of the season, which closed by regulation on February 15.

The total catch was 828,000 pounds, almost 300,000 pounds less than the previous season, (Table 1). But, as stated, the decreased catch can primarily be attributed to the small effort level.

### Stock Status

The Adak king crab stocks are not surveyed, however the Mandatory Observer Program has had 100 percent coverage on these grounds since 1988. Much needed biological information is being obtained in the form of bycatch sampling on catcher processors and is being analyzed by Department staff.

Compared to historic levels, the population is depressed, and most of the catch is from one area.



Table 2. Adak Area 'R' red king crab harvest composition by fishing season.<sup>1</sup>

Season	Season		No. Pounds <sup>2</sup>	Size Limit	Price Per Lb.
	Opened	Closed			
1960/61	01/01	12/31	2,074,000	-	N/A
1961/62	01/01	12/31	6,114,000	-	N/A
1962/63	01/01	12/31	8,006,000	-	N/A
1963/64	01/01	12/31	17,904,000	-	N/A
1964/65	01/01	12/31	21,193,000	-	N/A
1965/66	01/01	12/31	12,915,000	6.5"	N/A
1966/67	01/01	12/31	5,883,000	6.5"	N/A
1967/68 <sup>3</sup>	01/01	12/31	14,131,000	6.5"	N/A
1968/69		03/15	16,100,000	7.0"	N/A
1969/70	09/15	01/15	18,016,000	7.0"	N/A
1970/71	11/01	03/31	6,057,000	7.0"	N/A
1971/72	11/01	12/16	15,475,924	6.5"	N/A
1972/73 <sup>4</sup>	11/01	02/17	18,724,144	6.5"	N/A
1973/74	11/01	02/26	9,741,464	6.5"	N/A
1974/75	01/10	03/05	2,774,963	6.5"	.35
1975/76	11/01	12/18	411,583	6.5"	.38
1976/77	-----CLOSED-----				
1977/78	02/20	03/20	905,527	6.5"	1.36
1978/79 <sup>5</sup>	02/21	03/29	807,195	6.5"	1.23
1979/80	01/15	04/01	467,229	6.5"	.68
1980/81	01/15	03/28	1,419,513	6.5"	.92
1981/82	11/01	02/15	1,648,926	6.5"	2.01
1982/83	11/01	01/15	1,701,818	6.5"	3.44
1983/84	11/10	12/16	1,981,579	6.5"	3.43
1984/85	11/10	02/15	1,367,672	6.5"	2.10
1985/86	11/01	02/15	906,293	6.5"	2.15
1986/87	11/01	02/15	712,243	6.5"	3.85
1987/88	11/01	02/15	1,213,933	6.5"	4.00
1988/89	11/01	12/04	1,567,314	6.5"	5.00
1989/90	11/01	02/15	1,118,566	6.5"	4.20
1990/91	11/01	02/15	828,105	6.5"	4.00
1991/92 <sup>6</sup>	11/01	02/15		6.5"	3.00

<sup>1</sup> Includes catch from former Area 'S' now Western Aleutians District Area 'R'

<sup>2</sup> Includes deadloss

<sup>3</sup> Area 'S' fishery began

<sup>4</sup> Area 'S' continued until June

<sup>5</sup> Area 'S' eliminated - added to Area 'R'

<sup>6</sup> Preliminary figures

Table 3. 1990/91 Adak, Area 'R', red king crab catch statistics by month.

Month	No. Vssls	No. Lndgs	No. Crab <sup>1</sup>	No. Lbs <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Dead-loss Lbs
Nov	6	15	82,942	477,670	5,215	5.8	16	0
Dec	4	9	32,423	181,333	2,716	5.6	12	0
Jan <sup>2</sup>	4	10	31,538	169,102	2,743	5.4	11	0
Total	7	34	146,903	828,105	10,674	5.6	14	0

Table 4. 1991/92 Adak, Area 'R', red king crab catch statistics by month (Preliminary figures).

Month	No. Vssls	No. Lndgs	No. Crab <sup>1</sup>	No. Lbs <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Dead-loss Lbs
Nov	5	13	107,908	626,626	7,440	5.8	14	0
Dec	4	11	32,346	190,791	3,967	5.9	8	0
Total <sup>3</sup>	7	24	140,254	817,417	11,407	5.8	12	0

<sup>1</sup>Deadloss included

<sup>2</sup>January and February combined

<sup>3</sup>Preliminary figures

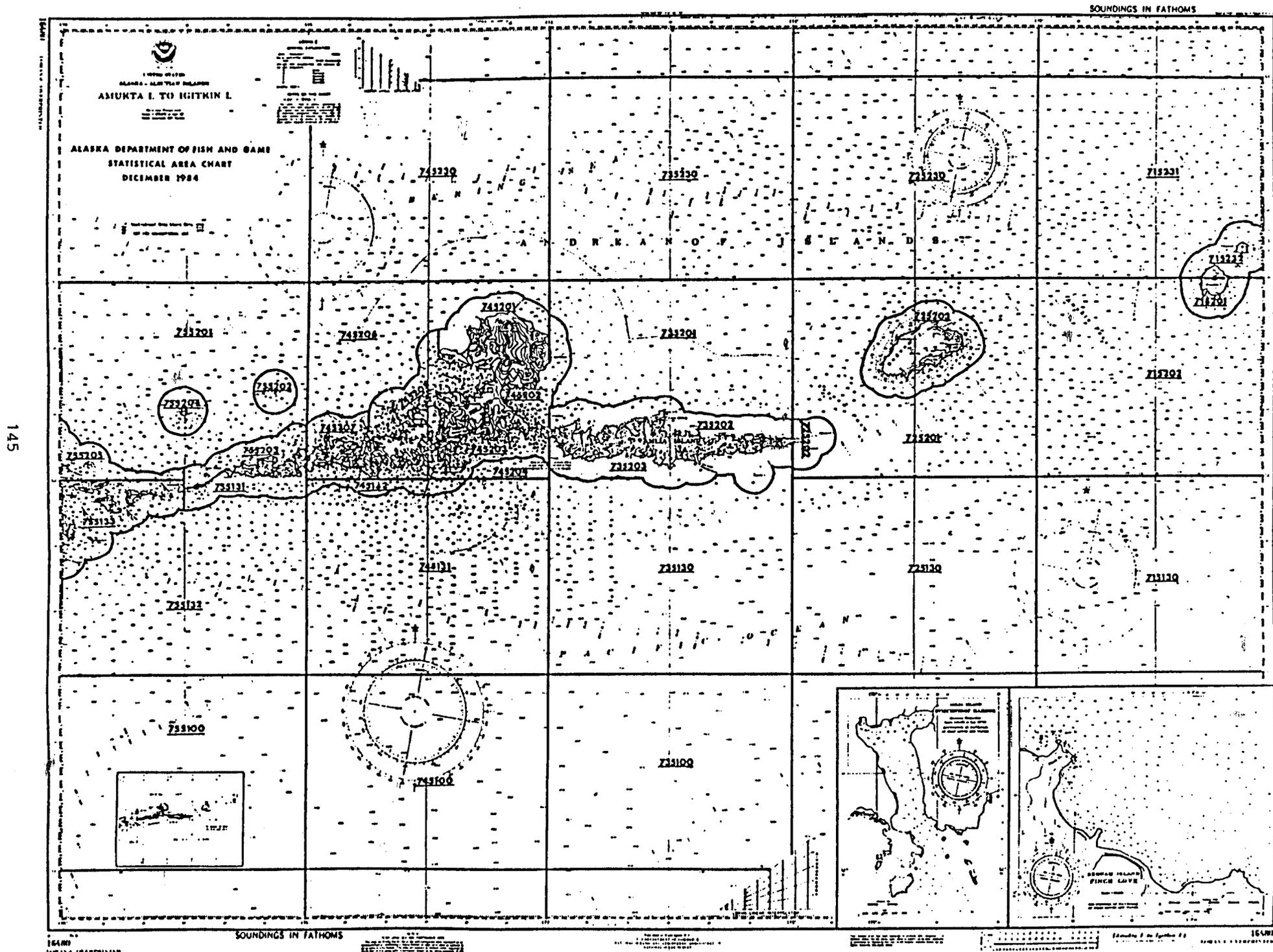
Table 5. 1990/91 Adak red king crab catch by statistical area.

Stat Area	No. Lndgs	No. Crab <sup>1</sup>	No. Lbs <sup>1</sup>	Lifted	Avg. Wt.	CPUE	Dead-loss Lbs.
795200	17	60,510	328,307	4,596	5.4	13	0
805201	19	76,421	442,035	4,327	6.0	18	0
Other	10	9,972	57,763	1,751	5.8	6	0
Total	34 <sup>2</sup>	146,903	828,105	10,674	5.6	14	0

<sup>1</sup> Deadloss included

<sup>2</sup> Actual landings

Figure 1. Adak king crab registration Area 'R'.



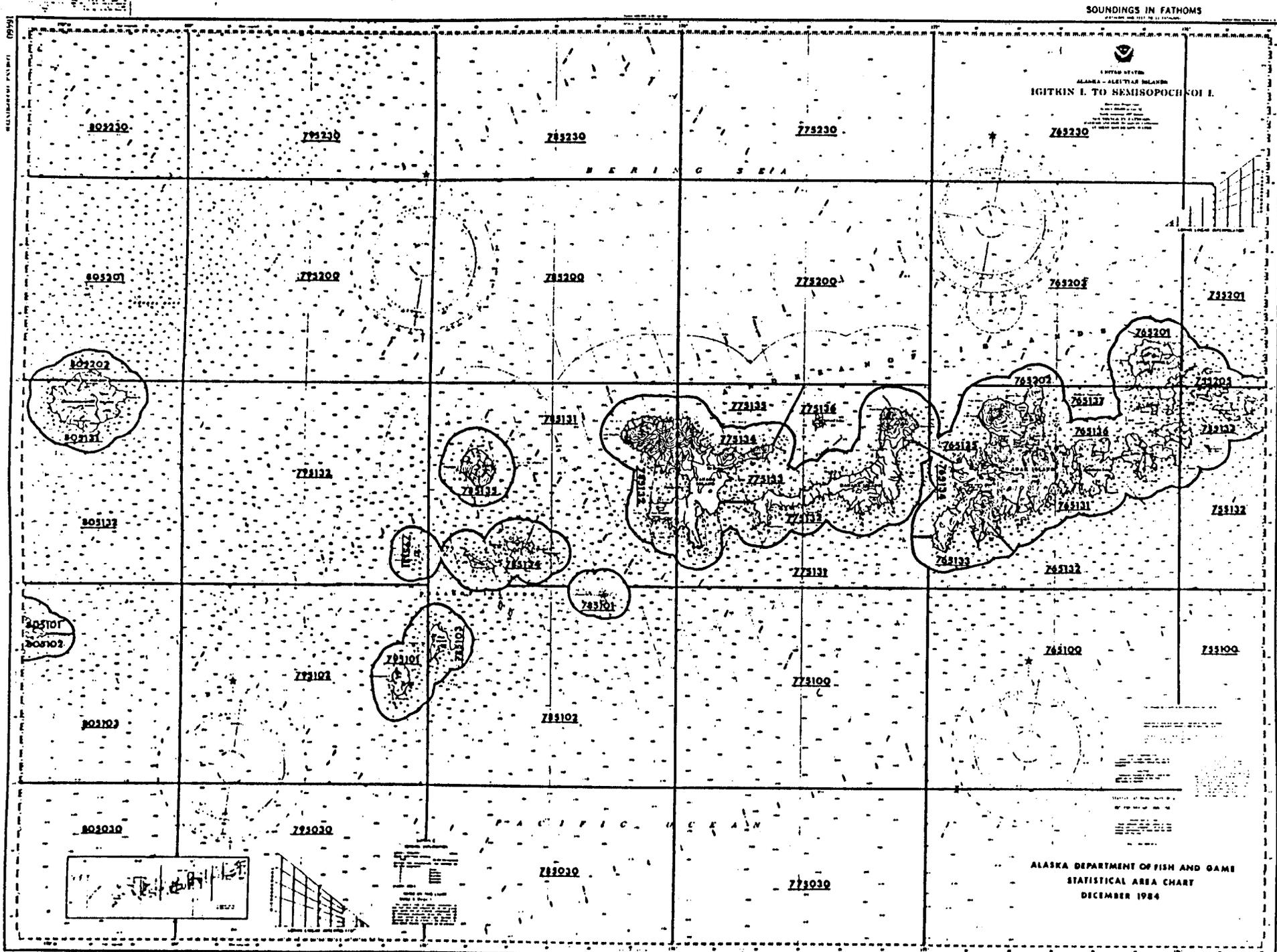
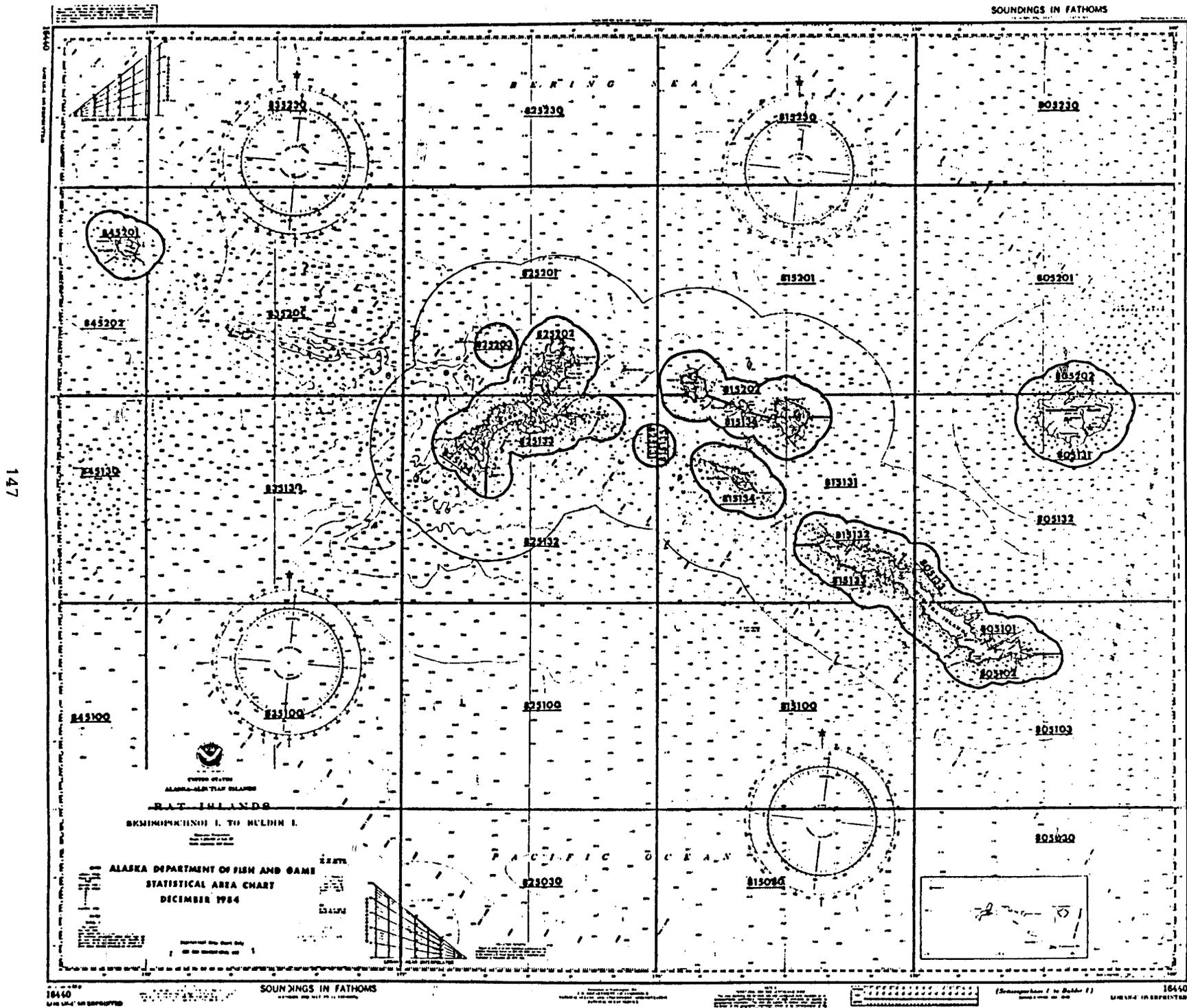
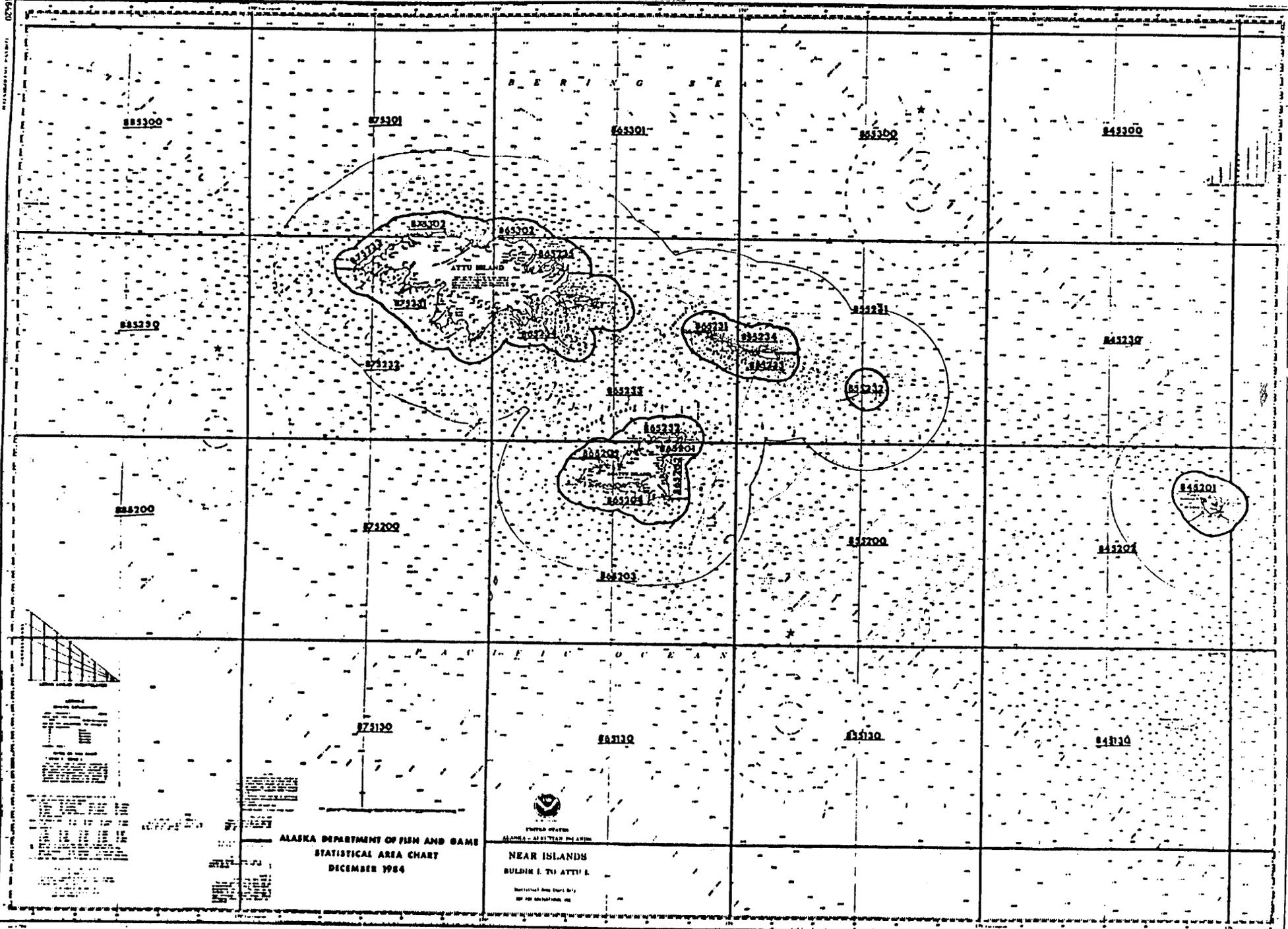


