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WESTWARD REGION SHELLFISH REPORT TO THE ALASKA BOARD OF FISHERIES

BY
WESTWARD REGION SHELLFISH STAFF
COMPILED BY WILLIAM E. NIPPES

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COMMERCIAL FISHERIES DIVISION
WESTWARD REGION (REGION IV)
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OVERVIEW OF THE WESTWARD REGION

Introduction

The Regional Office is located in Kodiak with a field office in Dutch Harbor. This report documents shellfish activities in the Region which are in progress 12 months of the year. 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 staff (fulltime) consists of five management biologists, 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.

The Westward Region's (Region IV) boundaries extend south from the latitude of Cape Douglas on the Alaska Peninsula, encompassing Kodiak Island; then 1,200 miles to Attu Island in the Aleutians, then northeast to Norton Sound including the Bering Sea (Figure 1). The Area encompasses 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 with minor fisheries occurring for scallops, shrimp, clams, octopus and sea urchins.

In 1990 approximately 500 catcher vessels, 29 catcher processors, 21 shore-based processors and 16 floating processors were actively engaged in harvesting and/or processing shellfish resources (Table 1). The 1990 king crab catch was 34.7 million pounds valued at over 145.0 million dollars; the 1990 Tanner crab catch was 189.9 million pounds valued at $1.91 per pound for *C. bairdi* and $0.64 per pound for *C. opilio* totaling 157.3 million dollars; the 1990 Dungeness catch was 3.0 million pounds valued at $4.5 million. The value of the three major shellfish fisheries was 307.7 million dollars. This exceeds the record value obtained in 1980 (Table 2).

Shrimp

There was no regional trawl shrimp harvest in 1990 (Table 3). Poor production in recent years discouraged fishermen and processors from harvesting in 1990. Their decision was due in part to more favorable conditions on the Washington and Oregon coast. A small harvest of pot shrimp occurred, but the low effort level was confidential.

A 50-day shrimp survey in 1989 of historically important grounds showed little or no stock improvement. The Westward staff anticipates the next survey of shrimp stocks in 1991.

King Crab

The Westward Region 1990 king crab harvest was approximately 34.7 million pounds. The red king crab seasons were closed once again in Kodiak (K), South Peninsula (M) and Dutch Harbor (O). 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 as well as associated reproductive problems.

This year, like last, the only red king crab population showing stability but at a low level was Bristol Bay. A total of 20.4 million pounds were harvested from Bristol Bay which is up from the previous season's 10.3 million pound harvest (Table 4). The Bristol Bay stock is expected to change little in 1991 while stocks in the Kodiak, South Peninsula, Dutch Harbor, Pribilof, and St. Matthew Island areas are expected to at best maintain their current levels. The harvest projection for the Bristol Bay red king crab fishery will not be announced until after the summer trawl survey.

Tanner Crab

The 1990 Tanner crab season produced 189.7 million pounds which is the peak production for Tanner crab in the region (Table 5). The catch in 1990 was comprised of approximately 88% *C. opilio* crab.

Stocks of *C. opilio* crab look very healthy with harvest expectations in excess of 100 million pounds 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.

Dungeness Crab

The 1990 Dungeness crab harvest in the Westward Region was 3.0 million pounds (Table 6). This was a slight decrease in catch from last season when 3.1 million pounds were harvested. The Kodiak District produced the majority of the harvest in 1990 and is expected to do so again during the 1991 season.

Mandatory Observers

On September 25, 1988 the mandatory observer requirement went into effect for vessels processing king and *C. bairdi* crab. The regulation adopted at the Board of Fisheries spring 1988 meeting required the industry to fund these observers. They are provided by a third party contractor and certified by the Department of Fish and Game.

The Program has been active for over two years with observers participating in nine annual fisheries. Preliminary data indicates that the observers' presence onboard catcher processors has served as a deterrent for taking undersized crab.

Details of this program are discussed later in this report.

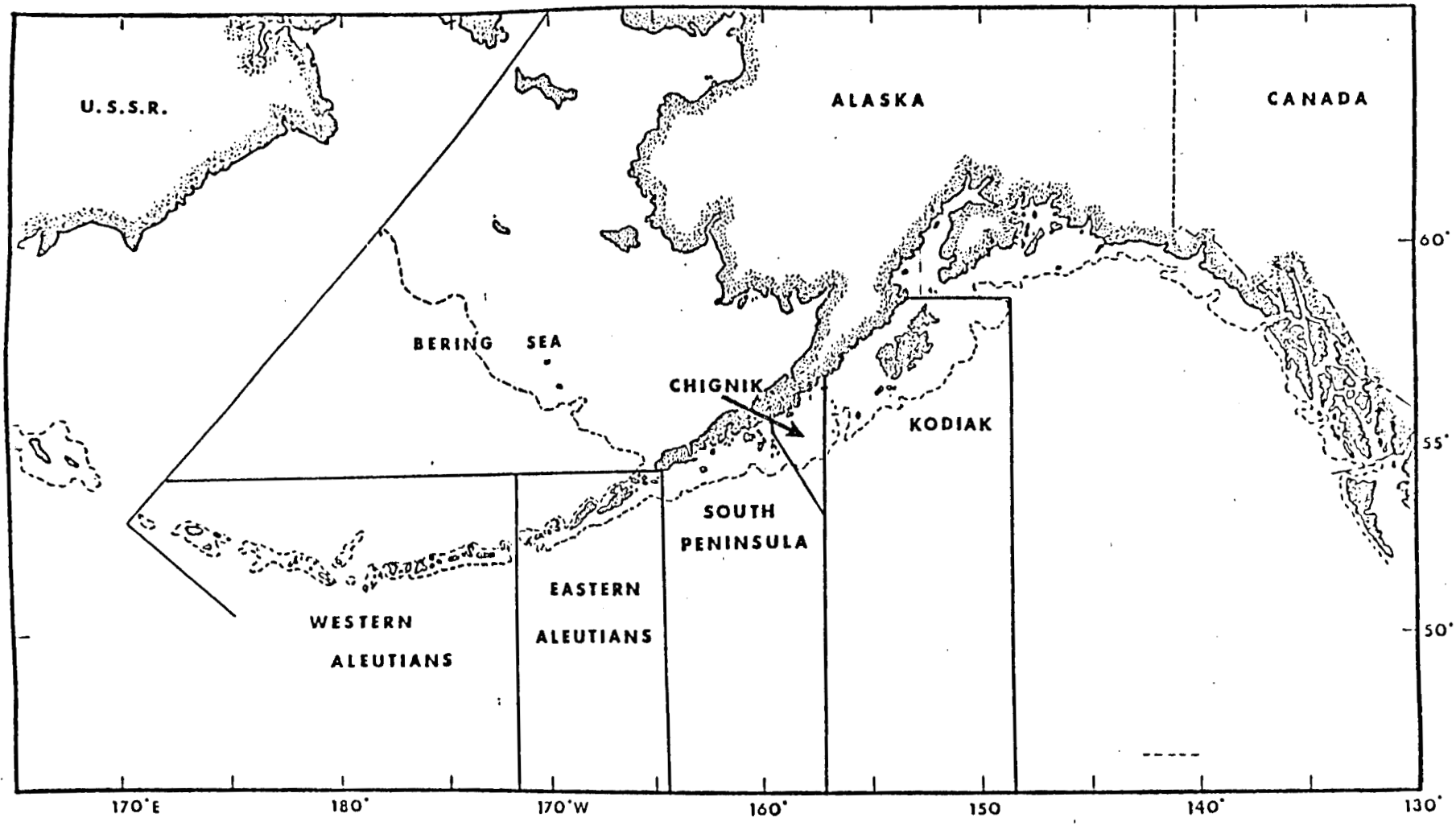

FIGURE 1. TANNER CRAB DISTRICTS— WESTWARD REGION

Table 1. Shellfish processors operating in the Westward Region during the 1990/91 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	TMD	Mel Morris
	East Point Seafoods	KTMDS	Jim Major
	Emerald Island Seafoods	MTD	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	Paul Pagette
King Cove	Peter Pan Seafoods	KT	
Akutan	Deep Sea	KTM	
	Trident	KTM	Clyde Lovett
Dutch Harbor	Alyeska Seafoods	KTMD	Frank Kelty
	Royal Aleutian Processors	KTMD	Pat Ziegler
	Arctic Star	KTM	Jay Hendrickson
	East Point Seafoods	KTD	Chuck Corbit
	Sans Souci	KTD	Nikata
	Unisea Seafoods	KTDM	Steve Stubbe
St. Paul	Pribilof Island Processors	T	
FLOATER PROCESSORS			
	Alaskan I	KT	
	All Alaskan	KT	
	Alaska Packer	KT	
	Aleutian Falcon	KT	
	Akutan	KT	
	Blue Wave	KT	
	Clipperton	KTM	
	Coastal Star	KT	
	Galaxy	KT	
	Mr. B	KT	
	Northland	KT	
	Omni Sea	KT	
	Tempest	KTM	
	Yard Arm Knot	KT	
	Ocean Pride	KT	
	Sea Alaska	KT	
CATCHER PROCESSORS			
	Alaskan Enterprise	KT	
	American Empire	KT	
	Arctic Discovery	KT	

Table 1. Shellfish processors operating in the Westward Region during the 1990/91 fishing seasons. (continued)

Location	Company	*Products	Superintendent
CATCHER PROCESSORS continued			
	Artic Orion	KT	
	Arctic Rose	M	
	Baranof	KT	
	Bountiful	KT	
	Courageous	KTM	
	Deep Sea Harvester	K	
	Diomedes	KT	
	Glacier Enterprise	KT	
	Gulf Wind	KT	
	Jacquelyn R	K	
	Justice	KT	
	Northern Enterprise	K	
	Olympic	K	
	Pacific Wind	KT	
	Patricia Lee	KTM	
	Pavlof	KTM	
	Pengwin	KTM	
	Perserverence	KT	
	Pro Surveyor	K	
	Rondys	KT	
	Royal Enterprise	KT	
	Seawind	K	
	Sjowind	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 1950 to 1990.

	------SHRIMP------			-----KING CRAB-----			---TANNER CRAB[1]--			DUNGENESS CRAB			---TOTAL---	
Year	#[2]	Price[3]	Value[4]	#[2]	Price	Value[4]	#[2]	Price	Value[4]	#[2]	Price	Value[4]	#[2]	Value[4]
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

continued....

Table 2. Westward Region king crab, shrimp, Tanner crab and Dungeness crab pounds, price per pound and value to the fishermen 1950 to 1990 (continued).