Figure 1. Adak king crab registration Area 'R' (continued page 2).

Figure 1. Adak king crab Registration Area 'R' (continued page 3).





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Figure 1. Adak king crab Registration Area 'R' (continued page 4).

## WESTERN ALEUTIAN TANNER CRAB

### Introduction

The Western Aleutian District of Statistical Area 'J' includes all water west of 172° West longitude and south of 54° 36' North latitude.

### Historic Background

Tanner crab (*Chionoecetes bairdi*) from the Western Aleutian have generally been harvested incidentally in the red king crab fishery. Over the past ten years, the fishery has averaged over 297,000 pounds and ranged from a low of 42,700 during the 1986/87 season to a high of over 838,600 pounds in the 1981/82 fishery (Table 1).

### 1990/91 Fishery

The fishery opened concurrent to the Adak red and brown king crab fisheries. The red king crab fishing effort was low, and therefore the take of Tanner crab from the area was also low; the lowest in over 12 years (Table 1).

Small boats at the Adak Naval Air Station again fished and landed crab locally, selling to the Naval facilities and private individuals at the docks.

Table 1. Historic Tanner crab fishery statistics from the Western Aleutians District.

Year	Opened	Closed	Vssls	Lndgs	No. Crab <sup>1</sup>	No. Lbs. <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Min. Size	Avg. Price Pound
1973/74	11/01	10/15	7	12	31,079	71,887	2,390	2.3	13	-	N/A
1974/75	11/01	10/15	C o n f i d e n t i a l								
1975/76	11/01	10/15	C o n f i d e n t i a l								
1976/77	11/01	10/15	----- N o F i s h i n g ---								
1977/78	11/01	06/15	6	7	103,190	237,512	2,700	2.3	38	5.5"	\$ .38
1978/79	11/01	06/15	6	9	84,129	197,244	4,730	2.3	18	5.5"	\$ .53
1979/80	11/01	06/15	10	12	147,843	337,297	5,952	2.3	25	5.5"	\$ .52
1980/81	01/15	06/15	9	23	95,102	220,716	7,327	2.3	13	5.5"	\$ .54
1981/82	01/15	06/15	17	43	364,164	838,697	21,910	2.3	17	5.5"	\$1.30
1982/83	11/01	06/15	61	125	225,491	488,399	40,450	2.2	6	5.5"	\$1.27
1983/84	11/10	06/15	31	86	171,576	384,146	20,739	2.2	8	5.5"	\$ .95
1984/85	11/10	06/15	31	41	75,009	163,460	13,416	2.2	6	5.5"	\$1.30
1985/86	11/01	06/15	15	30	98,089	206,814	7,999	2.1	12	5.5"	\$1.40
1986/87	11/01	06/15	8	24	19,874	42,761	10,878	2.1	2	5.5"	\$1.50
1987/88	11/01	04/20	15	37	63,545	141,390	7,453	2.2	8	5.5"	\$2.10
1988/89	11/01	05/07	36	77	69,280	148,997	18,906	2.1	4	5.5"	\$1.00
1989/90	11/01	04/09	12	30	22,937	48,746	6,204	2.1	4	5.5"	\$1.00
1990/91	11/01	03/25	5	21	6,901	14,779	1,309	2.1	5	5.5"	\$1.25

<sup>1</sup>Deadloss included

ANNUAL MANAGEMENT REPORT FOR THE  
SHELLFISH FISHERIES OF THE BERING SEA AREA, 1991

MARCH 1992

BY

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## BERING SEA DISTRICT TANNER CRAB

### Introduction

The Bering Sea District of Statistical Area 'J' includes all waters of the Bering Sea north of the latitude of Cape Sarichef and east of the U.S. Russian Convention line of 1867. This district has two subdistricts: the Western and Eastern which include the Norton Sound Section and the General Section (Figure 1). Two Tanner crab species, *Chionoecetes bairdi* and *Chionoecetes opilio*, are commercially harvested in the Bering Sea District.

### Historic Background

The first reported Tanner crab catches were made in 1968 incidental to the king crab fishery. In 1974 a directed Tanner crab fishery began with the target species, *C. bairdi*. In the 1977/78 season, an incidental catch of *C. opilio* was reported. During the fall Board of Fisheries meeting in 1978, the National Marine Fisheries Service (NMFS) reported that as much as a 50% decline in *C. bairdi* stocks could be expected during the 1978/79 fishing season, and the decline would continue for several years. As predicted, the *C. bairdi* stocks showed a sharp decline. Catches decreased from 29.7 million pounds, during the 1981 fishery, to 5.3 million pounds, for the 1983 fishery, to a total closure of the *C. bairdi* fishery in 1986 (Table 1, Figure 2). As the catches have declined in the *C. bairdi* fishery, effort has increased in the *C. opilio* fishery (Table 6, Figures 2 and 4).

Although prices have remained high for *C. bairdi*, fishing effort has decreased as the stock abundance decreased. With the decline in the *C. bairdi* stocks which were primarily harvested from the Southeastern Subdistrict (now the Eastern Subdistrict), industry has turned to the smaller and more abundant, but less valuable, *C. opilio* stocks to fill demands for Tanner crab. Historic *C. bairdi* catch by subdistrict and season is depicted on Table 3. Figure 3 shows historic average size.

### 1991 *C. bairdi* Fishery

The 1991 *C. bairdi* fishery opened at 12:00 noon, November 15, seven days after the closure of the Bristol Bay red king crab season. In the interim, the fleet was allowed to leave their king crab gear, over 90,000 pots, on the fishing grounds east of 166° West longitude.

Registrations and tank inspections began on November 14 at Dutch Harbor, Akutan, King Cove and St. Paul, but because of a strike called by the Alaska Marketing Association, many vessels and catcher processors initially refused inspection as a solidarity gesture. However, when the fleet was informed that inspections would not be conducted over the weekend, almost all 280 vessels received their inspection by close of business the next day.

During the same time period, the Alaska Marketing Association, some processors and a group of fishermen petitioned the Board of Fisheries to close the *C. bairdi* season until January 15, 1992, the scheduled opening for *C. opilio*. Although the petition to reconsider the opening was denied, Department elected to open, by emergency order, the entire Eastern Subdistrict to *C. bairdi* alleviating industries' concerns of additional fishery pressure on the confined *C. bairdi* grounds east 166° West longitude.

On January 7, 1992 the Board of Fisheries adopted an Emergency Regulation changing the legal definitions of *C. bairdi* and *C. opilio* Tanner crab. The Emergency Regulation defined only red eyed and non-red eyed crabs and their legal size limits, 5.5 and 3.1 inches across the carapace, respectively. This action was prompted by the courts dismissing many small *C. bairdi* crab cases during October 1991 due to the lack of positive identification of the sublegal crab as *C. bairdi*.

After the opening of the *C. opilio* fishery on January 15, industry started complaining to the Department about using only eye color for identification. Through industry contacts and Department catch monitoring programs, it became apparent that the use of eye color alone was not the only suitable characteristic to ensure protection of undersize *C. bairdi* and allow full utilization of surplus hybrid Tanner crab due to the difficulty of properly distinguishing eye color under all lighting conditions. The new regulation stated that in addition to eye color, the shape of Tanner crab mouth parts had been shown to be an effective characteristic to distinguish *C. bairdi* from *C. opilio* and hybrid Tanner crab, and when a combination of eye color and mouth part shape are used, the ability to distinguish *C. bairdi* is greatly improved and is not dependent on lighting conditions.

On January 24, 1992, another emergency regulation was issued modifying the January 7 emergency regulation to include eye color and mouth part shape.

#### *C. bairdi* Stock Status

National Marine Fisheries Service (NMFS), in a report to industry, estimated 35.1 million legal male crabs in the Eastern Subdistrict. About 72% of the legal crab were estimated to be east of 166° West Longitude. This represents about 22% less legal crabs than estimated last year and an increase of 37% in prerecruits. The population appears to be relatively stable at a level of high abundance.

#### 1991 *C. opilio* Fishery

The 1991 *C. opilio* fishery opened by regulation at 12:00 noon on January 15 with a guideline harvest of over 315 million pounds (nearly twice as much as was the 1990 harvest). The guideline was based on crabs four inches and larger. The Eastern Subdistrict guideline harvest was set at 246.1 million pounds, while the Western Subdistrict guideline harvest was set at 68.9 million pounds. With the

January 15 opening, the entire Bering Sea was opened to Tanner crab fishing. No new registrations or tank inspections were given as all of the fleet had already registered for the *C. bairdi* fishery in November.

During the March, 1990 spring Board of Fisheries meeting, the Board adopted a proposal to close the entire Eastern Subdistrict (waters east of 173° West Longitude). The closure was based on protecting molting king crab that inhabit the same grounds as Tanner crab. For the past several years, the Department had been closing the area east of 165° West Longitude by emergency order, and the staff considered the Board closure justified especially for the severely depressed blue king crab around the Pribilof Islands.

In October, the *C. opilio* crab harvest guideline for the Bering Sea was released showing a 125 percent increase in the guideline. A great deal of concern was expressed by the industry that a March 31 closure would not allow enough time to harvest the available crab. During the 1990 season the largest processing week was 16.4 million pounds with the season processing average almost nine million pounds per week. Based on maximum processing capabilities and no unforeseen problems, industry felt a maximum of 12 to 15 million pounds could be processed per week. Based on an 11 week season, between 132 and 165 million pounds could be expected to be taken from the Eastern Subdistrict leaving over 81 million pounds on the grounds.

Based on this information, the Board of Fisheries, during a December meeting, agreed to allow the Eastern Subdistrict *C. opilio* fishery west of 166° West Longitude to be closed by emergency order but retained the March 31 closure on the *C. bairdi* fishery and for the area east of 166° West Longitude.

Due to problems with small *C. bairdi* being landed as hybrids during 1990 fishery and a question of the legality of retaining hybrids, an Attorney General's opinion was requested. The opinion was that since no hybrid season was addressed in the regulation book, retaining hybrids was illegal. A December 18 news release informed industry of the decision. After discussion with industry representatives, Department staff and the Board of Fisheries, an emergency regulation was passed on February 12, 1992 legalizing the retention of hybrids at 3.1 inches or greater in shell width. At the time of this writing, only a few vessels have remained on the *C. bairdi* grounds north of the Alaska Peninsula. Fish ticket information indicates that most Tanner crab landings are mixed loads of *C. opilio* and *C. bairdi*.

Effort remained in the Eastern Subdistrict until late April due to ice conditions in the Western Subdistrict, and by the end of April over 229 million pounds had been landed (Table 9). As the cold weather and icing conditions became less serious, vessels began to fish west of 173° West longitude, and by the end of May; most of the 40.9 million pound catch for the month came from the Western Subdistrict (Table 9).

The Eastern Subdistrict closed on May 5. The estimated total harvest was 240.1 million pounds by 218 vessels (Tables 7 and 9). The catches remained high throughout the season, with an average catch per pot of 208 crabs, comparable to the 1990 season (Table 8).

Effort in the Western Subdistrict began in late April, with the closure of the Eastern Subdistrict in early May. The Western Subdistrict closed on June 23; the catch was 88.5 million pounds. Crab condition from this subdistrict has historically been less desirable by the processing industry, but few complaints were expressed during the season and can be attributed to fishermen delivering only desired market quality. Floater processors began processing crab at the Pribilof Islands and later as the ice edge allowed, moved to St. Matthew Island to be closer to the fishing grounds.

The total season harvest was 328.6 million pounds, a record harvest and over twice as much as the 1990 season. The harvest was worth about 164 million dollars to the fleet.

### C. opilio Stock Status

National Marine Fisheries Service (NMFS), in a report to industry, estimated 484.1 million legal male crabs in the Eastern Subdistrict for 1991, a 15% increase over last year. Sublegal males showed an increase of 79%. The increases were due, primarily, to accelerated growth of prerecruit crab. From 1989 to 1990, carapace width increased an average 20mm among prerecruit crab; postrecruit crab experienced similar growth.

### 1992 C. opilio Update

The 1992 *C. opilio* preseason guideline harvest was announced on September 18, 1991 at 400 million pounds: 351.1 million from the Eastern Subdistrict and 48.9 million from the Western Subdistrict. This was a 71.4 million pound increase over the 1991 season harvest of 328.6 million pounds. As in past seasons, the preseason harvest guideline was for crab 4 inches and greater, the size presently acceptable to industry.

On December 6, 1991, the 400 million preseason guideline harvest was adjusted down to 333 million pounds in compliance with the Federal Fishery Management Plan.

The Federal Fishery Management Plan, adopted in 1977 by the North Pacific Fishery Management Council, for the commercial king and Tanner crab fisheries in the Bering Sea/Aleutian Islands limits the GHL to the optimum yield (OY) range. For *C. opilio* this is 333 million pounds for any one registration year. Therefore, to conform to this specification, the 1992 *C. opilio* harvest for the Bering Sea will be limited to 333 million pounds of crabs four inches and larger in width of shell. This projection divided into 292.3 million pounds for the Eastern Subdistrict and 40.7 million pounds for the Western Subdistrict. This represents a 16.25% decrease from the September 1991 preseason harvest projection.

Table 1. Historic Bering Sea *C. bairdi* catch statistics by season.

Year	Vessels	Landings	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	CPUE	Avg. Wt.	Avg. Width(mm)	% New Shell	Pounds Deadloss
1968	NA	7	6,400	17,900	1,400	5	2.8	-	-	NA
1969	NA	131	353,300	1,008,900	29,800	12	2.9	-	-	NA
1970	NA	66	482,300	1,014,700	16,400	29	2.1	-	-	NA
1971	NA	22	61,300	166,100	7,300	8	2.7	-	-	NA
1972	NA	14	42,061	107,761	4,260	10	2.6	-	-	NA
1973	NA	44	93,595	231,668	15,730	6	2.5	-	-	NA
1974	NA	69	2,531,825	5,044,197	22,014	115	2.0	-	-	NA
1975	28	80	2,773,770	7,284,378	38,462	72	2.5	-	-	NA
1976	66	305	8,949,886	22,341,475	141,179	63	2.5	-	-	NA
1976/77	83	541	20,251,508	51,455,221	297,171	68	2.5	-	-	NA
1977/78	120	861	26,350,688	66,648,954	516,350	51	2.5	152.8	88.0	218,099
1978/79	144	817	16,726,518	42,547,174	402,697	42	2.5	152.7	95.0	76,000
1979/80	152	804	14,685,611	36,614,315	488,434	30	2.5	151.4	90.0	56,446
1981	165	761	11,887,213	29,732,086	559,626	21	2.5	149.4	86.6	101,594
1982	125	791	4,830,980	11,008,779	490,099	10	2.3	148.8	85.4	138,159
1983	108	448	2,286,756	5,273,881	282,006	8	2.3	148.8	70.5	60,029
1984	41	134	516,877	1,208,223	61,357	8	2.3	146.5	40.0	5,025
1985	44	166	1,283,474	3,151,498	104,707	12	2.4	150.0	65.0	14,096
1986										
1987										
1988	98	248	987,059	2,210,394	112,334	8	2.5	143.5	70.2	10,724
1989	109	359	2,907,021	7,012,965	184,892	16	2.4	149.4	80.8	34,664
1990	179	1,032	10,717,924	24,549,299	711,137	15	2.3	148.1	96.5	87,475
1990/91 <sup>2</sup>	255	1,756	16,608,625	40,081,555	883,391	19	2.4	149.7	95.3	210,769
1991/92 <sup>2</sup>	258	761	10,540,178	26,097,919	499,277	21	2.5	N/A	N/A	122,744

<sup>1</sup>Deadloss included

<sup>2</sup>Preliminary figures/catch through 2/2/92

Table 2. Historic Bering Sea *C. bairdi* Tanner crab seasons.

Season	Opened	Closed	Vessels	Pounds <sup>1</sup>	Avg. Wt.	CPUE <sup>2</sup>	Price Pound
1968 <sup>3</sup>			NA	17.9	2.8	5	NA
1969 <sup>3</sup>			NA	1,008.9	2.9	12	NA
1970 <sup>3</sup>			NA	1,410.7	2.1	29	NA
1971 <sup>3</sup>			NA	166.1	2.7	8	NA
1972 <sup>3</sup>			NA	108.8	2.6	10	NA
1973 <sup>3</sup>			NA	231.7	2.5	6	NA
1974 <sup>3</sup>			NA	5,044.2	2.0	115	NA
1974/75	7-29	6-15	28	7,284.4	2.5	72	\$ 0.20
1975/76	8-1	7-15	66	22,341.5	2.5	63	\$ 0.19
1976/77	8-1	7-7	83	51,455.2	2.5	68	\$ 0.30
1977/78	9-15	6-15	120	66,649.0	2.5	51	\$ 0.38
1978/79	11-1	5-24	144	42,547.2	2.5	42	\$ 0.52
1979/80	11-1	5-11	157	36,614.3	2.5	30	\$ 0.52
1981	1-15	4-15	165	29,732.1	2.5	21	\$ 0.58
1982	2-15	6-15	125	11,008.8	2.3	10	\$ 1.06
1983 <sup>4</sup>	2-15	5-22	108	5,273.9	2.3	8	\$ 1.20
		6-15					
1984	2-15	6-15	41	1,208.2	2.3	8	\$ 0.95
1985	1-15	6-15	44	3,151.5	2.4	12	\$ 1.40
1986		S E A S O N		C L O S E D			
1987		S E A S O N		C L O S E D			
1988	1-15	4-20	98	2,210.4	2.5	8	\$ 2.17
1989	1-15	5-7	109	7,013.0	2.4	16	\$ 2.90
1990	1-15	4-09 <sup>5</sup>					
		4-24 <sup>6</sup>	179	24,549.3	2.3	15	\$ 1.85
1990/91	11-20	3-25	225	40,081.6	2.4	19	\$ 1.12
1991/92 <sup>7</sup>	11-15		258	26,097.9	2.5	21	\$ 1.50

<sup>1</sup> Figures given in thousands - deadloss included

<sup>2</sup> Catch Per Unit Effort

<sup>3</sup> Incidental to the king crab fishery

<sup>4</sup> Partial Bering Sea closure

<sup>5</sup> East of 165° West longitude

<sup>6</sup> West of 165° West longitude

<sup>7</sup> Preliminary figures/catch through 2/21/92

Table 3. Historic Bering Sea *C. bairdi* catch by season by subdistrict.

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1974/75	Southeastern Pribilofs		72	2,526,687	6,504,984	32,275	2.6	78	0
			8	247,083	523,394	3,923	2.1	63	0
	TOTAL	28	80	2,773,770	7,028,378	38,462	2.5	72	0
1975/76	Southeastern Pribilofs		230	6,682,232	16,643,194	106,445	2.5	63	0
			74	2,273,804	5,714,913	34,761	2.5	65	0
	TOTAL	66	304	8,856,036	22,358,107	141,206	2.5	63	0
1976/77	Southeastern Pribilofs		437	16,089,057	41,007,736	233,667	2.6	69	0
			104	4,162,451	10,447,485	63,804	2.5	65	0
	TOTAL	83	541	20,251,508	51,455,221	297,471	2.5	68	0
1977/78	Southeastern Pribilofs		706	21,055,527	53,278,012	408,437	2.5	52	0
			155	5,210,170	13,152,843	107,913	2.5	48	0
	TOTAL	120	861	26,350,688	66,648,954	516,350	2.5	51	218,099
1978/79	Southeastern Pribilofs		758	15,601,891	39,694,205	356,594	2.5	44	75,400
			59	1,124,627	2,852,969	46,103	2.5	24	600
	TOTAL	144	817	16,726,518	42,547,174	402,697	2.5	42	76,000

continued...

<sup>1</sup>Deadloss included

Table 3. Historic Bering Sea *C. bairdi* catch by season by subdistrict (continued).

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1979/80	Southeastern Pribilofs		789	14,329,889	35,724,003	476,410	2.5	30	56,446
			15	355,722	890,312	12,024	2.5	30	0
	TOTAL	152	804	14,685,611	36,614,315	488,434	2.5	30	56,446
1980/81	Southeastern Pribilofs		674	10,532,007	26,684,956	496,751	2.5	21	97,398
			87	1,313,951	2,945,536	62,875	2.5	21	4,196
	TOTAL	165	761	11,845,958	29,630,492	599,626	2.5	21	101,594
1981/82	Southeastern Pribilofs		539	3,825,433	8,812,302	322,634	2.3	12	69,829
			252	1,005,547	2,196,477	167,465	2.2	6	68,330
	TOTAL	125	791	4,830,980	11,008,779	490,099	2.3	10	138,159
1982/83	Northern Southeastern Pribilofs		10	29,478	48,454	5,950	1.7	5	167
			287	1,984,673	4,633,354	192,538	2.3	10	52,879
		151	272,505	592,073	83,528	2.2	3	6,983	
TOTAL	108	448	2,286,756	5,273,881	282,006	2.3	8	60,029	
1983/84	Southeastern Pribilofs		91	470,181	1,099,142	44,546	2.3	11	4,688
			43	46,759	109,081	16,811	2.3	3	337
	TOTAL	41	134	516,877	1,208,223	61,357	2.3	8	5,025

<sup>1</sup>Deadloss included

continued...

Table 3. Historic Bering Sea *C. bairdi* catch by season by subdistrict (continued).

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadlos
1985	Southeastern Pribilofs	38	143	1,278,109	3,139,041	96,976	2.4	13	14,096
		15	23	5,365	12,457	7,731	2.3	1	0
	TOTAL	44	166	1,283,474	3,151,498	104,707	2.4	12	14,096
1986	SEASON CLOSED	-	-	-	-	-	-	-	-
1987	SEASON CLOSED	-	-	-	-	-	-	-	-
1988	Eastern Western	98	248	897,059	2,210,394	112,334	2.5	8	10,724
		0	0	0	0	0	0	0	0
	TOTAL	98	248	897,059	2,210,394	112,334	2.5	8	10,724
1989	Eastern Western	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
		0	0	0	0	0	0	0	0
	TOTAL	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
1990	Eastern Western		1,105	10,708,996	24,529,165	701,924	2.3	15	87,475
			17	8,928	20,134	9,213	2.3	<1	0
	TOTAL	179	1,032	10,717,924	24,549,299	711,137	2.3	15	87,475

<sup>1</sup>Deadloss included

continued...

Table 3. Historic Bering Sea *C. bairdi* catch by season by subdistrict (continued).

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1990/91	Eastern	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
	Western	0	0	0	0	0	0	0	0
	TOTAL	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769

<sup>1</sup>Deadloss included

Table 4. 1990/91 season *C. bairdi* catch by month for the Eastern Bering Sea.

Month	Vssls	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Dead- loss
Nov	130	151	2,868,352	7,150,663	70,712	2.49	40	48,130
Dec	222	395	7,133,605	17,210,249	267,705	2.41	27	72,562
Jan	181	299	2,843,988	6,800,215	144,885	2.39	20	53,172
Feb	199	446	1,948,451	4,655,903	177,102	2.39	11	28,905
Mar	210	466	1,814,229	4,264,525	222,987	2.35	8	8,000
TOTAL	255	1,756	16,608,625	40,081,555	883,391	2.41	19	210,769

<sup>1</sup>Deadloss included

Table 5. 1990/91 *C. bairdi* catch, by statistical area, for the Bering Sea.

Area	Landings	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Deadloss
605630	7	98,265	252,496	3,424	2.6	29	1,033
605700	6	61,961	161,320	2,187	2.6	28	600
615601	14	133,561	344,267	5,235	2.6	26	2,344
615630	100	973,760	2,596,067	36,064	2.7	27	7,647
615700	20	181,403	496,651	7,573	2.7	24	1,500
625531	8	28,565	67,475	2,377	2.4	12	2,000
625600	58	546,942	1,397,544	22,047	2.6	25	11,677
625630	85	712,018	1,779,896	26,495	2.5	27	28,905
625700	6	87,855	213,531	2,452	2.4	36	1,000
635530	75	731,602	1,752,649	35,956	2.4	20	17,525
635600	199	2,491,550	6,122,087	82,614	2.5	30	27,935
635630	139	1,490,730	3,608,164	49,864	2.4	30	18,279
635700	8	66,526	170,747	2,800	2.6	24	
645434	4	6,817	16,111	322	2.4	21	
645501	26	222,226	519,779	10,431	2.3	21	550
645530	75	728,358	1,781,286	34,271	2.4	21	9,673
645600	168	2,095,001	4,947,593	73,979	2.4	28	23,871
645630	110	1,310,380	3,085,373	46,716	2.4	28	9,339
655500	11	64,001	148,086	3,581	2.3	18	
655530	45	192,797	464,522	13,352	2.4	14	1,720
655600	91	689,442	1,610,289	30,046	2.3	23	3,749
655630	44	174,240	398,945	10,426	2.3	17	2,433
665500	20	48,654	112,907	6,352	2.3	8	
665530	49	68,638	161,049	17,664	2.3	4	
665600	32	67,639	158,004	10,776	2.3	6	2,000
665630	6	14,351	32,272	1,860	2.2	7	
675500	13	12,129	28,304	3,442	2.3	4	
675530	108	71,794	163,423	46,694	2.3	2	61,100

continued...

<sup>1</sup>Deadloss included

Table 5. 1990/91 *C. bairdi* catch, by statistical area, for the Bering Sea (continued).

Area	Landings	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Deadloss
675600	109	145,400	283,014	37,026	1.9	4	1,000
675630	16	14,501	35,404	4,291	2.4	3	
685530	55	50,200	114,239	20,058	2.3	3	350
685600	137	196,050	457,337	51,305	2.3	4	1,300
685630	68	82,593	188,404	24,540	2.3	3	1,650
695600	21	89,931	217,563	6,212	2.4	14	360
695631	12	109,147	248,421	3,084	2.3	35	
705600	46	99,959	228,464	13,333	2.3	8	
705630	91	1,038,372	2,411,269	28,117	2.3	37	8,550
705701	42	395,907	926,479	8,860	2.3	45	7,454
705702	6	28,696	68,751	873	2.4	33	2,020
715600	27	47,811	110,699	8,192	2.3	6	
715630	133	285,147	662,566	37,535	2.3	8	3,500
715700	81	377,286	876,844	23,514	2.3	16	5,725
715730	6	21,308	49,904	1,373	2.3	16	
725630	28	50,525	120,055	9,238	2.4	5	600
725700	20	31,064	69,581	4,084	2.2	8	600
OTHER	41	173,523	421,724	12,756	2.4	19	2,780
TOTAL	1756	16,608,625	40,081,555	883,391	2.4	18	210,769

<sup>1</sup>Deadloss included

Table 6. Historic Bering Sea *C. opilio* catch statistics by season.

Year	Vssls	Lndgs	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	CPUE	% New Shell <sup>2</sup>	Avg. Wt.	Width (mm) <sup>2</sup>	Pounds Deadloss
1977/78	15	38	1,267,546	1,716,124	13,247	96	NA	1.4	NA	0
1978/79	102	490	22,118,498	32,187,039	190,746	115	83.0	1.5	113.1	759,173
1979/80	134	597	25,286,777	39,572,668	255,022	95	90.0	1.6	118.1	228,345
1981	153	867	34,415,322	52,750,034	435,742	79	79.2	1.5	117.0	2,269,979
1982	122	803	24,089,562	29,355,379	469,091	51	78.0	1.2	109.4	1,042,655
1983	109	462	23,838,149	26,128,410	287,127	83	NA	1.1	NA	1,324,466
1984 <sup>3</sup>	52	367	21,009,935	26,813,074	173,591	138	78.0	1.1	105.4 <sup>4</sup>	798,744
1985 <sup>4</sup>	75	718	52,903,246	65,998,875	372,045	120	80.0	1.3	108.0 <sup>5</sup>	1,064,184
1986 <sup>5</sup>	88	992	76,499,123	97,984,539	543,744	141	73.7	1.3	109.5	1,392,933
1987	103	1,038	81,307,659	101,903,388	616,113	132	84.0 <sup>6</sup>	1.2	108.9	978,449
1988	171	1,285	105,716,337	134,060,185	766,907	137	71.2 <sup>6</sup>	1.3	109.5	3,260,020
1989	168	1,341	112,618,881	149,455,848	663,442	178	85.2 <sup>6</sup>	1.3	111.2	1,844,682
1990	189	1,565	128,977,638	161,821,350	911,613	139	97.4 <sup>6</sup>	1.3	109.1	1,796,664
1991	228	2,788	265,123,960	328,647,269	1,391,583	188	95.1	1.2	110.2	3,464,036

<sup>1</sup>Deadloss included

<sup>2</sup>Southeast and Pribilof Districts only

<sup>3</sup>North of 58° reopened until 12/31

<sup>4</sup>West of 164° opened through 12/31

<sup>5</sup>Open only west of 164° W. longitude

<sup>6</sup>Eastern and Western Districts combined

Table 7. Bering Sea *C. opilio* Tanner crab seasons data.

Season	Opened	Closed	Vssls.	Pounds <sup>1</sup>	Avg. Wt.	CPUE	Price Per Pound
1977/78	09-15-77	09-23-78	13	1,716,124	1.4	96	\$ .38
1978/79	11-01-78	09-03-79	134	32,187,039	1.5	115	.30
1979/80	11-01-79	08-15-80 09-03-80 <sup>2</sup>	152	39,572,668	1.6	99	.21
1981	01-15-81	08-01-81 09-01-81 <sup>2</sup>	153	52,750,034	1.5	76	.26
1982	02-15-82	08-01-82	122	29,355,374	1.2	51	.73
1983	02-15-83	05-22-83 06-15-83 <sup>3</sup>	109	26,128,410	1.1	83	.35 <sup>2</sup>
1984	02-15-84	08-01-84	52	23,940,984	1.1	147	.30
	08-01-84	12-31-84 <sup>4</sup>		2,872,090	1.1	125	
1985	01-15-85	09-22-85	75	57,446,554	1.2	142	.30
	10-09-85	12-31-85 <sup>5</sup>		8,552,321			
1986	01-15-86	09-24-86 <sup>6</sup>	88	97,984,539	1.3	141	.60
1987	01-15-87	06-22-87	103	101,903,388	1.2	132	.75
1988	01-15-88	03-29-88	161	75,695,562	1.3	141	.75
	05-15-88	06-30-88	<u>156</u>	<u>59,659,075</u>	1.3	<u>146</u>	<u>.80</u>
			171	135,354,637	1.3	144	.77
1989	01-15-89	03-26-89 05-07-89	168	149,455,848	1.3	178	.75
1990	01-15-90	04-24-90 <sup>6</sup>	177	94,831,897	1.2	148	.64 <sup>2</sup>
		06-12-90	<u>152</u>	<u>66,989,453</u>	<u>1.3</u>	<u>130</u>	
			178	161,821,350	1.2	135	
1991	01-15-91	05-05-91	218	240,090,666	1.3	206	.50
		06-23-91	<u>186</u>	<u>88,556,603</u>	<u>1.2</u>	<u>153</u>	
			220	328,647,269	1.2	188	

<sup>1</sup>Deadloss included

<sup>2</sup>Varied according to size

<sup>3</sup>Partial Bering Sea closure

<sup>4</sup>North of 58° only

<sup>5</sup>West of 164° opened through 12-31-85

<sup>6</sup>Open only west of 164° W. longitude

Table 8. Historic Bering Sea *C. opilio* catch, by season, by subdistrict.