	------SHRIMP------			-----KING CRAB-----			---TANNER CRAB[1]--			DUNGENESS CRAB			---TOTAL---	
Year	#[2]	Price[3]	Value[4]	#[2]	Price	Value[4]	#[2]	Price	Value[4]	#[2]	Price	Value[4]	#[2]	Value[4]
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					
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	103.4					

[1] *C. bairdi* and *C. opilio*
[2] Millions of pounds
[3] Dollars
[4] 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[1]	0[1]	341,551	11,225,610
1983	2,779,030	0[1]	0[1]	5,600	2,784,630
1984	3,023,438	0[1]	0[1]	0[1]	3,023,438
1985	1,159,912	0[1]	0[1]	0[1]	1,159,912
1986	453,468	0[1]	0[1]	0[1]	453,468
1987	0[1]	0[1]	0[1]	0[1]	0[1]
1988		C o n f i d e n t i a l			
1989	0[1]	0[1]	0[1]	0[1]	0[1]
1990	0[1]	0[1]	0[1]	0[1]	0[1]
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).

[1] 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	NF	NF	NF	NF	2,184.0	0	2,184.0
1951	200.0	599.0	NF	NF	NF	NF	799.0	0	799.0
1952	400.0	298.0	NF	NF	NF	NF	698.0	0	698.0
1953	900.0	380.0	NF	NF	NF	2,000.0	3,280.0	11,356.0	14,636.0
1954	4,000.0	317.0	NF	NF	NF	2,329.0	6,646.0	8,086.0	14,732.0
1955	2,000.0	1,641.0	NF	NF	NF	1,878.0	5,519.0	8,693.0	14,212.0
1956	4,800.0	4,221.0	NF	NF	NF	1,896.0	10,917.0	8,308.0	19,225.0
1957	5,000.0	6,687.0	NF	MF	MF	588.0	12,275.0	8,548.0	20,823.0
1958	5,200.0	7,246.0	NF	NF	NF	7.0	12,453.0	8,136.0	20,589.0
1959	10,200.0	6,167.0	NF	NF	NF	NF	16,367.0	11,602.0	27,969.0
Subtotal	32,760.0	29,680.0	-	-	-	8,698.0	71,138.0	64,729.0	135,867.0
Average	3,276.0	2,968.0	-	-	-	1,449.6	7,113.0	9,247.0	13,586.7
1960-61	21,064.0	6,700.0	NF	2,093.7	NF	598.0	30,456.5	24,611.0	55,067.5
1961-62	28,962.9	3,900.0	533.0	4,776.0	NF	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	NF	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	NF	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	NF	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	NF	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	NF	997.0	136,126.9	43,998.0	180,124.9
1967-68	43,448.5	17,252.0	22,709.0	16,948.9	NF	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	NF	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	NF	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	-	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	-	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	NF	96,747.4
1976-77	17,966.8	958.8	10,198.4	2.3	8,356.1	63,919.7	101,399.8	NF	101,399.8
1977-78	13,503.6	726.3	3,684.4	953.0	8,201.8[1]	69,967.8	94,567.9	NF	94,567.9
1978-79	12,021.8	3,093.8	6,824.1	807.2	10,387.7[1]	87,618.3	119,933.7	NF	119,933.7
1979-80	14,608.9	4,453.5	15,010.9	490.7	9,230.3[1]	107,828.0	151,647.4	NF	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	NF	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	NF	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	NF	38,497.8
1983-84	111.4[2]	CLOSED	1,810.0	10,109.6	11,701.9	CLOSED	25,463.1	NF	25,463.1
1984-85	22.2[2]	CLOSED	1,521.1	5,508.7	4,701.3	4,182.4	17,115.2	NF	17,115.2
1985-86	63.6[2]	CLOSED	1,968.2	11,931.0	2,959.8	4,174.9	20,405.4	NF	20,405.4
1986-87	146.5[2]	CLOSED	1,869.2	13,510.2	1,262.1	11,393.9	17,308.5	NF	17,308.5
1987-88	67.2[2]	CLOSED	1,383.2	3,190.0[3]	2,200.9	12,289.1	19,130.4	NF	19,130.4
1988-89	2.8[2]	CLOSED	1,545.1	9,571.1[4]	1,488.3	7,387.8	19,955.1	NF	19,955.1
1989-90	*	CLOSED	1,852.2	9,251.9[4]	1,428.2	10,264.8	22,657.8	NF	22,657.8
1990-91	*	CLOSED	1,718.8	9,606.3	1,725.3	20,362.3	33,412.7	NF	33,412.7
Subtotal	53,829.6	9,855.8	39,568.7	86,708.3	66,231.4	236,596.0	488,906.2	NF	488,906.2
Average	5,981.1	3,285.3	3,597.2	7,882.6	6,021.0	21,508.7	44,446.0		44,446.0

*Confidential catch
NF=No Fishing

[1]Fishing year - July 1 through June 30

[2]Brown crab

[3]Through January 31

[4]Calendar year

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

Year[1]	Kodiak	Chignik[2]	South Peninsula	Eastern Aleutians	Western Aleutians	Bering Sea		Total U. S. Harvest	Total Foreign Harvest
						C. opilio	C. bairdi		
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	NF
1982	13,756,159	3,240,526	4,589,042	739,694	838,627	29,351,474	11,008,779	63,542,301	NF
1983	18,927,061	3,497,370	2,863,798	547,830	448,399	26,128,410	5,273,881	57,686,749	NF
1984	14,789,903	659,043	1,789,883	239,395	191,954	26,813,074	1,208,223	45,691,225	NF
1985	12,024,553	385,838	2,561,868	165,529	66,549	65,998,875	3,151,498	82,900,497	NF
1986	8,974,520	184,907	3,763,761	166,939	72,441	97,984,539	NF	109,674,455	NF
1987	4,833,473	195,060	2,400,784	160,292	42,761	101,903,388	NF	109,535,758	NF
1988	3,888,906	183,111	3,328,809	309,918	169,289	134,060,185	2,210,394	144,150,612	NF
1989	5,208,999	323,120	1,055,082	328,696	53,181	149,455,340	7,012,965	163,437,891	NF
1990	3,456,314	NF	NF	171,785	48,746	161,742,748	24,549,299	189,968,822	NF
TOTAL	333,525,444	44,445,135	92,587,735	10,535,134	3,230,487	916,735,737	318,629,868	1,719,815,153	429,402,630
AVERAGE	13,896,894	2,339,218	4,025,553	585,285	190,029	70,518,134	15,172,851	71,658,965	26,837,664

SOURCE: Westward Region Shellfish Management Office 3/1/88

NF = No Fishing

[1]Calendar year

[2]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	NF	NF	1,904,567
1963	2,487,512	NF	NF	2,487,512
1964	4,162,182	NF	NF	4,162,182
1965	3,311,571	NF	NF	3,311,571
1966	1,148,600	NF	NF	1,148,600
1967	6,663,668	NF	NF	6,663,668
1968	6,829,061	1,259,000	NF	8,088,061
1969	5,834,628	1,056,000	NF	6,890,628
1970	5,741,438	13,000	NF	5,754,438
1971	1,445,864	11,000	NF	1,456,864
1972	2,059,536	65,000	NF	2,124,536
1973	2,000,526	194,500	NF	2,195,026
1974	750,057	NF	60,517	810,574
1975	639,813	NF	4,408	644,221
1976	87,110	NF	NF	87,110
1977	113,026	NF	NF	113,026
1978	1,362,306	NF	NF	1,380,340
1979	1,313,650	102,320	1,101	1,417,071
1980	2,011,736	NF	NF	2,100,736
1981	5,566,463	42,296	NF	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	[1]	11,124	3,089,061[2]
1990	2,879,955	65,806	17,365	2,963,126
TOTAL	84,689,573	6,440,350[2]	308,168	93,782,813[2]
AVERAGE (years fished)	2,920,330	402,522[2]	25,681	3,233,890[2]

NF = No Fishing

[1] Catch confidential

[2] Except 1989 Alaska Peninsula confidential catch

KODIAK AREA

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

MARCH 1991

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 1990 seasonal shellfisheries 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 1990. A small harvest of octopus, sea urchins, brown king crab and pot shrimp 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, 14.9 million pounds of shellfish were landed during 1990, nearly the same as the 15 million pounds the previous year. The 1990 ex-vessel value of shellfish to the Port of Kodiak equaled 27.6 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 10 million dollars.

A discussion of each shellfishery appears in individual sections of this report. Vessels fishing for shellfish in the Kodiak area during 1990 ranged in size from less than 20 feet to over 120 feet in keel length (Table 2). During 1990 a total of 5 emergency orders were issued for king crab and Tanner crab fisheries in the Kodiak Management Area (Table 3). Over 55,000 pots were utilized in the last year for Tanner and Dungeness crab fishing (Table 4.)

Table 1. 1990 landings and values of fisheries to the Port of Kodiak.

Species	Pounds[1]	Ex-Vessel Value[2]
Tanner		
C. bairdi	4,793,809	10,146,264
C. opilio	5,308,553	4,883,869
Dungeness	2,879,955	4,607,928
Red King Crab	901,393	4,957,662
Scallops	852,054	2,896,984
Sea Urchins	83,484	70,127
Octopus	67,128	79,882
Miscellaneous[3]	7,729	22,980
Groundfish	213,856,748	25,228,000
Halibut	11,573,000	21,063,000
Salmon[4]	29,720,912	27,582,929
Herring[4]		
Sac Roe/Food/Bait	5,318,000	2,100,000
Total	275,362,765	103,639,625

[1] Represents pounds of product landed at the Port of Kodiak and may not have been harvested in the Kodiak Management Area.

[2] Dollar value to fishermen in season and does not reflect postseason settlements.

[3] Includes brown king crab and pot shrimp.

[4] 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 1990 Tanner and Dungeness crab fishing seasons.

Vessel Keel Length	1989/90 Tanner Crab	1990 Dungeness Crab
<20	0	1
20-29.	7	10
30-39.	79	21
40-49.	79	11
50-59.	33	6
60-69.	17	12
70-79.	9	2
80-89.	26	-
90-99.	7	-
100-109.	1	-
110-119.	-	-
120-129.	1	-
130-139.	-	-
140-149.	-	-
≥150	-	-
VESSELS	233	62

Table 3. Shellfish emergency orders issued during 1990 for the Kodiak Management District.