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1977/78	Southeastern		33	1,063,872	1,439,959	11,560	1.4	0	0
	Pribilof		5	203,674	276,165	1,687	1.4	121	0
	TOTAL	13	38	1,267,546	1,716,124	13,247	1.4	96	0
1978/79	Southeastern	101	476	21,279,794	31,102,832	184,491	1.5	115 <sup>W</sup>	659,137
	Pribilof	10	14	838,704	1,084,039	6,225	1.5	134	100,000
	TOTAL	102	490	22,118,498	32,187,039	190,746	1.5	115	759,137
1979/80	Southeastern	133	561	23,199,446	36,406,391	237,375	1.6	97	187,945
	Pribilof	19	36	2,087,331	3,166,777	17,727	1.5	116	40,400
	TOTAL	134	597	25,286,777	39,572,668	225,102	1.6	99	228,345
1980	Southeastern		624	24,498,642	37,866,229	309,304	1.6	76	1,475,078
	Pribilof		243	9,916,617	14,886,705	126,438	1.5	74	794,901
	TOTAL	153	867	34,415,322	52,753,034	435,742	1.5	76	2,269,979
1982	Southeastern		468	10,207,174	13,079,583	257,193	1.3	40	422,979
	Pribilof		335	13,882,388	16,276,421	211,898	1.2	65	
	TOTAL	122	803	24,089,562	29,355,374	469,091	1.2	5F	1,092,655

continued...

Table 8. Historic Bering Sea *C. opilio* catch, by season, by subdistrict (continued).

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1983	Southeastern		153	3,553,281	94,197,304	4,470	1.2	38	165,298
	Pribilof		239	19,076,553	20,514,000	153,458	1.0	124	1,078,643
	Northern		69	1,223,813	1,417,106	39,199	1.1	31	80,525
	TOTAL	109	461	23,853,647	26,128,410	287,127	1.1	83	1,324,466
1984	Southeastern		76	3,534,370	3,990,621	33,091	1.1	106	54,678
	Pribilof		230	17,909,096	19,727,493	112,078	1.1	160	708,706
	Northern		61	2,566,469	3,094,960	28,422	1.2	91	35,411
	TOTAL	52	367	24,009,935	26,813,074	173,591	1.1	138	798,795
1985	Southeastern	55	301	21,963,882	27,373,232	158,819	1.4	95	461,001
	Pribilof	60	301	24,089,526	29,804,093	142,937	1.2	168	505,146
	Northern	24	116	6,849,838	8,821,550	70,289	1.3	97	98,037
	TOTAL	75	718	52,903,246	65,998,875	372,045	1.3	120	1,064,184
1986	Southeastern	47	112	8,491,694	10,957,578	63,889	1.3	132	44,755
	Pribilof	80	508	39,851,767	50,525,150	281,337	1.3	142	472,342
	Northern	67	372	28,155,662	36,501,811	198,518	1.3	142	861,436
	TOTAL	88	992	76,499,123	97,984,539	543,744	1.3	141	1,378,533

continued....

Table 8. Historic Bering Sea *C. opilio* catch, by season, by subdistrict (continued).

Season	Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1987	Southeastern	28	64	4,116,778	5,106,473	24,619	1.2	167	24,619
	Pribilof	94	458	38,604,802	47,676,734	261,337	1.2	163	261,337
	Northern	99	516	38,586,079	49,120,181	330,157	1.2	117	330,157
	TOTAL	103	1,038	81,307,659	101,903,388	616,113	1.2	132	978,449
1988	Eastern	161	770	59,838,392	75,695,562	422,719	1.3	141 <sup>†</sup>	775,104
	Western	156	515	47,330,314	59,689,075	323,196	1.3	146	2,484,916
	TOTAL	171	1,283	107,168,706	135,354,637	745,915	1.3	144	3,260,020
1989	Eastern	163	871	77,698,698	104,399,693	391,451	1.3	198	1,128,971
	Western	127	470	34,920,183	45,056,155	271,991	1.3	126	715,711
	TOTAL	168	1,341	112,618,881	149,455,848	663,442	1.3	178	1,844,682
1990	Eastern	177	956	76,331,829	94,831,897	512,259	1.2	148	1,010,755
	Western	152	659	52,645,809	66,989,453	399,354	1.3	130	785,909
	TOTAL	189	1,565	128,977,638	161,821,350	911,613	1.3	139	1,796,664
1991	Eastern	218	2,013	190,139,612	240,090,666	912,751	1.3	206	1,593,021
	Western	186	867	74,984,348	88,556,603	478,832	1.2	156	1,871,015
	TOTAL	220	2,788	265,123,960	328,647,269	1,391,583	1.2	188	3,464,036

<sup>1</sup>Deadloss included

Table 9. 1991 season *C. opilio* catch by district and month for the Eastern Bering Sea.

Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
January								
Eastern	102	142	8,531,960	11,017,617	37,919	1.29	225	67,335
Western				No Catch Reported				
Total	102	142	8,531,960	11,017,617	37,919	1.29		
February								
Eastern	192	482	44,535,803	57,115,699	204,404	1.28	218	331,587
Western				No Catch Reported				
Total	192	482	44,535,803	57,115,699	204,404	1.28	218	331,587
March								
Eastern	204	607	65,014,317	81,965,885	279,947	1.26	232	490,397
Western	4	4	226,637	273,020	340	1.20	666	0
Total	204	607	65,240,954	82,238,905	280,287	1.26	233	490,397
April								
Eastern	210	597	62,966,654	78,680,390	313,139	1.25	201	576,668
Western	41	79	7,034,170	8,613,166	26,537	1.22	324	15,303
Total	211	625	70,000,824	87,293,606	339,676	1.25	206	591,971

Table 9. 1991 season *C. opilio* catch by district and month for the Eastern Bering Sea (continued).

Subdistrict	Vssls.	Lndgs.	No. Crab <sup>1</sup>	No. Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
May								
Eastern	155	185	9,090,878	11,311,025	77,342	1.24	117	127,034
Western	168	322	25,833,144	29,572,860	168,679	1.14	153	493,736
Total	206	469	34,924,022	40,883,885	246,021	1.17	142	620,770
June								
Western	167	462	41,890,397	50,097,557	283,276	1.20	148	1,361,976
Subdistrict Total								
Eastern	218	2,013	190,139,612	240,090,666	912,751	1.3	208	1,593,021
Western	186	867	74,984,348	88,556,603	478,832	1.2	156	1,871,015
Season Total	220	2,788	265,123,960	328,647,269	1,391,583	1.23	188	3,464,036

<sup>1</sup>Deadloss included

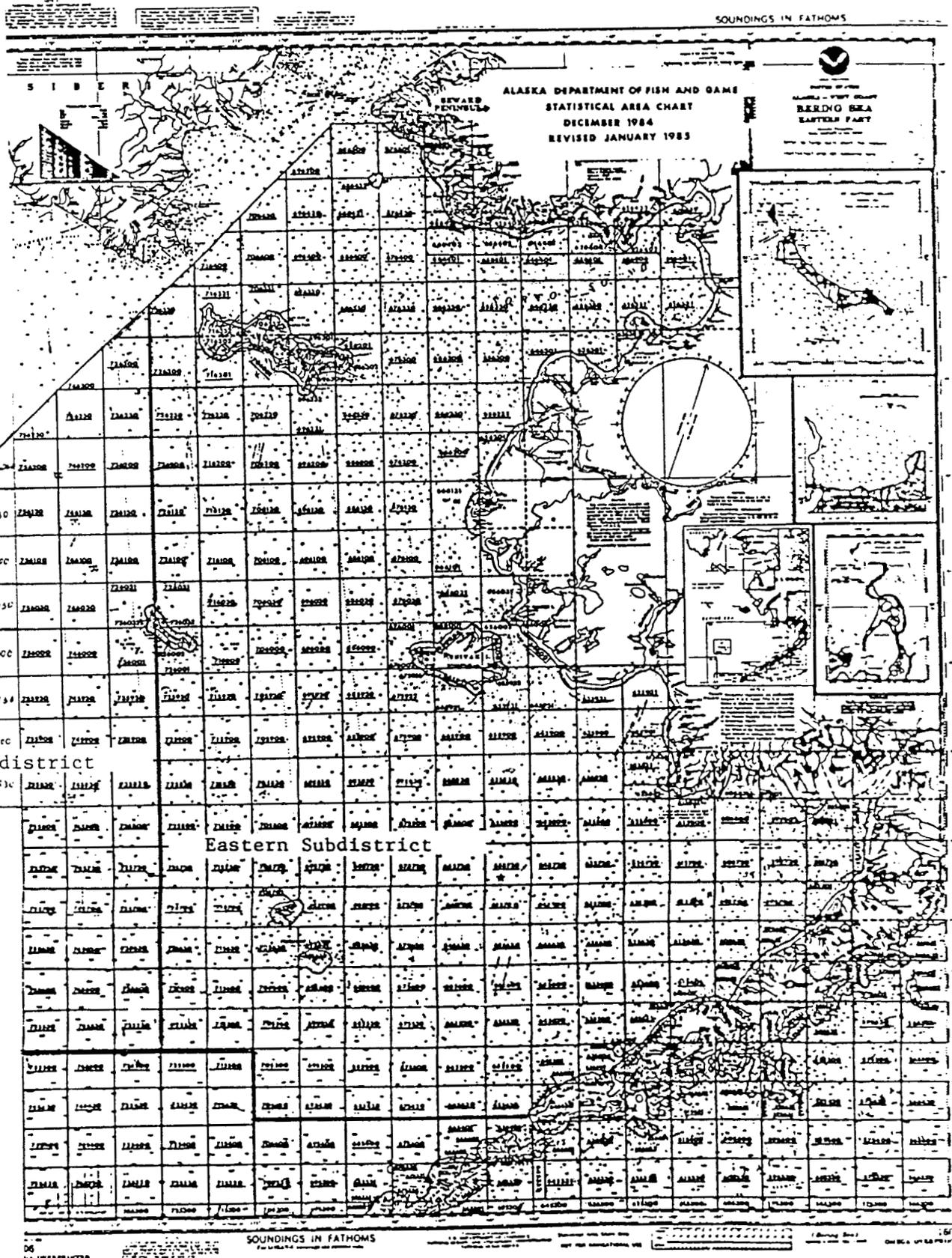


Figure 1. Bering Sea District of Statistical Area "J".

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## KING CRAB REGISTRATION AREA 'T' BRISTOL BAY

### Introduction

The Bristol Bay King Crab Statistical Registration Area 'T' includes all waters north of Cape Sarichef, east of 168° West longitude and south of the latitude of Cape Newenham and includes all waters of Bristol Bay.

### Historic Background

Commercial king crab fishing in the Bering Sea began with the Japanese in 1930 and continued until 1940. They returned to the fishery in 1953 and remained until 1974. The Russian king crab fleet operated in the Eastern Bering Sea from 1959 through 1971. United States fishermen entered the Eastern Bering Sea fishery with trawl gear in 1947. Effort and catches declined in the fifties with no catch being reported in 1959. A period of fluctuating low catches followed through 1966 before expanding to the full scale fishery of the mid to late seventies. As in other areas of the State, the stocks crashed in the early eighties but unlike other areas in the State, appear to be slowly recovering.

With the decline of king crab stocks in other areas of the State in 1968, U. S. effort continued to increase in the Eastern Bering Sea with a record catch of 129.9 million pounds landed during the 1980 season (Table 1).

The Eastern Bering Sea king crab fishery traditionally takes red king crab from the Bering Sea and Bristol Bay waters north of Unimak Island and the Alaska Peninsula from Cape Sarichef to Port Heiden.

In 1980 the Board of Fisheries made the Southeastern District of the Bering Sea, the major red king crab grounds: an exclusive registration area calling this area Bristol Bay, Registration Area 'T'. Vessels now registering for and fishing in this area are prohibited from fishing in any other exclusive registration area leaving only the Bering Sea, Area 'Q' and Adak, Area 'R', as alternative fishing areas.

The Area remained closed during the 1983/84 season due to the lowest ever recorded legal males as well as the lowest ever recorded total king crab population. Small females carrying fewer eggs and high predator abundance also contributed to the closure decision.

Since the reopening of the fishery in 1984, catches have slowly increased to over 20.3 million pounds harvested during the 1990 season. Fishing effort has increased dramatically from 89 vessels in 1984 to over 300 vessels in 1991. With the increase in fishing effort, the amount of pots being used by the fleet has also increased, with over 90,000 registered in 1991.

## 1991 Fishery

The Bristol Bay area opened to fishing at 12:00 noon on November 1 with a preseason harvest guideline of 18.0 million pounds. This is the second year of the new opening date, allowing for a better quality of king crab and bringing the Tanner crab and king crab seasons closer together.

Registrations and tank inspections were given at Dutch Harbor, Akutan, King Cove, Port Moller and for the first time, in St. Paul. A total of 25 catcher processors and 277 catcher vessels registered for the fishery, 62 vessels more than the 1990 season, (Table 1). The fleet registered 90,000 pots, an increase of 22,000 pots from the 1990 season.

Some of the increase in vessel effort can be attributed to closures of Federal groundfish fisheries in October and the addition of new crab vessels into the fishery. Many of the groundfish vessels that entered into the crab fishery had previously fished for crab during the late 1970's and early 1980's and converted back to the crab fisheries as early as September for the St. Matthew season. Many vessel operators also believed they needed to show crab deliveries during the year to ensure themselves permits in the event Individual Fishing Quota or limited entry is established by the Federal government in the Bering Sea/Aleutian Island crab fisheries.

All catcher processors and remote floater processors were required to have observers onboard during processing operations. Only one Department sampler remained onboard a floater processor at Port Moller to conduct Tanner crab registration after the king crab closure.

As during last season, all catcher processor observers were required to report, in code, daily: the area of operation, number of pots pulled, crab caught and sampling conditions. Although helpful in determining the daily catch rates and comparison of catcher only and catcher processors, reporting was not asked of catcher vessels due to the amount of time required on the radio to collect this information and the lack of voluntary reporting by the catcher vessels last year.

With no large increase in the preseason harvest guidelines for the past three seasons, the 1991 season was expected to correspond with the 1990 season. The only change anticipated was the amount of vessel effort and number of pots expected to be used during the fishery. This year, the average keel length of vessels in the fishery increased only slightly, from 110 feet in 1990 to over 111 feet in 1991. The average number of pots per vessel also increased only slightly, from 290 in 1990 to 298 in 1991, but due to the increase in vessel effort, over 22,000 more pots were registered.

Catch reports from the catcher processors indicated an average catch per pot, for three reporting periods, at 15 crab per pot and an average weight of 6.8 pounds. Based on this information, the Department estimated over two million pounds of crab being harvested daily by the fleet. Knowing the fleet has required at least a 72 hour closure announcement in the past, the decision to close the fishery was made on November 5, and the closure announced for November 8, making this the shortest season since 1988, (Table 2).

With the closure announcement made, observer reports were no longer taken except for their season accumulations on November 9. The ex-vessel value of the fishery exceeded 51.6 million dollars.

The seven day, 1991 season produced a total catch of 17 million pounds with an additional 206,500 coming from the 1991 test fishery on the same area, (Table 1). Although catch reports indicated a crab weighing 6.8 pounds, the average weight for the 1991 season was 6.5 pounds, identical to 1990, as was the average length, and average catch per pot, (Table 1).

The catcher processor fleet averaged over 93,300 pounds per vessel, 40,000 pounds more than the catcher only vessels. The catcher processors averaged three crab per pot more than the catcher vessels and pulled an average of 280 pots more than the catcher vessels, (Table 4). It still appears that in short seasons, such as the 1991 Bristol Bay fishery, the larger catcher processors that carry more pots are able to out fish the catcher vessels. In longer seasons, 10 or more days, the catcher vessels appear to catch up to the soak time and number of pots being pulled by the catcher processors, (Table 4).