Emergency Order	Effective Date	Explanation
Tanner Crab		
4-S-01-90	January 27, 1990	Closed the Eastside Section at 12:00 noon on January 27, 1990. Also closed the Northeast and Southeast Sections at 12:00 noon on January 31, 1990.
4-S-02-90	February 2, 1990	Closed the Southwest Section at 12:00 noon on February 2, 1990.
4-S-04-90	February 11, 1990	Closed the Westside Section 12:00 noon on February 11, 1990.
4-S-05-90	February 15, 1990 February 17, 1990 February 21, 1990	Reopens the Westside Section for a 48 hour period from February 15 through February 17, 1990. Closed the Kodiak District 12:00 noon on February 21, 1990.
King Crab		
4-S-12-90	September 25, 1990	Closed Kodiak king crab registration area on September 25, 1990.

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
Tanner Crab							
Avg. pots per vessel[1]	127	127	119	109	91	100	113
Total vessels	302	214	233	189	176	171	233
Total pots on grounds	38,354	27,178	27,370	20,601	16,016	17,100	26,229
Dungeness	1984	1985	1986	1987	1988	1989	1990
Average pots per vessel[1]	491	437	417	383	424	437	478
Total vessels	106	125	81	45	50	47	62
Total pots on grounds[1]	52,067	58,375	33,785	17,220	21,200	20,593	29,625

[1]Information from interviews at tank inspections.

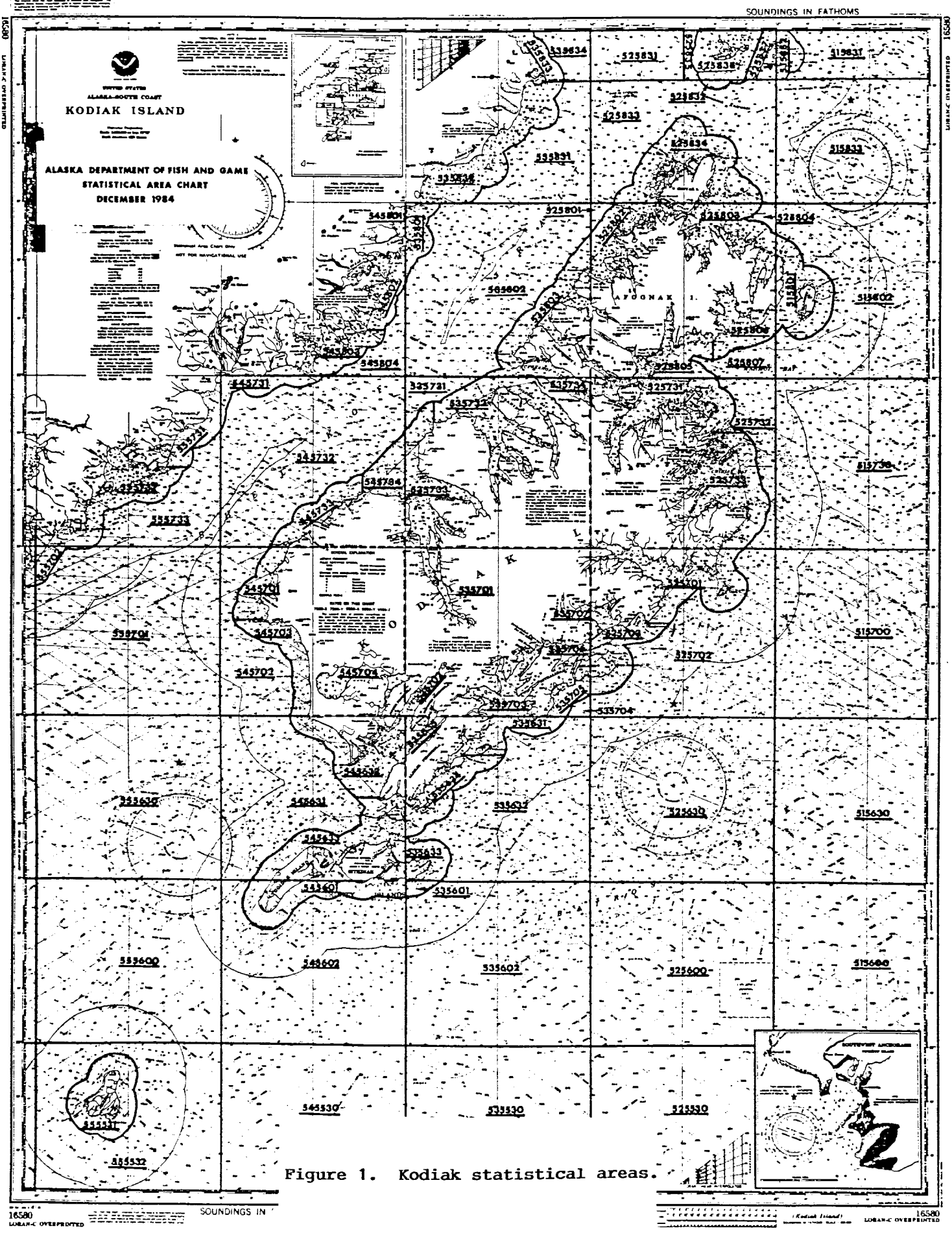

Figure 1. Kodiak statistical areas.

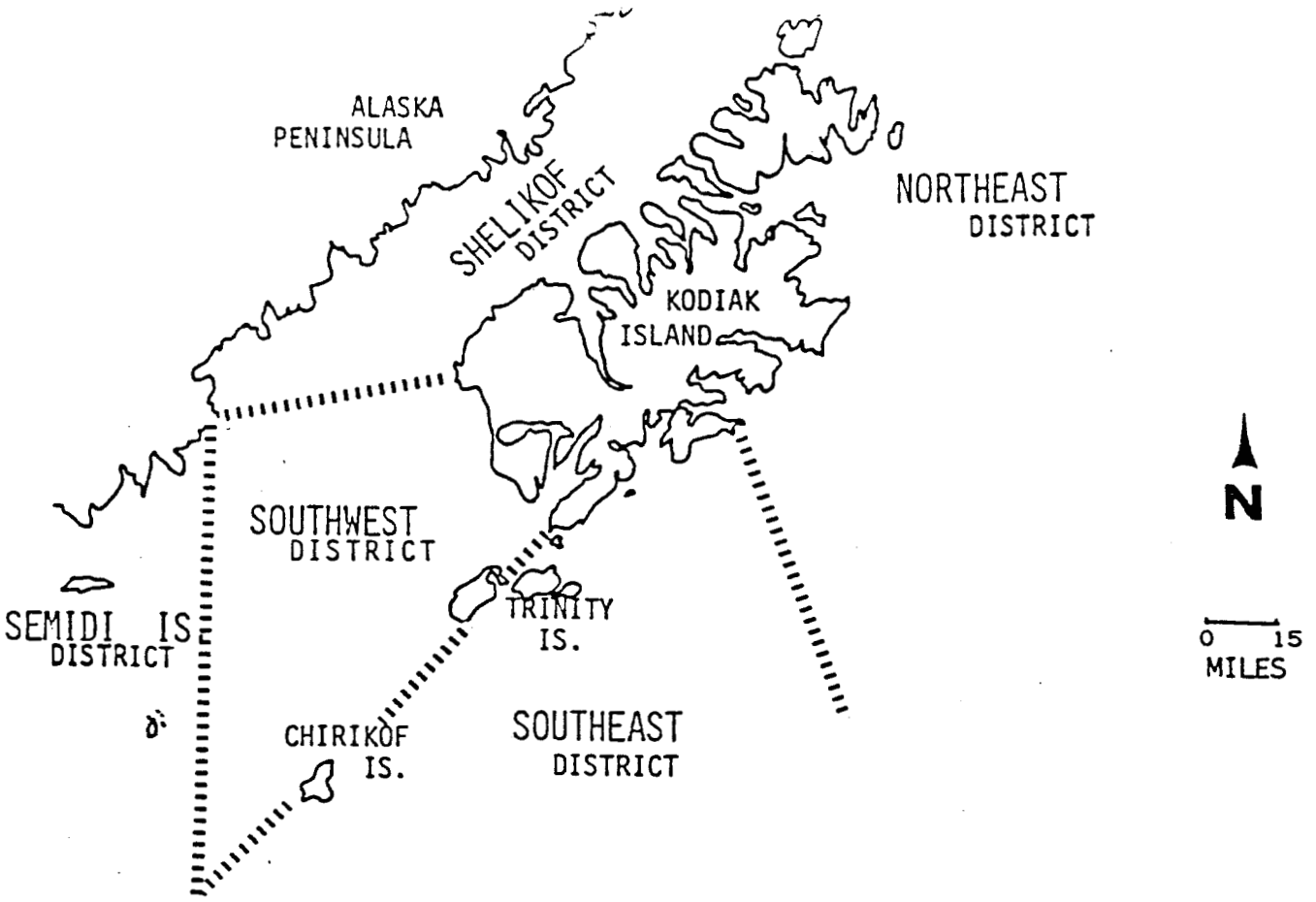

Figure 2. Kodiak (Area K) king crab districts.