The 1991 Bristol Bay red king crab fishery covered 21,600 square miles, somewhat less than the 1990 season. The majority of the catch, 60 percent or 10.3 million pounds, was taken from just two statistical areas, (Table 3, Figure 1).

### Stock Status

The National Marine Fisheries Service estimated the legal male population in 1991 to be 11.5 million crabs, or 70 million pounds, only a slight increase over the 1990 survey. Prerecruits and juvenile crab again showed no change between the 1989, 1990 and 1991 surveys.

Table 1. Historic U.S. Red King Crab catch in the Bristol Bay Registration Area 'T' of the Bering Sea, 1966 to 1991.

Year	Vssls	Lndg	No. of Crab <sup>1</sup>	No. of Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	Average Length (mm)	CPUE	% Old Shell	Deadloss
1966	9	15	140,554	997,321	2,720	7.1		52		
1967	20	61	397,307	3,102,443	10,621	7.8		37		
1968	59	261	1,278,592	8,686,546	47,496	6.8		27		
1969	65	377	1,749,022	10,403,283	98,426	5.9		18		
1970	51	309	1,682,591	8,559,178	96,658	5.1		17		
1971	52	394	2,404,681	12,955,776	118,522	5.4		20		
1972	64	611	3,994,356	21,744,924	205,045	5.4		20		
1973	67	441	4,825,963	26,913,636	194,095	5.6		25		N/A
1974	104	605	7,710,317	42,266,274	212,915	5.5		36		N/A
1975	102	592	8,745,294	51,326,259	205,096	5.7		43		1,639,483
1976	141	984	10,603,367	63,919,728	321,010	6.0	147.9	33	27.4	875,327
1977	130	1,020	11,733,101	69,967,868	451,273	5.9	147.9	26	13.0	730,279
1978	162	926	14,745,709	87,618,320	406,165	5.8	147.0	36	6.9	1,273,037
1979	236	889	16,808,605	107,828,057	315,226	6.4	152.3	53	10.4	3,555,891
1980	236	1,251	20,845,350	129,948,463	567,292	6.2	151.1	37	11.0	1,858,668
1981	177	1,026	5,307,947	33,591,368	542,250	6.3	151.1	10	47.4	711,289
1982	90	255	541,006	3,001,210	141,656	5.6	145.2	4	24.6	95,834
1983			NO COMMERCIAL FISHERY							
1984	89	137	794,040	4,182,406	112,556	5.2	142.4	7	26.5	35,601
1985	128	130	796,181	4,174,953	85,003	5.5	142.3	9	25.8	6,436
1986	159	230	2,099,576	11,393,934	178,370	5.4	142.2	12	25.5	284,127
1987	236	311	2,122,402	12,289,067	220,871	5.8	144.7	9	19.0	120,388
1988	200	201	1,236,131	7,387,795	153,004	6.0	146.9	8	15.1	23,537
1989	211	287	1,684,706	10,264,791	208,684	6.1	148.4	8	17.7	81,334
1990	240	331	3,120,326	20,362,342	262,131	6.5	151.6	12	14.7	116,527
1991	302	324	2,630,446	17,177,894 <sup>2</sup>	227,555	6.5	151.9 <sup>3</sup>	12	12.1	119,670

<sup>1</sup>deadloss included

<sup>2</sup>includes 206,529 pounds Test Fishery

<sup>3</sup>floater, catcher processor, ADF&G samples

Table 2. Bering Sea red king crab harvest composition by fishing season, 1973 through 1991.

Season	Opened-Closed	Catch <sup>1</sup>	Percent Recruit <sup>2</sup>	Percent Post Recruit <sup>2</sup>	Size Limit	Average Price Per Pound
1973	06/15-09/09	28.2	63	37	6¼" 03/01-10/31	-
					6½" 11/01-01/28	\$0.84
1974	07/29-10/12	41.9	60	40	6¼" 03/01-10/31	-
					6½" 11/01-01/18	\$0.38
1975	08/01-11/16	51.3	21	79	6¼" 03/01-10/31	-
					6½" 11/01-02/28	\$0.38
1976	08/15-12/07	63.9	56	44	6½"	\$0.58
1977	09/15-12/08	70.0	67	33	6½"	\$1.11
1978	09/10-10/23	87.6	75	25	6½"	\$1.23
1979	09/15-10/14	107.8	47	53	6½"	\$1.01
1980	09/10-10/20	129.9	44	56	6½"	\$ .90
1981	09/10-10/20	32.0	-	-	6½"	-
	10/25-12/15	1.5	14	86	7"	\$1.50
1982	09/10-10/10	2.7	68	32	6½"	\$3.05
1983	NO COMMERCIAL FISHERY					
1984	10/01-10/16	4.2	59	41	6½"	\$2.60
1985	09/25-10/02	4.1	66	34	6½"	\$2.90
1986	09/25-10/07	11.4	65	35	6½"	\$4.05
1987	09/25-10/06	12.3	77	23	6½"	\$4.00
1988	09/25-10/02	7.4	59	41	6½"	\$5.10
1989	09/25-10/06	10.3	58	42	6½"	\$5.00
1990	11/01-11/13	20.4	49	51	6½"	\$5.00
1991	11/01-11/08	17.2	44	56	6½"	\$3.00

<sup>1</sup>Deadloss included, millions of pounds

<sup>2</sup>Recruits figured at 149 mm - all previous years, 155 mm

Table 3. 1991 Bristol Bay king crab catch by Statistical Area.

Stat Area	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Dead-loss #
615601	5	21,289	140,978	1,458	6.6	15	0
615630	35	148,374	972,631	12,551	6.6	12	16,320
615700	5	21,681	140,431	1,970	6.5	11	3,600
625600	28	126,603	809,657	10,585	6.4	12	0
625630	103	689,133	4,464,229	55,864	6.5	12	66,733
635600	68	294,515	1,935,222	26,572	6.6	11	1,000
635630	145	887,881	5,814,907	80,506	6.5	11	13,717
635700	13	66,129	440,709	6,868	6.7	10	0
645600	19	77,986	517,651	5,883	6.6	13	0
645630	39	195,548	1,281,071	14,082	6.6	14	15,600
Others	NA	101,307	660,408	11,216	6.5	9	2,700
Totals	324	2,630,446	17,177,894 <sup>2</sup>	227,555	6.5	12	119,670

<sup>1</sup>Deadloss included

<sup>2</sup>Includes 206,529 pounds Test Fishery

Table 4. Comparative average catches of catcher/processor vs catcher vessels from Bristol Bay kin crab seasons.

	SEASONS					
	1991	1990	1989	1988	1987	1986
Number of Catcher Processors	25	20	18	20	21	12
Number of Catchers	278	219	193	180	215	147
Pounds of CP Catch	2,333,532	2,708,805	1,334,083	994,546	2,342,142	1,182,866
Percent of CP Catch <sup>1</sup>	13.6	13.3	13.0	13.5	19.0	10.4
Average CP Catch	93,341	135,440	74,116	49,727	111,530	93,572
Average Catcher Catch <sup>2</sup>	53,397	80,220	46,273	35,515	46,265	69,463
Average CPUE CP's	14	13.9	9.4	7.8	13.8	12.1
Average CPUE Catchers	11	12.0	7.9	8.2	8.9	11.7
Total Catch	17,177,894 <sup>3</sup>	20,276,979	10,264,791	7,387,258	12,289,067	11,393,934
Average # Pots Pulled CP's	1,012	1,483	1,289	1,039	1,376	1,502
Average # Pots Pulled Catcher	727	1,061	961	730	893	1,091
CP Range Catch	41,091- 170,373	41,458- 265,151	21,905- 185,408	19,796- 98,875	5,300- 268,750	34,097- 179,415

<sup>1</sup>CP total catch divided by Total Catch

<sup>2</sup>Total catch less CP catch divided by number catcher only vessels

<sup>3</sup>Includes 206,529 pounds Test Fishery

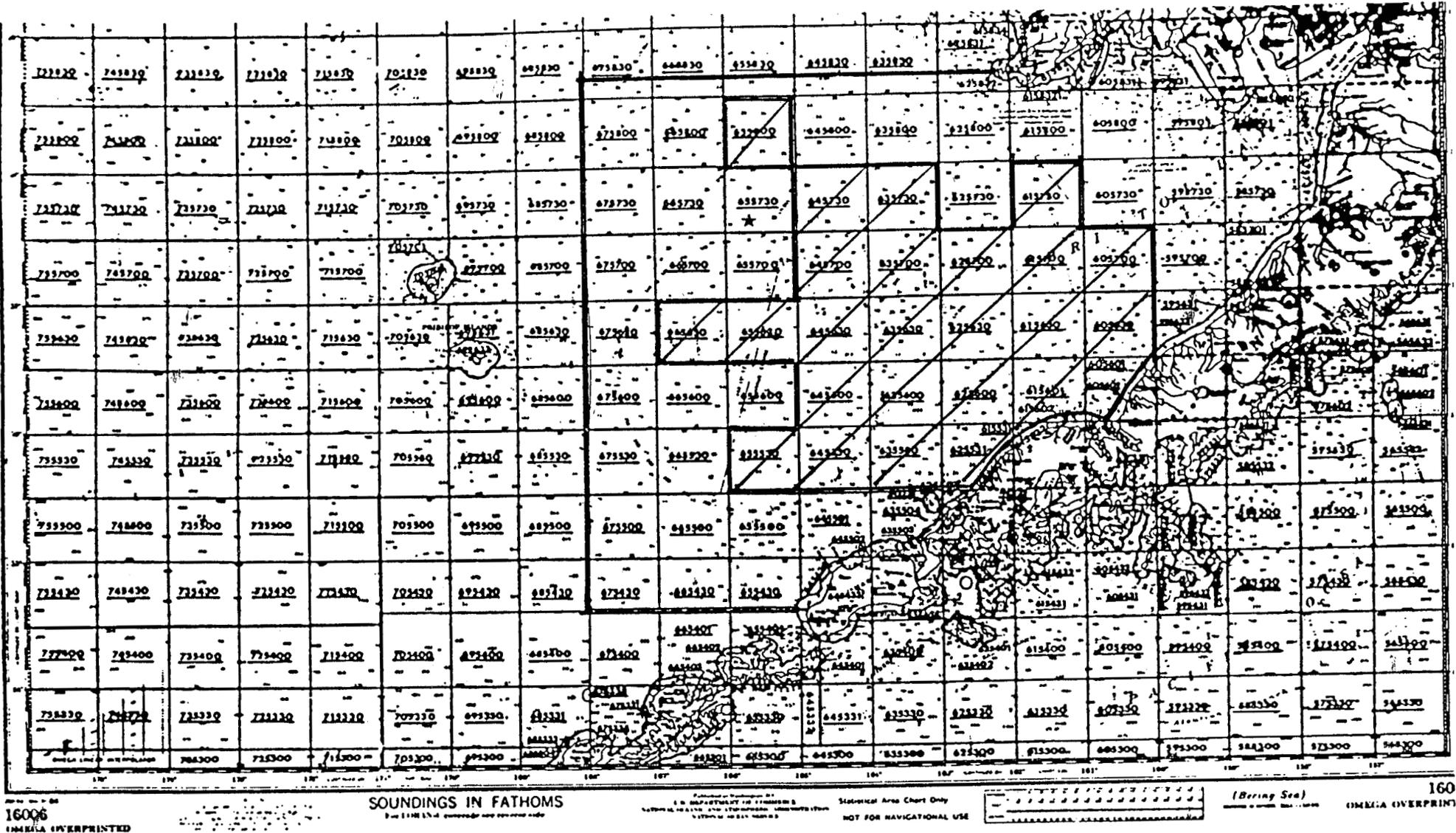


Figure 1. 1991 red king crab catch distribution in the Bristol Bay, Area "T".

## KING CRAB STATISTICAL AREA 'Q' BERING SEA

### Description

The Bering Sea king crab area, Statistical Area 'Q', includes all waters west of 168° West longitude to the U.S. Russian Convention Line of 1867 and north to the latitude of Cape Newenham at 58° 39' North latitude including the waters of the Chukchi Sea. This registration area is separated into the Pribilof and Northern Districts. The Northern District is further separated in two sections: the Norton Sound Section which includes all waters east of 168° West longitude and north of the latitude of Cape Romanzof, and the General Section which includes all waters not described in the Norton Sound Section.

### Historic Background

The blue king crab fishery in the Pribilofs started in 1973 when vessels targeted on blue king crab stocks between St. George and St. Paul Islands during the summer months when the red king crab fishery was closed. The first reported catch was 1.2 million pounds taken by eight vessels between July and October. The crab averaged 7.3 pounds, and the catch per unit effort (CPUE) was 26 crabs per pot. The average weight has remained relatively constant to that of the red king crab stocks. The CPUE of 26 crabs per pot has never again been attained by the fleet averaging only nine crabs per pot until the past three seasons when the CPUE dropped to three crabs and less per pot (Table 1). Due to low population estimates in this district, the red and blue king crab fishery has been closed since the 1988/89 season.

### Pribilofs - 1991

The 1991 National Marine Fishery Service survey of the Pribilof District blue king crab stocks estimated the legal male stocks to be at 491,000 crabs, but with an extremely broad confidence interval. Population estimates for 1990 and 1991 indicate no significant increase in abundance in numbers of the legal, sublegal and female crabs. The population remains depressed.

The National Marine Fisheries survey of blue king crab provided an estimate of 730,000 to 2,590,000 mature crabs with a mid-point of 1,660,000 crabs. If the population was at the low end of the range, removal of 20% of the mid-point population estimate would result in a harvest of 328,000 crabs and effectively result in a 48% exploitation rate on mature animals. Up to 80% of the legal population could be removed. If a fishery were to occur, the effort would be extremely large. The ability to control removal would be difficult, and no insight could be gained on the accuracy of the survey from inseason fishery performance. After review of the 1991 NMFS trawl survey information and anticipated effort, the Department determined that the removal of mature males through an opened commercial fishery would have significant risk on the population.

During the 1991 Bristol Bay season, one vessel registered for the fishery and actually fished for and delivered red king crab to St. Paul from the closed Pribilof District. This vessel had been fishing for hair crab in the area for several months and had found red king crab. Fish and Wildlife officers were aware of the illegal activity, and when the vessel arrived to deliver, the load was seized and the operator fined. This district has been closed to all king crab fishing since the 1988/89 season (Table 1). Red king crab have been taken incidental to the blue king crab.

#### St. Matthew - 1991

On July 24, 1991 after determining that the National Marine Fisheries survey of St. Matthew blue king crab stocks may not be completed in time to determine if a commercial fishery should occur, a news release from Kodiak announced a delay in the opening from September 1 to September 14.

The delay was based on performance of the 1990 fishery and the 1990 survey results which indicated a 20 percent decline in prerecruits. The Department felt that until the 1991 survey results were available and analyzed, a commercial fishery and harvest projection were unwarranted.

On August 26 and August 28, news releases from Kodiak announced the opening of the St. Matthew fishery on September 14 and that a preseason harvest guideline of 3.2 million pounds would be obtained in only four days. On September 16, the day of the opening, the closure was announced for September 20.

Although the Department did not have personnel on the grounds, all processing vessels were covered under the Mandatory Observer Program. With a short four day season and the closure already announced, observers were required to report only their season accumulative total the day after the season closed. At this time, three catcher processors requested "extended possession" to purchase and process crab on the grounds.

The four day fishery yielded a catch of 3.3 million pounds (Tables 2 and 4). Average catch per pot increased to 20, the largest catch per pot recorded in this fishery. Crab were in good condition and averaged 4.6 pounds each, comparable to the previous season. Unlike the 1990 season, and more like previous seasons, the average catch per pot for the catcher processors was larger than that of the catcher only vessels. Catcher processors averaged 26 crabs per pot, eight more than the catcher only vessels, (Table 5). The catcher processor fleet is larger overall, averaging 275 pots per vessel and an average keel length of 132.2 feet. The catcher vessels averaged 180 pots per vessel and had an average keel length of 117.3 feet. The catcher processors averaged 54 percent more catch than the catcher only vessels, 82,300 and 44,600 respectively. As stated in previous years reports, it appears that during short seasons (3 to 5 days), larger vessels capable of carrying and setting large amounts of gear at one time have a distinct advantage over the smaller vessels with less gear. Approximately 13,100 pots were registered in the fishery.

Crab were purchased by floaters and catcher processors on the fishing grounds and at shore-based plants in St. Paul and Dutch Harbor. Vessels had 60 hours to leave the fishing grounds and be at their processing location in Dutch Harbor and Akutan and 24 hours to deliver on the grounds or to St. Paul. One vessel was cited for failure to be at his point of delivery within the required time. This catcher processor elected to store gear in the Bristol Bay area before coming to Dutch Harbor.

The blue king crab were worth \$2.80 per pound to the fishermen, making the value of this fishery about 9.2 million dollars.

### Stock Status

The 1991 NMFS survey indicated 3.2 million mature male crabs and 2.2 million legal male crabs. This compares to 2.4 million mature crabs and 1.7 million male legal crabs from the 1990 survey. NMFS felt that there was no significant difference in these two population estimates. This population still appears to be depressed and should be managed accordingly.

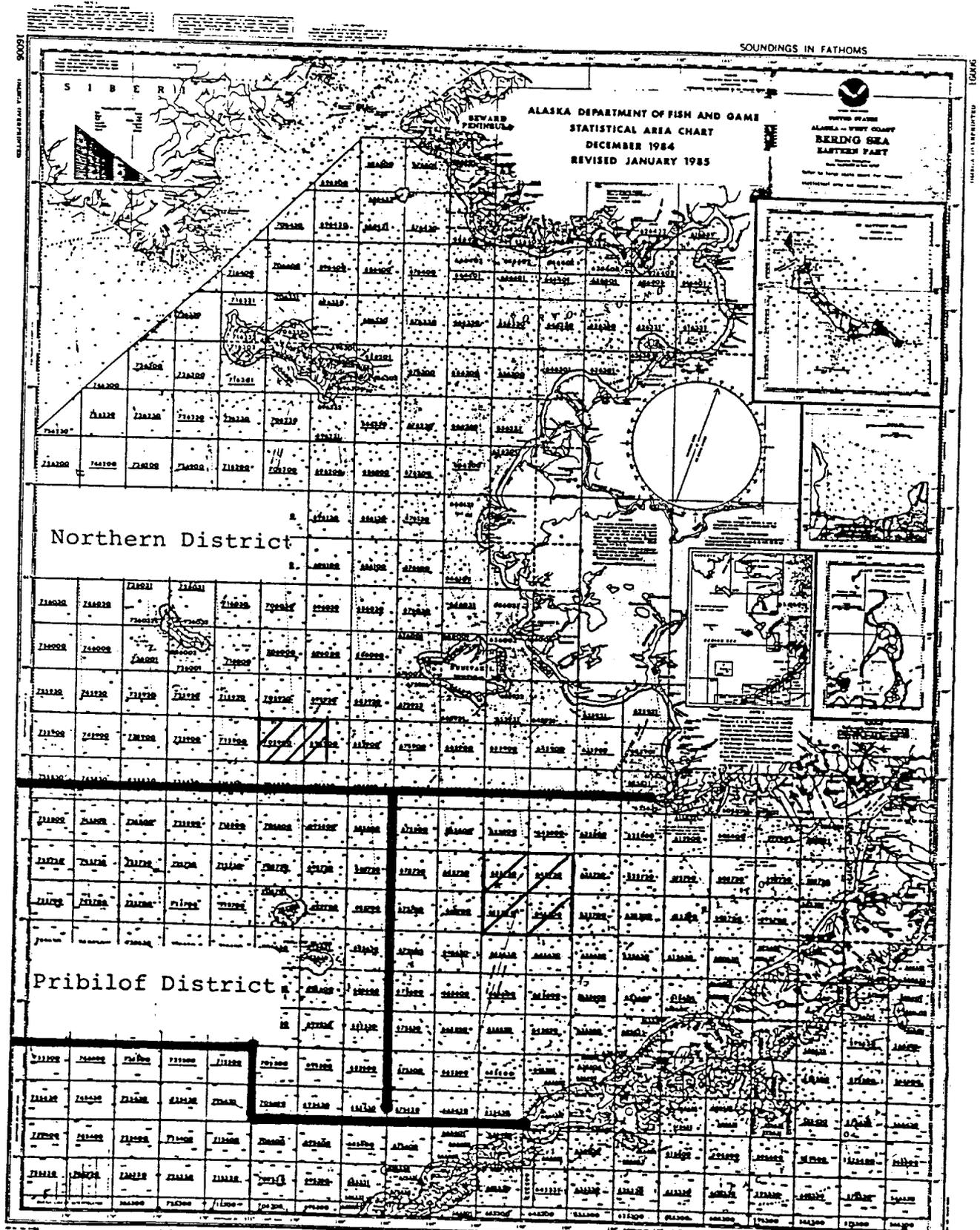


Figure 1. Bering Sea king crab registration Area "Q".

Table 1. Historic blue king crab catch Bering Sea, Area 'Q', Pribilof District.

Year	Vssls	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	CPUE	Avg. Wt.	Average Length	Pounds Deadloss
1973/74	8	13	174,420	1,276,533	6,814	26	7.3	N/A	0
1974/75	70	101	908,072	7,107,294	45,518	20	7.8	157.8	0
1975/76	20	54	314,931	2,433,714	16,297	19	7.7	159.1	0
1976/77	47	113	855,505	6,611,084	71,738	12	7.7	158.1	0
1977/78	34	104	807,092	6,456,738	106,983	8	7.9	158.9	159,269
1978/79	58	154	797,364	6,395,512	101,117	8	8.1	159.3	63,140
1979/80	46	115	815,557	5,995,231	83,527	9	7.7	155.9	284,555
1980/81	110	258	1,497,101	10,970,346	167,684	9	7.3	155.7	287,285
1981/82	99	312	1,202,499	9,080,729	176,168	7	7.6	158.2	250,699
1982/83	122	281	587,908	4,405,353	127,728	5	7.5	159.8	51,703
1983/84	126	221	276,364	2,193,395	86,428	3	7.9	159.9	4,562
1984/85	16	25	40,427	306,699	15,147	3	7.6	155.45	0
1985/86	26	49	77,607	532,735	23,483	3	6.9	146.52	7,500
1986/87	16	25	36,988	258,939	15,800	2	7.0	N/A	5,450
1987/88	38	68	95,131	701,337	40,507	2	7.4	152.72	9,910
1988/89				S E A S O N	C L O S E D				
1989/90				S E A S O N	C L O S E D				
1990/91				S E A S O N	C L O S E D				
1991/92 <sup>2</sup>				S E A S O N	C L O S E D				

<sup>1</sup>Deadloss included

<sup>2</sup> 10,869 pounds illegal red crab

Table 2. Historic blue king crab catch in the Northern District of statistical Area 'Q' (St. Matthew and St. Lawrence Islands).

Year	Vssls	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	CPUE	Percent Oldshell	Avg. Wt.	Avg. Length	Pounds Deadloss
1977	10	24	281,665	1,202,066	17,370	16	7.0	4.3	130.4	129,148
1978	22	70	436,126	1,984,251	43,754	9	N/A	4.5	132.2	116,037
1979	18	25	52,966	210,819	9,877	5	80.8	4.0	128.8	56,147
1980			Confidential				N/A	4.7	N/A	
1981	31	119	1,045,619	4,627,761	58,550	18	N/A	4.4	N/A	53,355
1982	96	269	1,935,886	8,844,789	165,618	12	19.6	4.6	135.1	142,973
1983 <sup>2</sup>	164	235	1,931,990	9,454,323	133,944	14	26.7	4.8	137.2	828,994
1983 <sup>3</sup>	13	13	11,264	52,557	3,975	3	-	4.7	-	3,500
1984 <sup>2</sup>	90	169	841,017	3,764,592	73,320	11	34	4.5	135.48	31,983
1984 <sup>3</sup>			No Reported Landings							
1985 <sup>2</sup>	79	103	484,836	2,427,110	51,606	9	9	5.0	138.98	2,613
1985 <sup>3</sup>			No Reported Landings							
1986 <sup>2</sup>	38	43	219,548	1,003,162	22,093	10	10	4.6	134.33	32,560
1986 <sup>3</sup>			No Reported Landings							

continued...

Table 2. Historic blue king crab catch in the Northern District of statistical Area 'Q' (St. Matthew and St. Lawrence Islands continued).

Year	Vssls	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	CPUE	Percent Oldshell	Avg. Wt.	Avg. Length	Pounds Deadloss
1987 <sup>2</sup>	61	62	234,521	1,075,179	28,440	8	5	4.6	134.13	400
1987 <sup>3</sup>			No	Reported	Landings					
1988 <sup>2</sup>	46	46	302,053	1,325,185	10,160	13	65	4.4	133.29	22,358
1988 <sup>3</sup>			No	Reported	Landings					
1989 <sup>2</sup>	69	69	247,641	1,166,258	30,853	8	9	4.7	134.55	3,754
1989 <sup>3</sup>	5	9	1,652	4,518	2,402	-	-	-	-	0
1990 <sup>2</sup>	31	38	391,405	1,725,349	26,264	15	4	4.4	134.28	17,416
1990 <sup>3</sup>			No	Reported	Landings					
1991 <sup>2</sup>	68	69	726,519	3,372,066	37,104	20	12	4.6	134.1	216,459
1991 <sup>3</sup>			No	Reported	Landings					

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<sup>1</sup>Deadloss included

<sup>2</sup>St. Matthew

<sup>3</sup>St. Lawrence - red and blue

Table 3. Northern District, Area 'Q' king crab harvest composition by fishing season.

Season	Opened	Closed	Species	Catch <sup>1</sup>	Size Limit	Price Per Lb.
1977	June 7	Aug. 16	Blue	1,202,066	5 1/2"	\$ 1.00
			Red	543,041	5"	
1978	July 15	Sept. 3	Blue	1,984,251	5 1/2"	.95
	July 15	Aug. 16	Red	2,007,910	4 3/4"	
1979	July 15	Aug. 24	Blue	210,819	5 1/2"	.70
	July 15	Aug. 16	Red	3,024,228	4 3/4"	
1980	July 15	Sept. 3	Blue	353,683	4 3/4"	.75
	July 15	July 31	Red <sup>2</sup>			
1981	July 15	Aug. 21	Blue	4,627,761	5 1/2"	.90
	July 15	Sept. 3	Red <sup>2</sup>	63,983	4 3/4"	
1982	Aug. 1	Aug. 16	Blue	8,844,789	5 1/2"	2.00
	Aug. 1	Aug. 16	Red <sup>2</sup>	3,690	4 3/4"	2.00
	May 1	Aug. 1	Brown	193,507	5 1/2"	2.00
1983 <sup>3</sup>	Aug. 20	Sept. 6	Blue	9,506,880	5 1/2"	3.00
	Aug. 20	Sept. 6	Red	1,635	4 3/4"	2.50
	May 1	Aug. 1	Brown		5 1/2"	-
1984	Aug. 1	Sept. 8	Blue	3,764,592	5 1/2"	1.75
	Aug. 1	Sept. 8	Red <sup>2</sup>	-	4 3/4"	-
	May 1	Dec. 31	Brown <sup>3</sup>	-	5 1/2"	-
1985	Sept. 1	Sept. 6	Blue	2,427,110	5 1/2"	1.60
	Aug. 1	Sept. 6	NO CATCH REPORTED		4 3/4"	-
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2"	-
1986	Sept. 1	Sept. 6	Blue	1,003,162	5 1/2"	3.20
	Aug. 1	Sept. 6	NO CATCH REPORTED		4 3/4"	-
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2"	-
1987	Sept. 1	Sept. 5	Blue	1,075,179	5 1/2"	\$ 2.85
	Aug. 1	Sept. 5	NO CATCH REPORTED		4 3/4"	-
	Jan. 1	Dec. 31	Brown	424,394	5 1/2"	2.60
1988	Sept. 1	Sept. 5	Blue	1,325,185	5 1/2"	3.10
	Aug. 1	Sept. 5	NO CATCH REPORTED		4 3/4"	-
	Jan. 1	Dec. 31	Brown	160,441	5 1/2"	3.10

continued...

Table 3. Northern District, Area 'Q' king crab harvest composition by fishing season (continued).

Season	Opened	Closed	Species	Catch	Size Limit	Price Per Lb.
1989	Sept. 1	Sept. 4	Blue	1,166,258	5 1/2"	2.90
			Blue	**	5 1/2"	NA
	Aug. 1	Sept. 4	Red <sup>2</sup>	4,518	4 3/4"	-
	Jan. 1	Dec. 31	Brown	4,407	5 1/2"	NA
1990	Sept. 1	Sept. 7	Blue	1,725,349	5 1/2"	3.35
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2"	
1991	Sept. 16	Sept. 20	Blue	3,372,066	5 1/2"	2.80
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2"	

<sup>1</sup> Deadloss included

<sup>2</sup> Does not include Norton Sound

<sup>3</sup> Some of Northern District open until September 20

\*\* Combined with red king crab to total 4,518 lbs.

Table 4. Bering Sea (Northern District) blue king crab catch by statistical area, for the 1991 season St. Matthew Island.

Stat Area	Lndgs	Crab <sup>1</sup>	Pounds <sup>1</sup>	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
726001	33	279,289	1,313,229	14,889	4.7	17	112,806
726002	4	24,816	116,636	1,630	4.7	15	2,530
736001	44	404,255	1,860,486	19,161	4.6	20	95,023
Other	6	18,159	81,715	1,424	4.5	12	6,100
TOTAL	69	726,519	3,372,066	37,104	4.6	18	216,459

<sup>1</sup>Deadloss included

Table 5. St. Matthew Blue King crab comparative average catches of catcher/processor vs. catcher vessels.

	SEASONS				
	1991	1990	1989	1988	1987
Number of Catcher/Processors	9	7	15	9	
Number of Catchers	59	24	54	37	48
Pounds of C/P Catch	740,687	447,320	462,034	462,851	336,460
Percent of C/P Catch	22.0	25.9	39.6	34.9	31.3
Average C/P Catch	82,298	63,903	30,802	51,428	25,881
Average Catcher Catch	44,600	53,251	13,041	23,306	15,390
Average CPUE C/P's	26	15	11	16	10.5
Average CPUE Catchers	18	15	7	12	7.5
Total Catch	3,372,066	1,725,349	1,166,258	1,325,185	1,075,179
Average # Pots Pulled C/P's	682	983	618	706	540
Average # Pots Pulled Catcher	525	807	399	432	446
C/P Range Catch	41,812- 129,038	27,403- 111,507	16,744- 43,650	39,375- 71,170	15,010- 50,319

Table 6. St. Matthew comparative mid-point and emergency order projections and actual harvests.

Year	Harvest Guideline	Mid-Point	Harvest	E.O. Projection
1983	8.0	-	9,454,000	8.0
1984	2.0 - 4.0	3.0	3,764,000	4.0
1985	0.9 - 1.9	1.4	2,427,000	2.0
1986	0.2 - 0.5	0.3	1,003,000	1.0
1987	0.6 - 1.3	.95	1,075,000	1.3
1988	0.7 - 1.5	-	1,325,000	1.5
1989	1.7	-	1,166,000	1.7
1990	1.9	-	1,725,000	1.9
1991	3.2	-	3,372,000	3.2

## BERING SEA KOREAN HAIR CRAB

### Introduction

The Korean hair crab, *Erimacrus isenbeckii*, sold commercially as "kegani" by the Japanese, was fished commercially for the first time by the U.S. fleet in 1979. When interest was first expressed by fishermen and processors in this species, the season was opened by emergency order and ran concurrently with the Tanner crab fishery. During the 1980 Board of Fisheries meeting, a year long season was established under the terms of a permit issued by the Alaska Department of Fish and Game.

### 1991 Fishery

Seven vessels registered for the Bering Sea hair crab fishery in 1991. This increased interest compared to recent years resulted primarily from a fishermen's strike at the start of the *C. bairdi* fishery in November over price. Vessel operators were looking for something to do to keep their vessels working. The strike was short, one week, and most of the vessels caught hair crab as bycatch in the *C. bairdi* fishery. Table 1 lists the historic catch of hair crab in the Bering Sea.

The annual National Marine Fisheries Service summer trawl survey of the Bering Sea indicates that hair crab stocks suffered a serious decline in the mid-1980's. The population was reduced to 10% of the level when the fishery began in 1979. Stocks have been rebounding for the past four years and now stand at about 33% of the 1979 level.

The average weight of hair crab caught in 1991 was only 0.9 pounds, 1.1 pounds less than when the fishery started in 1978. The only major buyer in this fishery has set a minimum size of 3.5 inches carapace width. National Marine Fisheries Service considered this size of crab to be a large male and should weigh 1.3 pounds. The average size being purchased this year was obviously much smaller than 3.5 inches.

Table 1. Historic Korean hair crab catch statistics, by season, for the Bering Sea.

Year	Vessels	Landings	Number Crab <sup>1</sup>	Number Pounds <sup>1</sup>	Pots Lifted	CPUE	Average Weight	Average Length	Pounds Deadloss
1978-79	11	16	2,457	5,213	9,908	1	2.1	111.8	0
1979-80	9	17	25,417	53,914	14,506	2	2.1	114.5	0
1980-81	67	192	1,127,309	2,439,483	172,695	7	2.2	104.8	265,369
1981-82	48	159	466,560	932,584	117,518	4	2.0	103.1	29,749
1982-83	52	161	575,453	1,211,420	84,346	7	2.1	103.2	122,456
1983-84	19	48	200,670	406,538	20,414	10	2.0	-	28,062
1984 <sup>2</sup>	7	26	197,209	396,630	22,392	9	2.0	-	19,436
1985 <sup>2</sup>			C O N F I D E N T I A L						
1986 <sup>2</sup>			C O N F I D E N T I A L						
1987 <sup>2</sup>			C O N F I D E N T I A L						
1988 <sup>2</sup>			N O F I S H I N G						
1989 <sup>2</sup>			N O F I S H I N G						
1990 <sup>2</sup>			N O F I S H I N G						
1991 <sup>2</sup>	7	42	441,533	377,708	44,444	10	0.9	-	0

<sup>1</sup>Deadloss included.