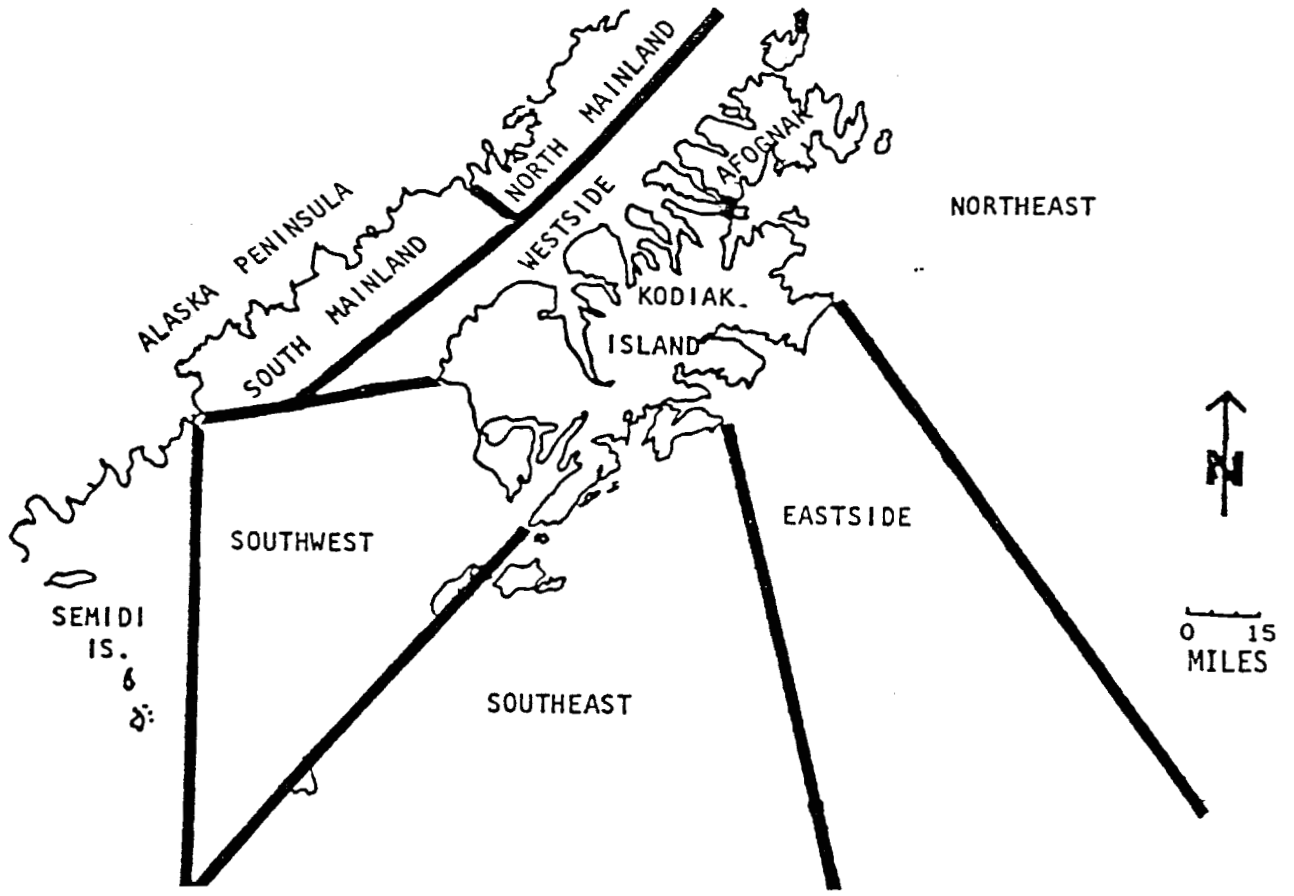

Figure 3. Kodiak District Dungeness crab fishing sections.

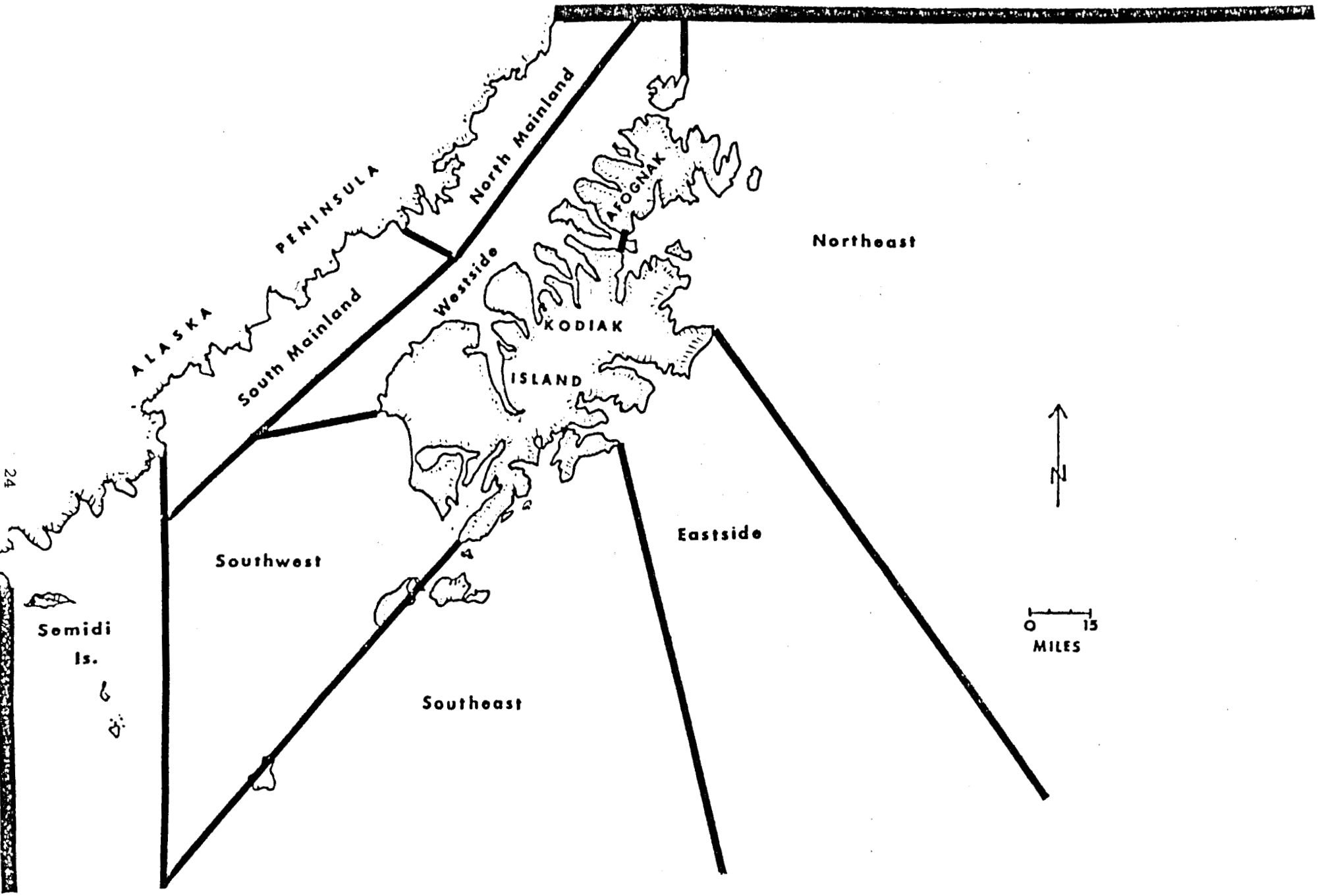

Figure 4. Kodiak District Tanner crab fishing sections.

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 fish and Game 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 Fish and Game 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 $5\frac{1}{2}$ 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 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 develope 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 ($\leq$ 114mm CW) did not enter pots in predictable numbers from survey to survey; thus, little can 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 its 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.

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 speculates that fish predation on small crab has been a major factor limiting Tanner crab from recruiting into the commercial fishery.

1989/90 Fishery

The 1989/90 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 23rd.

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 241 vessels were

registered and inspected to fish Kodiak for Tanner crab. Additionally, nine vessels were registered to tender crab from remote locations around Kodiak Island.

The Department estimated 27,000 pots on the fishing grounds at the start of the season. This was a substantial increase in effort compared to 176 vessels fishing 17,000 pots the previous year.

The preseason harvest projection for Kodiak was 4.7 million pounds based on survey results. This compares to 4.4 million pounds projected for the 1989 fishery.

The Eastside Section was assigned a preseason harvest projection of 900,000 pounds. The Department estimated that 71 vessels were fishing 8,300 pots at the start of the fishery. This was a substantial increase over the previous season when 24 vessels utilized 2,300 pots in the Eastside Section. The Department estimated that only 43 legal crabs need be captured in each pot to attain the preseason harvest projection of 900,000 pounds. With only 25,000 pounds landed from the Eastside Section, the Department announced a closure for 12:00 noon on January 27th. A total of 64 vessels landed 1,049,868 pounds of Tanner crab with an overall catch rate of 24 crabs per pot.

At the same time the Eastside closure was announced, the Department projected closures for the Northeast and Southeast Sections.

The Department estimated that approximately 78 vessels were fishing the Northeast Section with a total of 6,300 pots. This compares to the 1989 fishery when 61 vessels utilized 4,800 pots to fish the Northeast Section. The Department estimated that only 65 crabs need be captured in each pot to attain the preseason harvest projection of 1,000,000 pounds. An emergency order was issued to close the Northeast Section at 12:00 noon on January 31, 1990. A total of 86 vessels landed 499,341 pounds of Tanner crab with an overall catch rate of 11 crabs per pot.

The Southeast Section had a preseason harvest projection of 500,000 pounds. Interviews at tank inspection time indicated that approximately 30 vessels would

fish the Southeast Section with a total of 3,400 pots. This effort is a reduction from 1989 when 44 vessels utilized a total of 4,400 pots. The Department estimated that only 59 crab need be captured in each pot to attain the preseason harvest projection. The Southeast Section closed to Tanner crab fishing on January 31, 1990. A total of 49 vessels landed 484,512 pounds with an overall catch per pot of 15 crabs.

The next area to close was the Southwest Section. A preseason harvest projection of 600,000 pounds was assigned to the Southwest Section. The Department estimated that approximately 20 vessels would fish the Southwest Section with approximately 2,000 pots. This compares to last season when 31 vessels fished 5,000 pots.

Catch rates this season started at 10 crabs per pot and declined to less than 5 crabs per pot after six days of fishing. Last year catches started at 58 crabs per pot and declined to 26 crabs per pot after six days of fishing.

Considering the extremely poor catch rates, the Department did not expect the harvest to reach the 600,000 pound projection. On January 30th the Department announced that the Southwest Section would close to Tanner crab fishing at 12:00 noon on February 2, 1990. A total of 25 vessels landed 307,427 pounds of Tanner crab with an overall catch rate of 12 crabs per pot.

The Westside Section was assigned a preseason harvest projection of 600,000 pounds based on survey results. The Department estimated that 14 vessels utilizing 1,350 pots started the season in the Westside Section. Last year 22 vessels fished 1,800 pots to start the season in the Westside Section. Catch rates started at 25 crabs per pot and declined to 13 crabs per pot after five days of fishing. The previous season's catch rates started at 37 crabs per pot and declined to 13 crabs per pot after nine days of fishing. It became apparent that the preseason harvest projection would not be obtained. Fishery performance was so poor that on February 7th, the Department announced the Westside Section would close at 12:00 noon on February 11th.

As the closure date drew near, weather conditions worsened as strong northwest winds and air temperature near zero created severe icing conditions. The

Department announced that baited gear could remain on the fishing grounds, and the Westside Section would reopen for a 48 hour period to retrieve this gear when the weather conditions were more favorable for fishing. On February 15, 1990, the Westside Section reopened for a 48 hour period to allow fishermen to retrieve their fishing gear in more favorable weather. A total of 41 vessels landed 291,058 pounds of Tanner crab with an overall catch per pot of 10 crabs.

The last area to close in the Kodiak District was the North Mainland Section. The preseason harvest projection was 1.1 million pounds for the North Mainland Section. The Department estimated that 27 vessels started fishing in the North Mainland Section utilizing 4,400 pots. The previous season only five vessels started in the North Mainland with a total of 650 pots. Catch rates started at 12 crabs per pot and increased to 17 crabs per pot after seven days of fishing. Last year catch rates started at 23 crabs per pot and declined to 21 crabs per pot after eight days of fishing.

Interviews with North Mainland fishermen indicated the occurrence of prerecruit crab that were pink and recently molted. Fishermen also reported occasionally catching a legal crab that had recently molted. Department samples have indicated that as high as 50% of the newshell crab in the samples delivered had just recently molted. These crab are not softshell crab but are considered "new light" crab. The increase of "new light" crab was also evident in the average weights taken from the North Mainland crab. Average weight for crab, the first two weeks of fishing, was 2.3 pounds and declined to an average of 2.06 pounds the last week of the fishery.

Considering the occurrence of "new light" crab in the catch and the presence of premolt crab in the catch, a closure of the North Mainland Section was warranted. On February 21, 1990, the remainder of the Kodiak Island District closed to Tanner crab fishing. In the North Mainland Section, a total of 39 vessels landed 823,990 pounds with an overall catch rate of 14 crabs per pot.

The Department does not survey the South Mainland and Semidi Island Sections of the Kodiak District. During the 1990 fishery, several vessels fished these sections; however, catch rates were so poor that the vessels quit fishing and

moved elsewhere. The harvest for the South Mainland and the Semidi Islands section remains confidential because too few vessels participated to release catches.

A total of 233 vessels landed 3,456,314 pounds of Tanner crab from the Kodiak District with an overall catch rate of 15 crab per pot.

Stock Status

The Department of Fish and Game conducts summer trawl surveys to access 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 eight (208) successful hauls were made capturing a total of 45,884 Tanner crabs. A total of 25,320 male crabs were caught of which 2,688 were legal crabs and 6,229 were prerecruit-one in size (114mm - 138mm carapace width).

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

The Department made harvest projections based on survey results. These projections were based on a 40% exploitation rate for legal male crab in each section. Harvest projections for the 1990/91 Tanner crab fishery were:

Section	Millions of Pounds
Northeast	.5
Eastside	.8
Southeast	.5
Southwest	Closed
Westside	.5
North Mainland	.3
South Mainland	No Projection
Semidi Islands	No Projection
Total	2.6

Table 1. Commercial catch and effort for the Tanner crab (*Chionoecetes bairdi*), Kodiak Management District, 1967-1990.[1]

Year	Vssls.	Lnds.	Number of crab[1]	Number of Lbs.[1]	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[2]	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[3]	123	1,741	11,857,573	29,820,899	217,523	59	2.5	.20
1974/75[3]	74	471	5,459,940	13,649,966	73,826	83	2.5	.17
1975/76[4]	104	1,168	10,748,958	27,336,909	199,304	64	2.5	.20
1976/77[5]	102	998	7,830,727	20,720,079	164,213	48	2.6	.33
1977/78[6]	148	1,483	12,401,243	33,281,472	251,621	49	2.6	.43
1978/79[7]	218	1,225	10,702,829	29,173,807	275,455	38	2.7	.55
1979/80[7]	211	1,385	6,813,128	18,623,875	282,946	24	2.7	.55
1980/81[8]	188	771	4,398,631	11,748,629	174,351	25	2.7	.65
1981/82[9]	221	950	5,413,467	13,756,159	230,403	24	2.5	1.65
1982/83[9]	348	1,439	7,744,812	18,927,061	377,562	21	2.4	1.25
1983/84[9]	303	1,229	5,891,968	14,478,066	303,764	10	2.5	1.20
1984/85[10]	214	710	4,567,037	12,024,553	176,830	26	2.6	1.50
1985/86[10]	233	601	3,457,930	8,996,151	160,808	21	2.6	1.90
1986/87[10]	189	503	1,830,365	4,833,473	110,963	16	2.6	2.62
1987/88[10]	176	557	1,614,874	3,888,906	101,488	16	2.4	2.40
1988/89[11]	171	567	2,106,320	5,208,999	86,556	24	2.5	3.05
1989/90[11]	233	548	1,435,477	3,456,314	97,333	15	2.4	2.40
TOTAL	-	-	127,686,856	334,850,902	3,750,990	-	-	-
AVERAGE	166	895	6,080,326	13,952,121	170,500	35	2.5	-

[1] Data Source: Alaska Department of Fish and Game annual Board of Fish and Game Reports and annual Kodiak Area Management Report.
[2] Fishing year July 1 - June 30.
[3] Legal season November 1 - June 30. Season terminated May 15 due to onset of mating period.
[4] Legal season November 1 - April 30.
[5] Legal season January 1 - April 30.
[6] Legal season January 1 - May 15.
[7] Legal season January 5 - May 15.
[8] Legal season January 22 - May 15.
[9] Legal season February 10 - May 15.
[10] Legal season January 15 - May 15.
[11] Legal season January 15 - March 31.

Table 2. Tanner crab, *Chionoecetes bairdi*, catch in pounds by fishing seasons for the Kodiak Management District 1981/82 through 1989/90 fishing season.

Section	1981/82[1]	1982/83[2]	1983/84[2]	1984/85[3]	1985/86[3]	1986/87[3]	1987/88[4]	1988/89[4]	1989/90[4]
Northeast	1,160,945	2,832,979	1,845,103	1,063,906	646,120	613,791	566,129	466,069	499,341
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
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
Southwest	5,188,309	5,587,149	2,240,332	889,176	721,443	475,122	1,143,306	1,703,723	307,427
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
S Mainland	260,645	149,419	549,712	123,978	85,163	26,434	5,778	*	*
Westside	1,818,517	1,910,776	1,353,127	1,151,883	259,803	663,908	411,135	206,772	291,058
TOTAL	13,756,159	18,927,061	14,478,066	12,024,553	8,996,151	4,833,473	3,888,906	5,208,999	3,456,314

[1]Fishing season January 22 - May 15, shortened due to price negotiations.
[2]Fishing season February 10 - May 15.
[3]Fishing season January 15 - May 15.
[4]Fishing season January 15 - March 31.
*North Mainland catch includes South Mainland and Semidi Is. catches to protect vessel confidentiality.

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, 1989/90. 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[1]
525630	7	8	103,405	2.5	22	62,030	41,375
525701	10	11	60,485	2.5	15	60,485	0
525702	16	17	293,673	2.4	30	160,012	133,661
525703	41	52	475,790	2.5	25	333,531	142,259
525731	22	53	96,328	2.3	11	83,212	13,116
525733	58	152	342,617	2.5	12	336,253	6,364
525805	4	5	7,987	2.5	4	7,699	288
525806	4	5	24,553	2.3	11	18,406	6,147
535631	12	14	104,606	2.4	17	81,150	23,456
535632	11	11	42,617	2.4	13	3,912	38,705
535702	4	5	41,108	2.7	14	4,216	36,892
535703	37	82	315,395	2.4	15	227,414	87,981
535707	12	13	102,718	2.4	23	102,718	0
535732	17	26	94,359	2.4	9	18,020	76,339
535733	5	6	31,561	2.4	6	30	31,531
535801	7	9	37,362	2.5	10	8,808	28,554
535802	18	33	220,147	2.3	14	49,745	170,402
535803	10	13	67,882	2.1	14	14,874	53,008
535831	16	28	268,675	2.2	14	16,037	252,638
535832	6	7	56,396	2.1	16	13,073	43,323
545631	8	9	80,917	2.5	16	4,205	76,712
545632	21	32	164,845	2.5	11	83,266	81,579
545732	7	8	20,326	2.3	10	2,089	18,237
545802	8	14	94,415	2.4	11	6,125	88,290
545803	7	9	79,429	2.5	13	5,351	74,078
******	41	62	228,718	2.4	13	67,953	160,765
TOTAL	233	548	3,456,314	2.4	15	1,770,614	1,685,700

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

[1]Last day of fishery February 21st

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

Year	Open	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

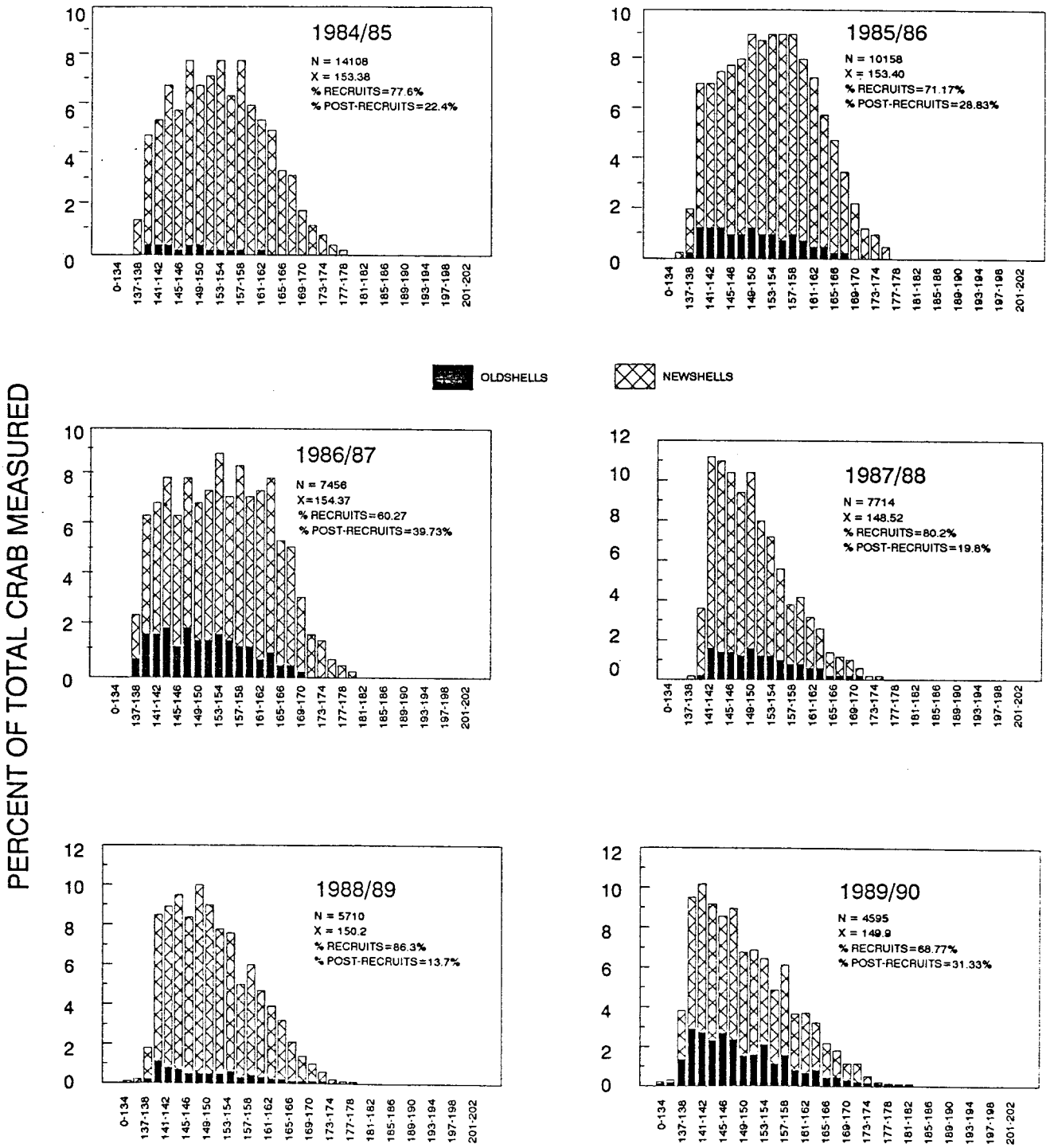

Figure 1. Tanner crab width frequencies from commercial fishery, Kodiak District, 1984/85, through 1989/90 fishing seasons.