<sup>2</sup>Permit fishery.

## OCTOPUS

Nine vessels made 19 octopus deliveries in 1991. The harvest came as bycatch to the Tanner crab fishery and totaled 7,594 pounds (385 octopus). Octopus bycatch processed as food or bait in the trawl fishery totaled 185,020 pounds. An additional unknown amount was discarded.

## SQUID

The reported squid catch in 1991 was 1,118 pounds. This came as bycatch in the trawl fishery and was used for food.

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ANNUAL MANAGEMENT REPORT FOR THE  
MANDATORY SHELLFISH OBSERVER PROGRAM, 1991

MARCH 1992

BY

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## INTRODUCTION

In April 1988 the Alaska Board of Fisheries adopted regulations requiring onboard observers on all vessels which processed king crab and *C. bairdi* Tanner crab in waters of Alaska. This action was prompted by Alaska Department of Fish and Game (ADF&G) staff reports which suggested illegal processing of undersize and female crab by at-sea processors, based on consistently higher production rates of catcher processors compared to catcher only vessels. These regulations resulted in creation of the Mandatory Shellfish Observer Program which first deployed observers in the September 1988 Bristol Bay red king crab fishery. Primary goals of the Program were to determine the legality of the landed and processed product; collect shell size, age and condition information from delivered product and to collect bycatch data from the pots being fished.

Although regulations dealing with the Observer Program apply statewide, the focus has been on the crab fisheries in the Bering Sea and Aleutian Islands where essentially all at-sea processing of crab occurs. In 1981, all the observer activity was handled by ADF&G staff in Dutch Harbor.

In the spring of 1990, the Alaska Board of Fisheries adopted regulations which broadened mandatory observer coverage to include those vessels processing *C. opilio*. These changes were made due to reports of undersized *C. bairdi* being processed as *C. opilio*.

### Observer Program Guidelines

Observer Program guidelines are in regulation and outline the responsibilities of the contractor, ADF&G and the observer (Figure 1).

Pursuant to regulation, observer costs are borne by industry with vessels hiring observers through third party contractors.

### Contractors

Contractors are required to hire, train and provide all observer logistical support including food, accommodations, sampling equipment, travel to and from vessels and to and from ADF&G briefings and debriefings conducted within the management area of the fishery. Contractors secure contracts directly with vessel owners/operators and deploy observers.

### ADF&G

The Alaska Department of Fish and Game is responsible for establishing observer qualification and conflict of interest standards and sampling procedures. ADF&G is also charged with review and approval of observer training programs, observer testing, certification (and decertification), briefing, debriefing, analysis of observer data and program progress reports.

## Observer

Observer qualifications include a minimum of a Bachelor of Science degree in the Natural Sciences or prior experience as an National Marine Fisheries Service observer.

Observers are required to undergo ADF&G approved training and pass a written and practical certification exam administered in Dutch Harbor. Observers may not have a financial interest in the observed fishery or assigned vessel. Observers are limited to no more than 90 days duty on a specific vessel in any 12 month period. Observers who are inactive for more than 12 consecutive months lose their certification but may become recertified by re-examination.

## 1991 SEASON OVERVIEW

### Vessel Effort and Observer Coverage

During the period January 1, 1991 through January 15, 1992, the observers made 270 trips and logged 325 man months at sea. This is a dramatic increase over 1990 levels when observers made 117 trips and logged 120 man months at sea.

Large increases in the number of observer trips and observer man months at sea were due in large part to the *C. opilio* fishery in the Bering Sea which required observer coverage for the first time in 1991. An increased number of at-sea processors and corresponding trips also contributed to more observer activity. From 1990 to 1991, vessel trips for catcher processors increased from 71 to 191 and for floating processors from 24 to 74 (Table 1).

### Bering Sea *opilio*

Observers made 155 trips on 45 different processor vessels (28 catcher processors and 17 floating processors) and logged 220 man months at sea. This fishery accounted for 57% of total observer trips and 68% of observer man months for 1991. Table 2 summarizes vessel trips and observer activity, by fishery for 1991.

### Dutch Harbor Brown King Crab

Observers made five trips on four different catcher processors and logged seven observer man months at sea during the fishery. This was approximately 2 percent of observer trips and man months for 1991.

St. Matthew Blue King Crab

Observers made 11 trips on 11 different processing vessels (9 catcher and 2 floating processors) and logged 5 man months at sea. This fishery accounted for 4% of total observer trips and 1.5% of observer man months for 1991.

Bristol Bay Red King Crab

Observers made 37 trips on 37 different processor vessels (25 catcher and 12 floating processors) and logged 20 man months at sea. This fishery accounted for almost 14% of total observer trips and 6% of observer man months for 1991.

Adak Brown King Crab

Observers made a total of 10 trips on 5 different catcher processors and logged almost 8 man months at sea. This accounted for less than 4% of total observer trips and 3% of man months at sea.

Bering Sea *bairdi*

Observers made 52 trips on 40 different processor vessels (28 catcher and 12 floating processors) and logged over 65 man months at sea. This fishery accounted for over 19% of the total observer trips and 20% of observer man months for 1991.

## OBSERVER PROGRAM ACTIVITIES

### Observer Briefing and Debriefing Activity

The Program activities increased dramatically in 1991 as a result of expanded observer coverage and additional processing vessels. In 1991 (January 1-through-December 31), ADF&G staff in Dutch Harbor conducted 264 observer briefings and 337 debriefings (includes mid-trip debriefings). This is approximately double the level conducted in 1990 and over six times the level conducted during the first year of operation in 1988 (Figure 2).

Briefing, debriefing and mid-trip debriefing activity remained high throughout the fall, winter and spring months corresponding to the opening of the Dutch Harbor brown king crab fishery on September 1 and the closure of the *C. opilio* fishery on June 23 (Figure 3).

Briefing times (time spent with one observer for one briefing) ranged from 5 to 105 minutes. The average was 46 minutes. Debriefing times ranged from 5 to 145 minutes, with the average at 40 minutes. Mid-trip debriefings (observer meets with ADF&G staff for data review when vessel is in town for supplies, repairs etc.) ranged from 10 to 210 minutes and averaged 41 minutes. Average brief, debrief and mid-trip debrief times by month are listed in Table 3 (Figure 4).

### Observer Exams, Certification and Decertification.

During 1991, four observer certification exams were administered by ADF&G in Dutch Harbor. Of the 56 candidates tested during 1991, 54 were certified. In 1988, 85 of 103 candidates were certified, and in 1989, 46 of 52 candidates were certified. In 1990, 28 of 31 candidates successfully passed. Currently 120 observers are certified (Table 4).

Since the Program's inception in 1988, 85 observers have been placed in "inactive status" due to inactivity in 12 continuous months. An additional 19 observers have been decertified for failure to comply with observer program standards (Table 4).

### Observer Data and Evidence Collection

Evidence (physical and/or photographic) was collected on 50 of the 270 observer trips in 1991 (Table 5 and Figure 5).

In the Bering Sea *C. opilio* fishery, evidence was collected on 30 of the 155 trips; approximately 60% of total evidence collected by observers during 1991. In the Bering Sea *C. bairdi* fishery, evidence was collected on 11 of 52 trips accounting for 22% of the evidence collected. In the Bristol Bay red king crab fishery, evidence was collected on 6 of the 37 observer trips accounting for 12% of observer collected evidence for 1991. While evidence was collected on 3 of

10 observer trips conducted on Adak brown king crab, no evidence was collected by observers in the Dutch Harbor brown king crab or St. Matthew blue king crab fisheries during 1991.

Biological data on legal and sublegal catch rates and size composition of the retained and discarded catch (bycatch) was collected by all observers on all trips conducted in 1991. Specific information on crab numbers by size frequency and bycatch samples collected is not available at this time.

### Problems with the Observer Program

Most of the problems within the Observer Program in the first several years of operation have been resolved through tightening of regulations and better cooperation between industry, observer contractors, observers and ADF&G. However, some problems continue to plague the Program.

The greatest problems with industry center around the current structure of the Program and the resulting pressure vessel owners and operators can exert on contractors and observers to circumvent many program regulations. Current regulations require contractors to make observer vessel assignments. While current regulations do not allow vessels to make requests for specific observers, there is nothing in regulation which prohibits a vessel from refusing to accept a specific observer. Consequently, an observer who collects evidence on a vessel, or gains a reputation for refusing to allow illegal activity can be denied assignments or "black listed."

### CONTRACTORS

The current program structure places tremendous pressure on contractors in the interest of maintaining vessel contracts to make observer assignments and other decisions regarding observers according to demands of contracting vessels and companies. This is in violation of current regulations and allows vessels indirect control over observer placement. Under the current contracting and observer deployment system, an observer willing to allow illegal activities onboard a vessel creates fewer problems for the vessel and the contractor.

### OBSERVERS

Once again, program structure places the observer in a compromised position between requirements of ADF&G (which includes documenting illegal activities and collecting evidence) and possible pressure from the vessel to overlook violations in order not to be denied future access to the vessel. These pressures can come from the vessel and the contractor.

Another problem concerning observers is a growing trend toward cross-over employment as crewmembers on commercial crabbing vessels. Current conflict of interest regulations only prohibit certified observers from duty on vessels for which they have a vested interest. Currently some observers, immediately upon completion of an observer trip aboard a vessel, are returning to that same vessel as a paid crewmember. This situation raises serious questions about observer conduct (what he or she might have been willing to overlook in order to gain employment on the vessel) and an individual's ability to be an objective observer immediately after working as a paid crewmember on a commercial vessel. It is also questionable whether observers, exposed to the highly confidential fishing information (catch rates and exact fishing locations etc.), should be allowed free participation as paid crewmembers where such privileged information could be inappropriately used.

#### SUMMARY

Observer program activity increased dramatically in 1991, due mostly to the additional coverage required for the Bering Sea *C. opilio* fishery and an increased number of processing vessels. The increase occurred both in observer activity (number of trips and observer man months at sea) and observer program activity (briefing, debriefing etc).

Observer program activity was limited to that which occurred from the ADF&G office in Dutch Harbor. Four observer certification exams were given and 54 observers were certified during 1991. Eighty-five observers were removed from active observer status for failure to make an observer trip in 12 consecutive months. Since the start, 19 observers have been decertified for failing to adhere to program standards.

Observers collected evidence (physical and photographic) on 18.5% of all observer trips during 1991. The Bering Sea *C. opilio* fishery accounted for 60% of all evidence collected.

Problems with the Observer Program continue to center around the third party contractor system of obtaining and deploying observers. Many of the problems dealing with observer placement could be minimized if observer deployment were done by ADF&G instead of contractors who have a vested interest in staying on good terms with contracting vessels.

Table 1. Summary of vessel trips, observer trips, observer man months at sea, number of active contractors and numbers of briefings/debriefings from 1988 to 1991.

Year	--Trips--		Observer	Active	Man	Man Months	Contractors	--Total--	
	C/P <sup>a</sup>	F/P <sup>b</sup>	Trips	Observers	Months	/Observer		Brief	Debrief
1988	37	11	65	N/A	119.1	1.8	8	44	43
1989	70	27	104	N/A	125.3	1.2	6	128	124
1990	71	24	117	N/A	120.8	1.0	7	150	127
1991	191	74	270	106	325.3	1.7	6	267	337 <sup>c</sup>

<sup>a</sup>Catcher Processor

<sup>b</sup>Floating Processor

<sup>c</sup>Includes mid-trip debriefings.

Table 2. Summary of vessel trips, observer trips and observer man months at sea by fishery for the year of 1991.

Fishery	--Trips--		Observer	% of Total	Man	% of Total
	C/P <sup>a</sup>	F/P <sup>b</sup>	Trips	Observer	Months	Observer
				Trips		Man Months
Bering Sea <i>opilio</i>	108	47	155	57.4	220.5	68.0
Dutch Harbor Brown King	4	0	5	1.9	7.0	2.1
St. Matthew Blue King	9	2	11	4.1	4.8	1.5
Bristol Bay Red King	25	12	37	13.7	20.0	6.0
Adak Brown King	8	0	10	3.7	7.8	2.4
Bering Sea <i>bairdi</i>	37	13	52	19.2	65.2	20.0
Totals	191	74	270	100.0	325.3	100.0

<sup>a</sup>Catcher Processor  
<sup>b</sup>Floating Processor

Table 3. Number and average time in minutes of briefing, debriefing and mid-trip debriefing sessions by month from January 1991 through January 1992.

Date	Briefing		Debriefing		Mid-trip		Range		
	No.	Ave. Time	No.	Ave. Time	No.	Ave. Time	Brief	Debrief	Mid-trip
Jan. 91	45	41	29	45	0	0		N/A	
Feb. 91	8	34	7	34	15	72	20- 60	15- 60	15-210
Mar. 91	32	35	24	36	32	30	15- 95	5-135	15- 60
Apr. 91	29	33	26	36	9	29	15- 55	10-120	15- 60
May 91	26	30	29	30	6	26	10- 60	15-145	15- 30
June 91	8	25	40	33	3	32	5- 65	15- 65	30- 35
July 91	5	27	8	44	1	15	10- 35	20- 90	60- 80
Aug. 91	3	65	4	89	0	0	45- 90	55-120	0
Sep. 91	11	37	10	34	1	30	20- 60	20- 60	30- 30
Oct. 91	38	62	3	57	2	70	15- 95	30- 80	60- 80
Nov. 91	45	47	45	43	4	23	15- 85	5- 90	15- 45
Dec. 91	14	56	23	54	16	50	30- 90	5-130	10-100
Jan. 92	45	65	13	46	18	43	20-140	25- 80	15- 60
Totals <sup>a</sup>	309		261		107		5-105	5-145	10-210 <sup>b</sup>
Average <sup>c</sup>		46		40		41			

<sup>a</sup>Overall total sessions: 677.

<sup>b</sup>Overall range of minutes per session: 42.

<sup>c</sup>Overall average of minutes per session.

Table 4. Number of mandatory Shellfish Observer Program candidates by exam including numbers passed, numbers currently certified, inactive and decertified.

---Exam---				Numbers Currently		
No.	Date	Number of Candidates	Number Passed	Certified	/Inactive <sup>a</sup>	/Decertified <sup>b</sup>
1	09/10/88	32	30	6	20	4
2	09/14/88	57	44	8	29	7
3	09/23/88	14	11	2	8	1
4	08/24/89	52	46	13	28	5
5	10/24/90	20	18	18	0	0
6	10/26/90	3	2	2	0	0
7	12/18/90	8	8	7	0	1
8	01/24/91	15	15	15	0	0
9	04/16/91	4	2	2	0	0
10	05/05/91	11	11	11	0	0
11	10/22/91	26	26	25	0	1
12	01/07/92	11	11	11	0	0
Totals		253	224	120	85	19

<sup>a</sup>Decertified due to 12 month observer employment inactivity.

<sup>b</sup>Decertified due for nonconformity to program standards.

Table 5. Number of vessels, observer trips and observer trips where evidence was collected, by fishery from January 1 to December 31, 1991.

Fishery	Vessels		Observer # of Trips	Evidence Collected	Percent <sup>c</sup> of Total
	F/P <sup>a</sup>	C/P <sup>b</sup>			
Bering Sea <i>opilio</i>	17	28	155	30	60.0
Dutch Harbor Brown King	0	4	5	0	0
St. Matthew Blue King	2	9	11	0	0
Bristol Bay Red king	12	25	37	6	12.0
Adak Brown King	0	5	10	3	6.0
Bering Sea <i>bairdi</i>	12	28	52	11	22.0
Totals	43	94	270	50	100.0

<sup>a</sup>Floating processor

<sup>b</sup>Catcher processor

<sup>c</sup>Percentage of total evidence collected for the year of 1991.