KTFREQ90-7

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 in 1988 continued to increase with a large portion of the catch comprised of animals newly recruited to the fishery.

1990 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, 1990. A total of 62 vessels made landings

harvesting 2,879,955 pounds of Dungeness crab. This is near the average harvest since 1962 (Table 1). The 1990 season catch was valued at 4.4 million dollars with an average price of $1.54 per pound.

The Southeast Section continued to produce the majority of the harvest (84%) with the 1990 catch of 2.4 million pounds being the largest on record (Table 2). July and August were the most productive months (Table 3).

The Department of Fish and Game did not operate a dockside interview and sampling program during the 1990 season. Budget restrictions ard personnel availability precluded any sampling of this fishery.

Stock Status

No assessment of Kodiak Dungeness stocks is conducted independent of the commercial fishery.

Table 1. Dungeness crab commercial catch and effort by fishing year for the Kodiak Management District, Statistical Area 'J', 1962 through 1990.

Year	Lndgs	Vssls	---Commercial Catch--- No. Crab	No. Pounds	Pots Lifted	Avg Lbs Per Lndg	CPUE	Avg Price Per Lb	Ex-Vessel Dollars
1962[1]	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[2]				Confidential					
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[3]	466	50	2,614,545	5,566,463	295,138	11,945	9	.70	3,897,000
1982/83[4]	991	111	2,004,075	4,546,311	481,542	4,588	4	.75	3,410,000
1983/84[4]	1,079	103	2,044,505	4,752,148	503,464	4,408	4	1.05	4,989,000
1984/85[4]	1,163	106	2,393,974	5,303,052	627,441	4,564	4	1.45	7,689,000
1985[5]	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	511	62	1,268,130	2,879,955	290,288	5,636	4	1.54	4,435,000
Average	421	44	1,044,199	2,932,837	226,970	8,052	7	$ .58	1,679,786

[1]Season open year round 1962 - 1976
[2]Open May 1 through December 31, 1977 - 1980
[3]Open February 27, 1981 through February 1, 1982
[4]Open May 1, 1982 through February 1, 1983
[5]Open May 1, 1985 through December 31, 1985

Table 2. Dungeness crab commercial harvest (in pounds) by fishing section, Kodiak Management District, 1981-1990.

Section	1983/84[2]	1984/85[2]	1985[3]	1986[3]	1987[3]	1988[3]	1989[3]	1990
Northeast	206,386	330,977	346,252	93,428	102,997	149,992	113,211	65,581
Eastside	437,477	1,332,175	1,564,019	364,635	173,438	177,523	193,200	169,796
Southeast	1,995,363	2,137,968	1,156,447	253,179	751,793	1,126,298	2,323,771	2,424,632
Southwest	575,937	204,714	392,233	57,231	84,352	190,280	165,401	99,334
N Mainland	516,289	430,536	342,001	90,783	106,449	97,924[5]	*	18,723
S Mainland	454,646	259,649	37,377	6,222	9,990	*	0	0
Westside	564,610	607,033	320,691	101,945	221,964	383,097	282,354[6]	101,889
Semidi Is.[4]	1,440	0	1,415	0	0	0	0	0
Total	4,752,148	5,303,052	4,160,435	967,423	1,450,983	2,125,114	3,077,937	2,879,955

[1]Fishing season February 27, 1981 through February 1, 1982
[2]Fishing season May 1 through February 1
[3]Fishing season May 1 through December 31
[4]Area added to Kodiak District by Board of Fisheries, 1983
[5]1988 North Mainland and South Mainland catches combined to protect vessel confidentiality
[6]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 1990. 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	12	88	125,252	2.0	2	5,001	18,845	23,323	44,837	18,259	12,080	1,321	1,550
525702	4	5	8,586	2.3	2	0	0	428	6,168	1,990	0	0	0
525703	6	16	31,984	1.9	3	0	1,057	7,499	13,876	4,445	5,107	0	0
525731	5	11	1,850	1.8	1	0	87	510	0	165	842	0	246
525732	5	7	2,313	2.0	1	0	0	1,295	285	0	401	0	332
525733	18	151	61,418	2.0	2	319	6,027	10,859	4,930	12,851	19,199	6,540	693
535601	3	8	87,579	2.3	6	0	23,211	43,374	20,994	0	0	0	0
535631	5	5	9,522	2.1	4	0	2,881	0	5,202	0	637	802	0
535634	3	5	11,634	2.2	3	0	1,221	8,347	0	2,028	0	0	0
535701	5	15	62,744	2.3	2	30,596	21,621	4,696	2,785	0	2,387	0	659
535703	4	7	6,445	2.0	2	0	0	4,373	842	0	0	1,126	104
535705	4	5	13,882	2.2	3	0	0	0	12,051	0	1,831	0	0
535706	3	4	3,974	1.7	2	0	0	2,013	1,257	0	701	0	0
535732	8	25	16,902	2.1	1	1,548	6,436	3,310	3,005	2,084	300	219	0
535733	4	15	21,825	2.1	1	3,330	0	6,801	2,573	4,034	2,478	2,609	0
545601	15	85	1,404,221	2.3	6	0	277,922	542,425	325,204	80,993	132,124	14,565	16,695
545602	12	58	888,579	2.4	5	0	149,344	332,047	170,321	51,653	84,788	88,441	11,399
545632	6	21	71,988	2.1	3	0	16,419	16,958	25,050	7,252	2,929	1,370	0
545633	4	4	20,485	2.2	5	0	0	0	9,986	0	0	9,720	779
545802	3	8	8,583	2.1	2	0	465	3,371	4,314	433	0	0	0
******	8	14	20,189	2.2	2	0	5,740	3,639	10,128	433	0	158	0
TOTAL	62	511	2,879,955	2.3	4	40,794	531,276	1,014,998	663,808	186,620	265,804	126,871	32,457

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

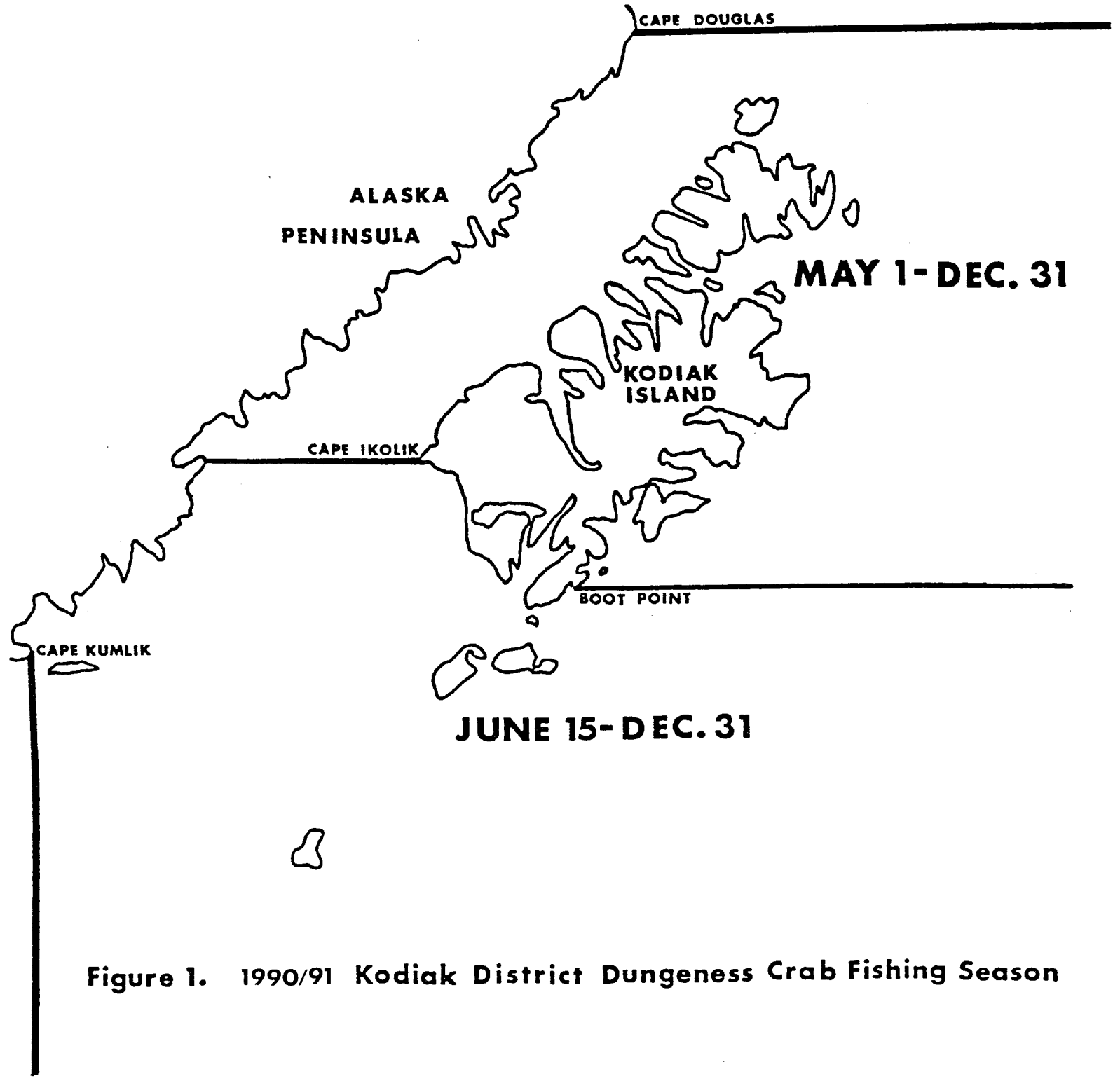

Figure 1. 1990/91 Kodiak District Dungeness Crab Fishing Season

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 $5\frac{1}{2}$ inches. In 1949 the size limit was increased to $6\frac{1}{2}$ 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 effect 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 ten 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, 1989 and 1990, the Department again conducted 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 1990/91 fishing season was closed prior to the scheduled September 25th opening.