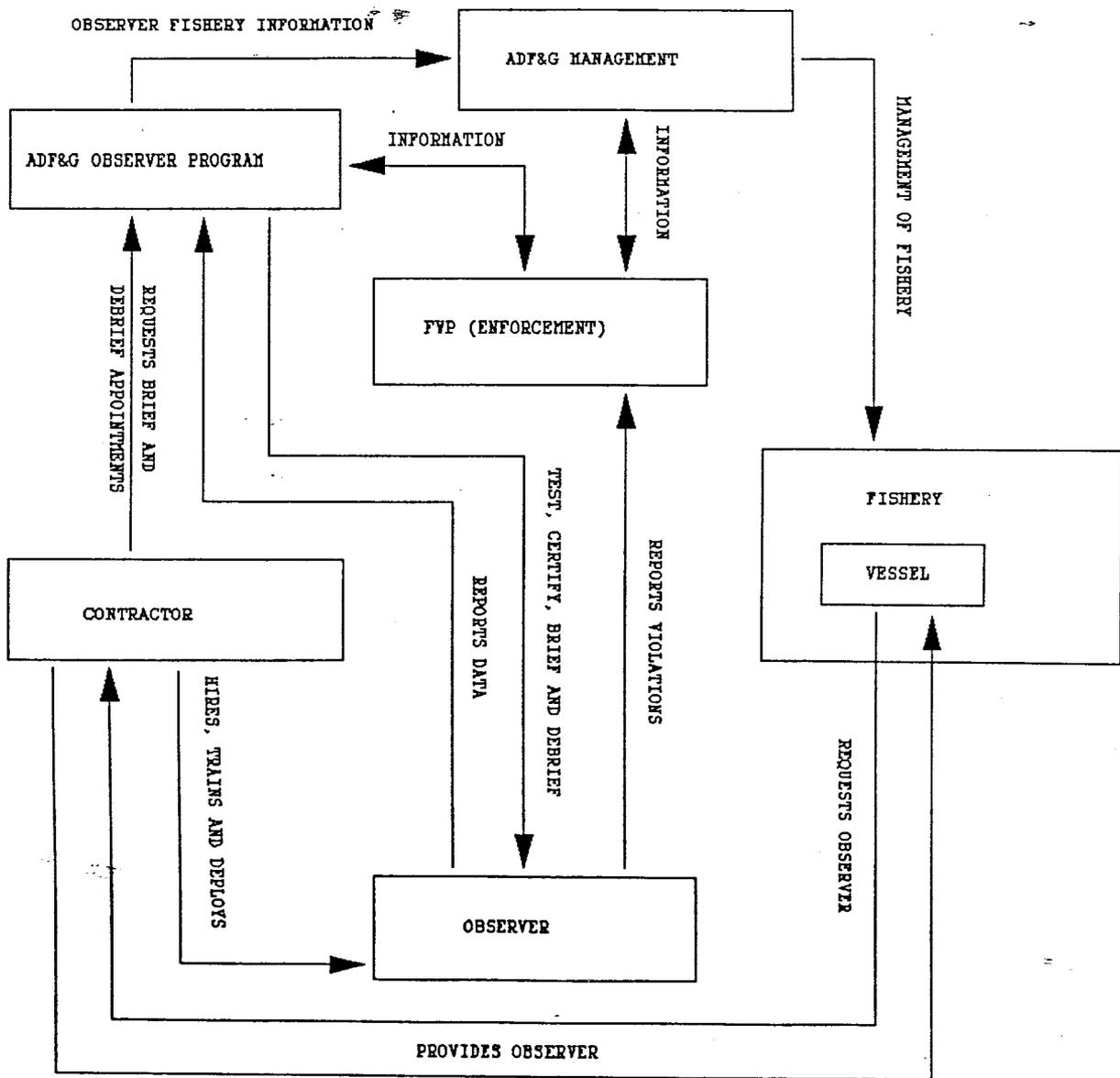


Figure 1. State of Alaska Mandatory Shellfish Observer Program organization flow diagram.

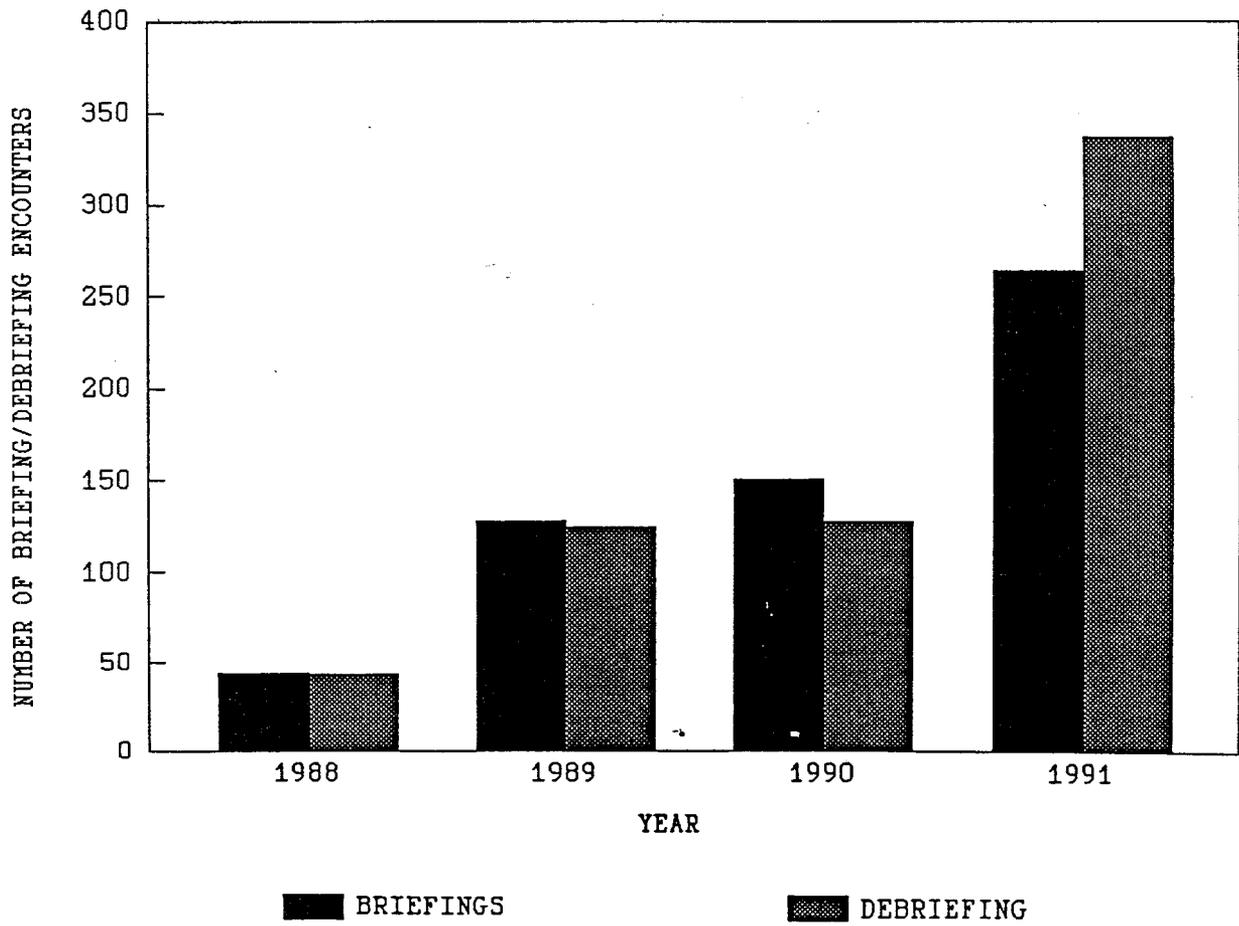


Figure 2. Number of briefing and debriefing sessions by year from 1988 to 1991.

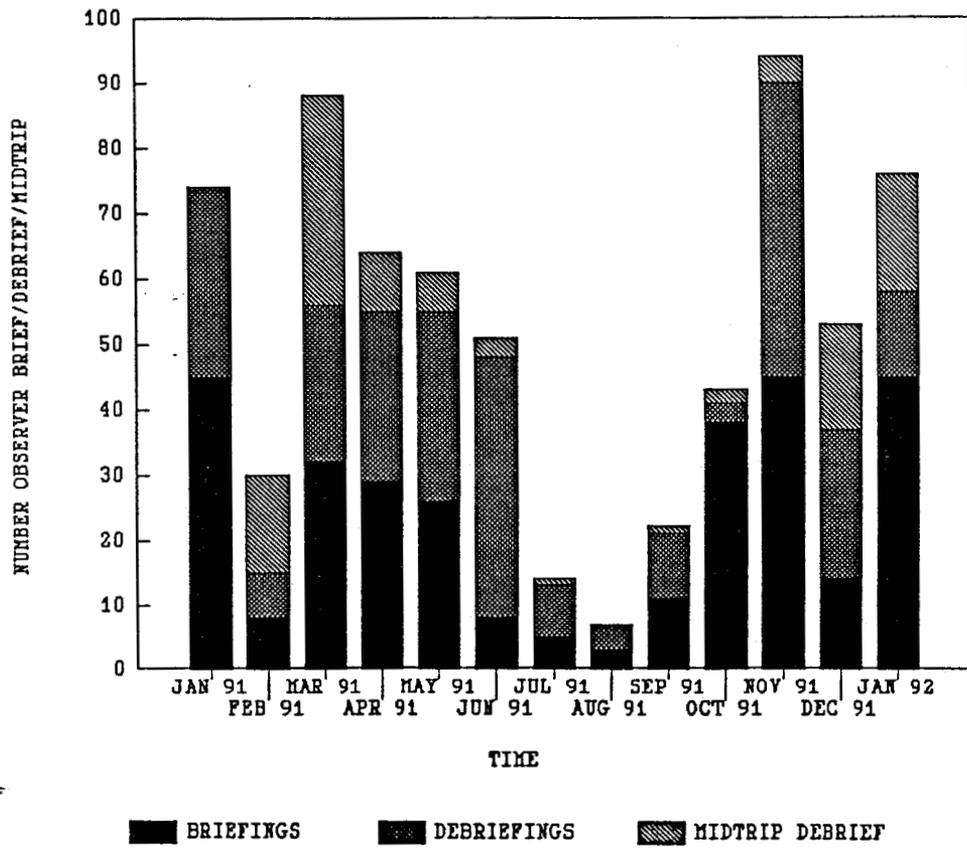


Figure 3. Number of observer sessions by month and session type (brief, debrief, midtrip debrief), January 1, 1991 to January 15, 1992.

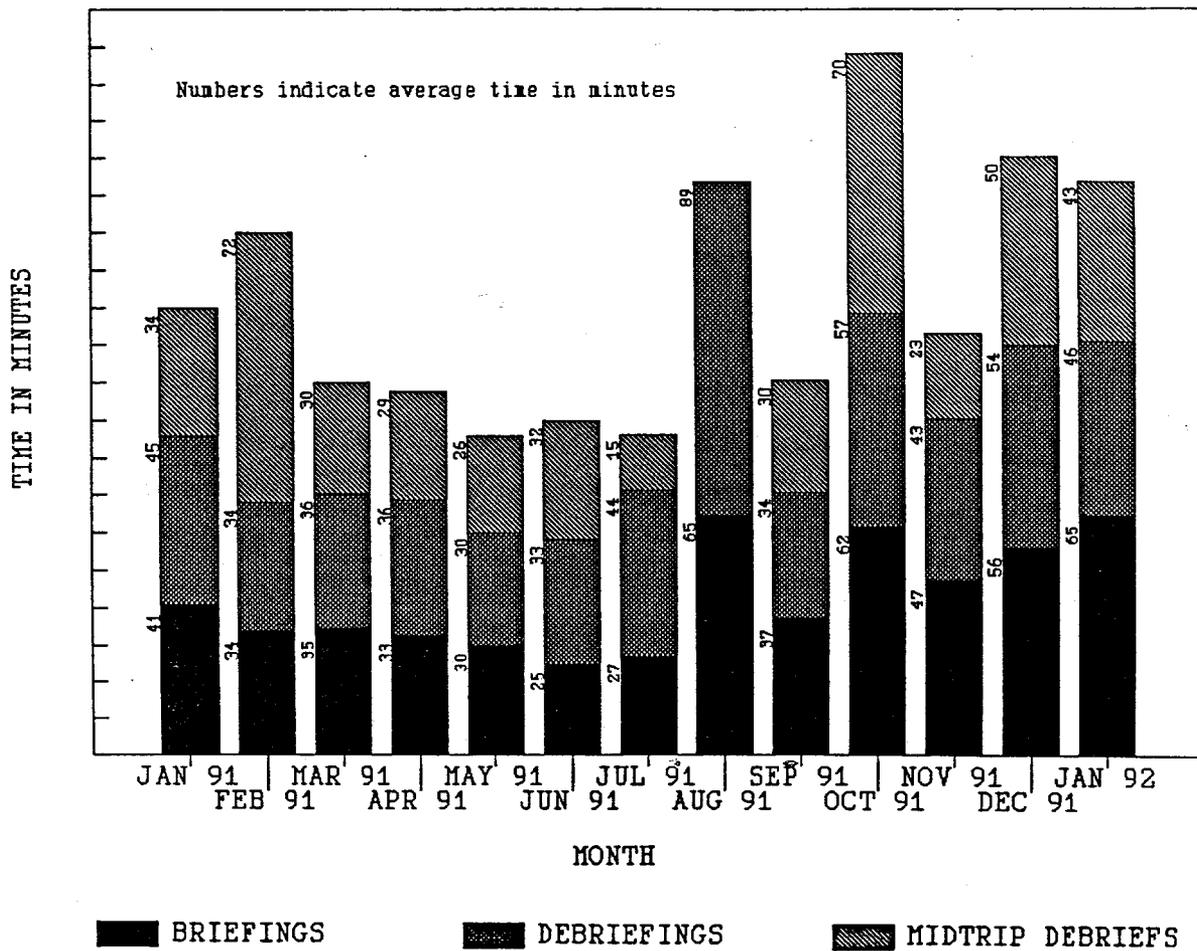


Figure 4. Average time in minutes spent with observers by month and session type (brief, debrief or midtrip debrief) conducted by ADF&G Observer Staff, January 1991 through January 1992.

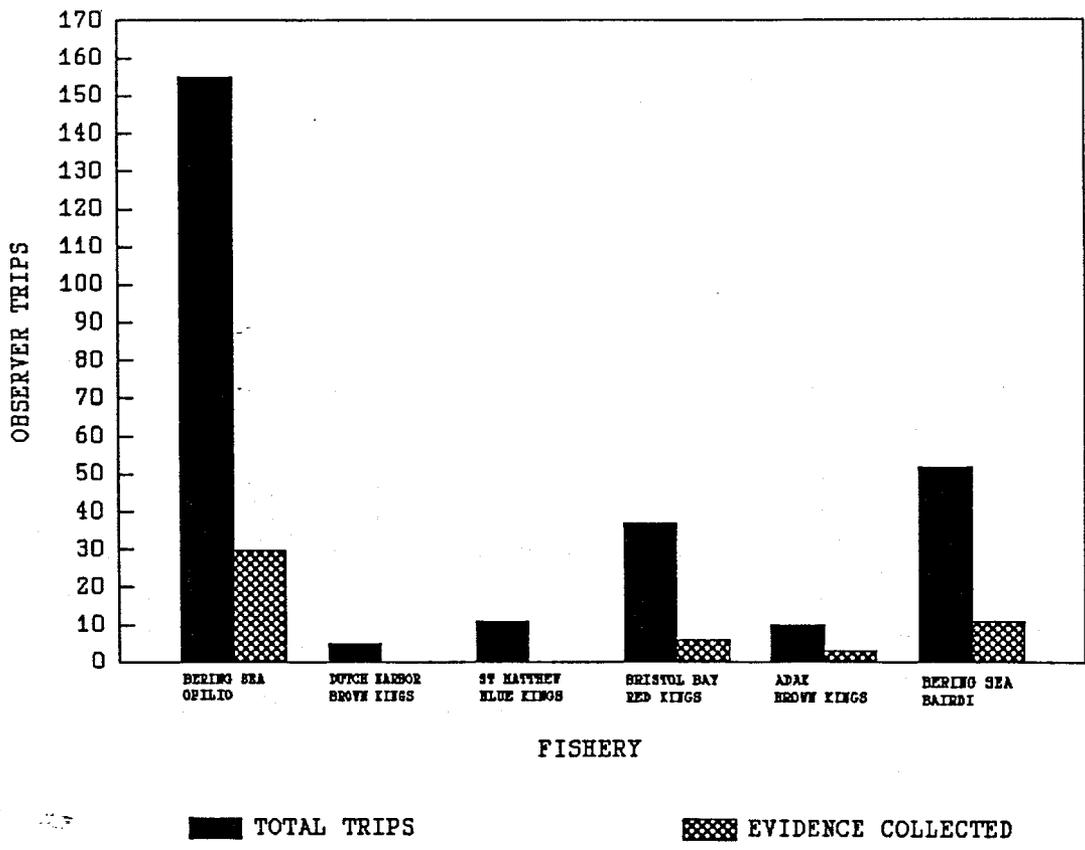


Figure 5. Number of observer trips and observer trips where evidence was collected, by fishery from January 1, 1991 to January 15, 1992. Bering Sea Bairdi data does not include data from the 1990 season that occurred in 1991.

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