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.

A small amount of brown king crab was harvested in 1990 by three vessels (Table 5).

Table 1. Historic commercial red king crab catch and effort for the Kodiak Registration Area 'K', 1960/61 through 1990/91 fishing seasons (fish ticket date).

Fishing Year[1]	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[2]	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[3]	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					
AVERAGE	174	1,359	2,963,898	24,834,120	143,813	21	-	-

[1] Fishing year defined as May 1 - April 30.

[2] July 1 - April 30 season established.

[3] August 15 - January 15 established.

Table 2. Kodiak red king crab harvest composition and seasons; 1960/61 through 1990/91 seasons.

Season	Open	Closed	Catch Million Pounds	Percent Recruits[1]	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"[2]
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"[3]
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[4]	FISHERY CLOSED					
1985/86	FISHERY CLOSED					
1986/87[5]	FISHERY CLOSED					
1987/88	FISHERY CLOSED					
1988/89	FISHERY CLOSED					
1989/90	FISHERY CLOSED					
1990/91	FISHERY CLOSED					

[1] Recruitment after 1963 based on 7" size limit.

[2] Marmot Bay, Chiniak Bay and Kupreanof Strait did not open for 8" crab

[3] Uganik Bay, Kupreanof Strait, Marmot Bay, Chiniak Bay, Ugak Bay, South Sitkalidak Strait, Kiliuda Bay and Alitak Bay did not open for 7½" crab.

[4] Harvest of crab by test fishery - 33,743 pounds.

[5] Harvest of crab by test fishery - 13,393 pounds.

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

Year	Estimate in No. of Animals X 10^6
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

*Trawl Survey

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

	Threshold	1990 Trawl Estimate
District 1 (Northeast)	1.93	.023
District 2 (Southeast)	0.72	.000
District 3 (Southwest)	2.28	.022
District 4 (Shelikof)	0.19	.001
TOTAL	5.12	.047

Table 5. Historic commercial brown king crab, *Lithodes aequispina*, catch and effort for the Kodiak registration area 'K', 1983 through 1990 fishing seasons (fish ticket data).

Fishing Year	Landings	Vessels	No. of Crab	No. of Pounds	Pots Lifted	Average Crab Per Pot	Average Wt. Per Crab	Average Price Per Pound	Ex-Vessel Value (Millions)
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
AVERAGE	20	5	8,814	59,090	3,181	3	-	-	-

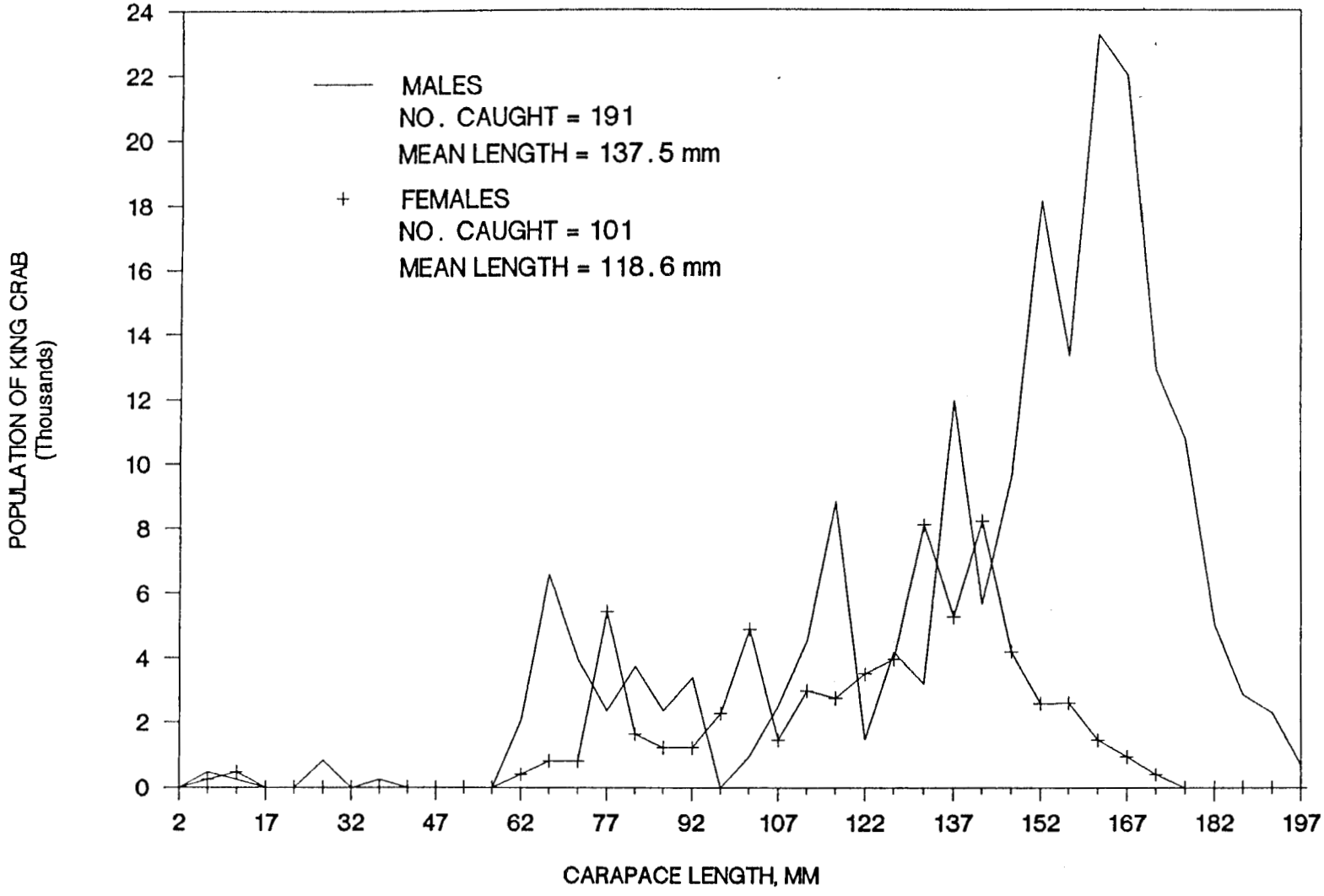

Figure 1. Carapace length frequency of male and female king crab, Paralithodes camtschatica, from the Kodiak trawl survey, 1990.

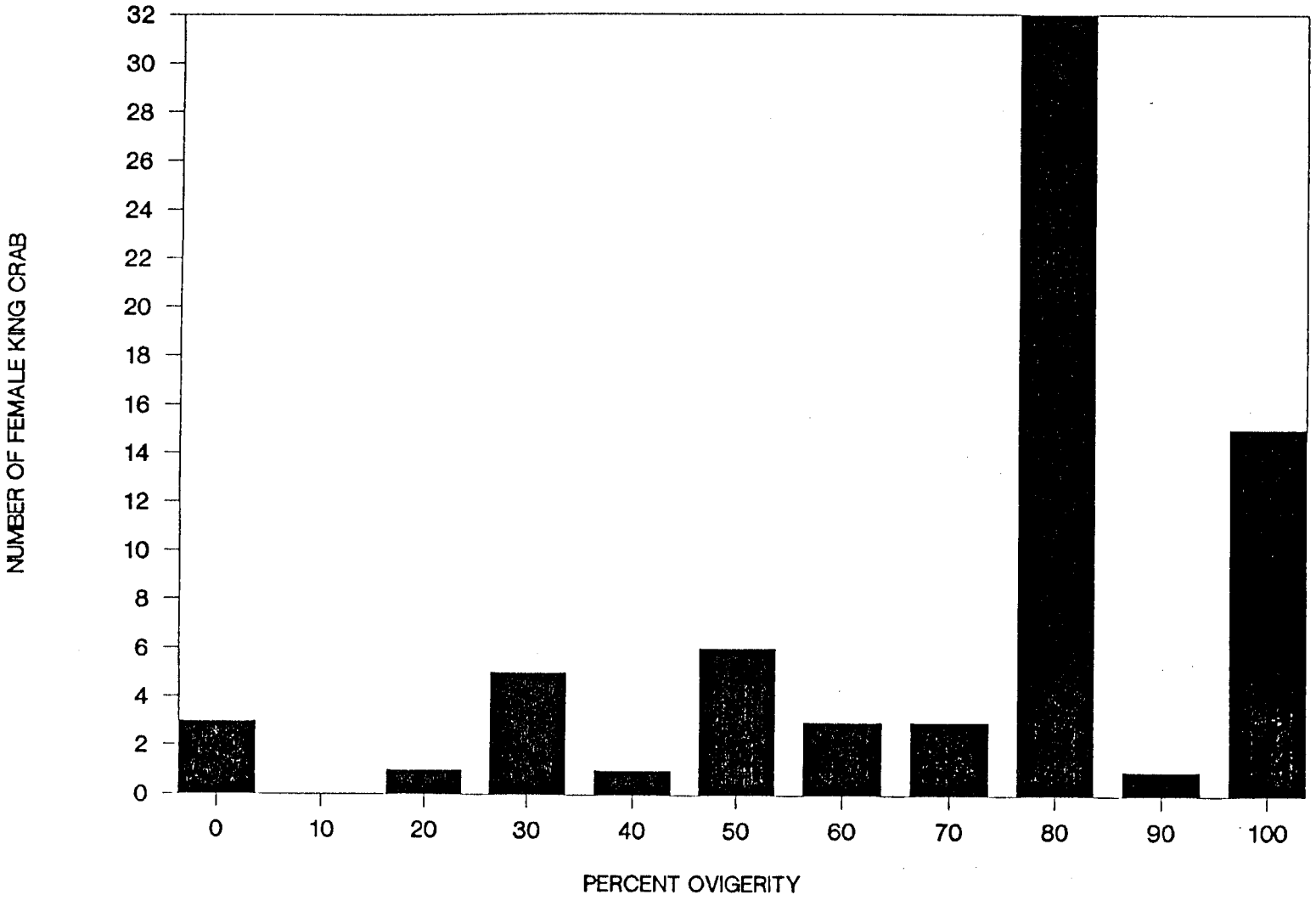

Figure 2. Percent ovigerity of female king crab captured during the Kodiak trawl survey, 1990.

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 too 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 Board of Fish and Game (later known as 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 of Fisheries 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 Aniakchak, 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.

1990/91 Trawl Fishery

The trawl fishery opened in the Kodiak District on June 15, 1990. There has been no commercial harvest of shrimp by a trawl during the 1990/91 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 decline in production.

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

Pot Shrimp Fishery

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

A small pot shrimp harvest occurred during 1990. Less than three vessels landed shrimp from the Kodiak Area (Table 4).

Table 1. Historic commercial shrimp catch and effort for the Kodiak District of Westward Statistical Area 'J', 1958 through 1990/91 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
Fishing Year Averages		33	556	25,917,820	$.12

Table 2. Kodiak District shrimp seasons, harvest and effort by section 1990/91 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

NOTE: This page contains some confidential information not for public distribution.

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[1]	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	2,000	0	0	0
Kukak Bay	**	**	**	**	**	**
Wide Bay	**	**	**	**	**	**
Puale Bay	**	**	**	**	**	**
Mainland	466,694	918,277	447,675	10,841	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

[1]Test fishing survey

*Chiniak and Kalsin Bay combined
**Areas combined in 1982/83 to form Mainland Section

NOTE: This page contains some confidential information not for public distribution.

Table 4. Pot shrimp catch statistics, Kodiak District of Statistical Area 'J', 1969 - 1990.

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	

**No commercial landings recorded for 1971 or 1987*

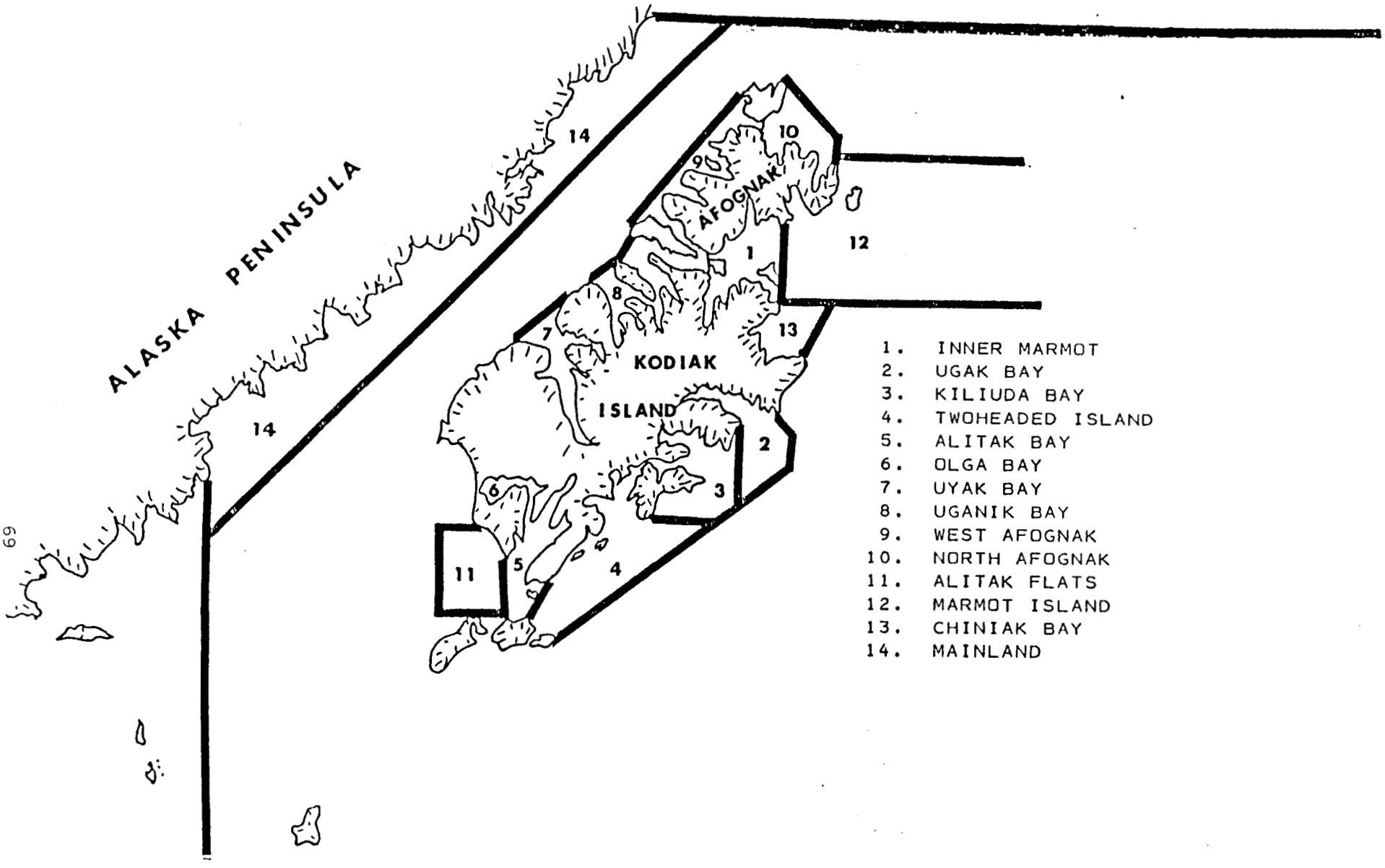

Figure 1. Kodiak District trawl shrimp fishing sections.

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/or muddy bottom 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 2 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 conclusions 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 1990 was the highest since 1970. Several vessels from the East Coast of the United States entered the fishery, and effort was at the highest level since 1981.

Fishing activity during 1990 was concentrated in the Kodiak Area, but fishing also occurred in the Alaska Peninsula and Eastern Aleutian Districts.

Two fishing vessels operated as catcher processors and froze their own product onboard.

Interest in harvesting scallops of the genus *Chlamys* did arise 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 is being explored during 1991.

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

Year	Vessels	Landings	Commercial Catch (#s)	Average Price Per Pound
1967		Confidential		
1968	8	89	872,803[1]	.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		Confidential		
1977	-	-	0	-
1978	-	-	0	-
1979		Confidential		
1980	7	33	371,018[2]	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

[1] 718,671 pounds shucked - 154,132 pounds unshucked

[2] 353,433 pounds shucked - 17,575 pounds unshucked

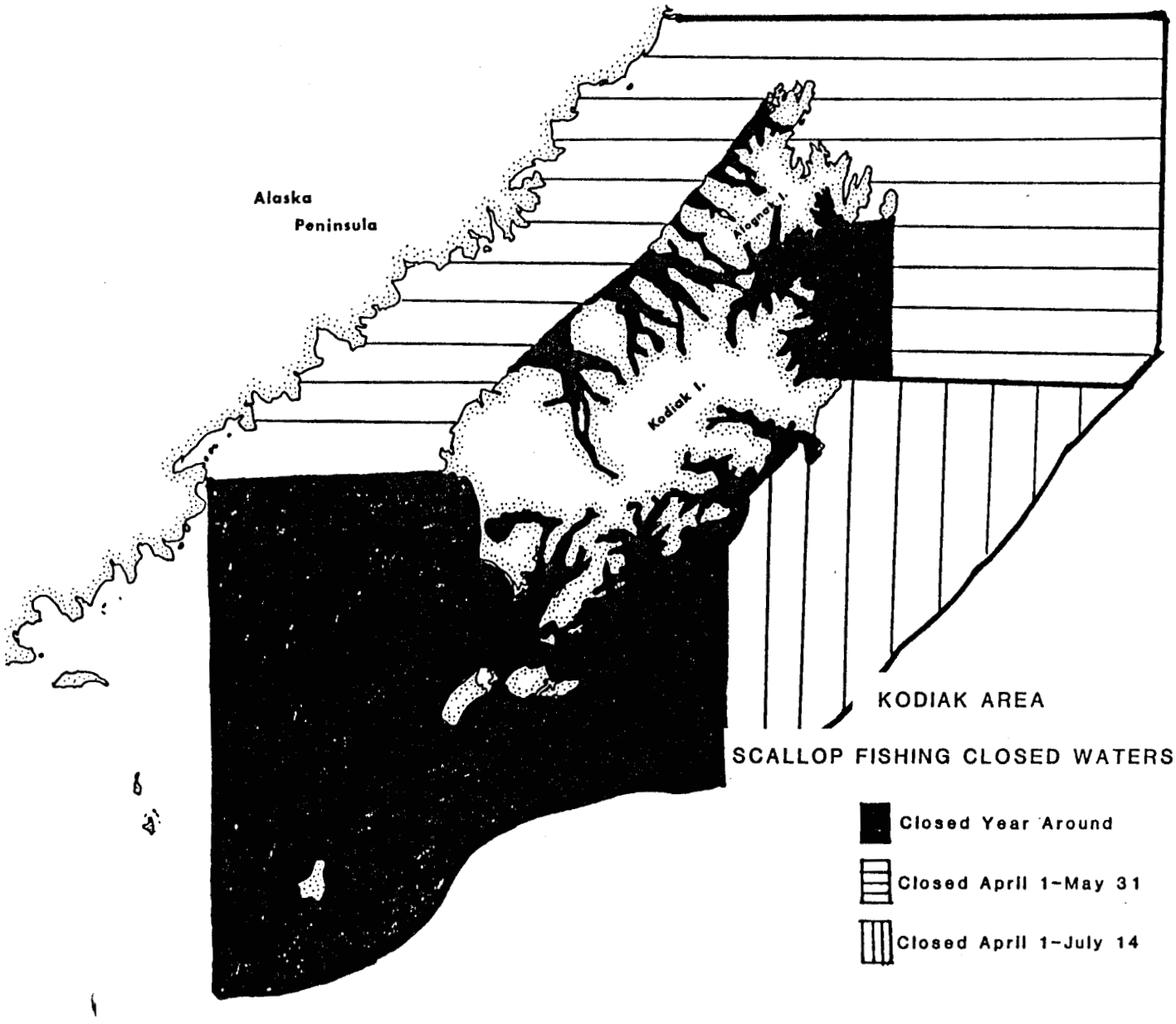

Figure 1. Kodiak Area scallop fishing closed waters.

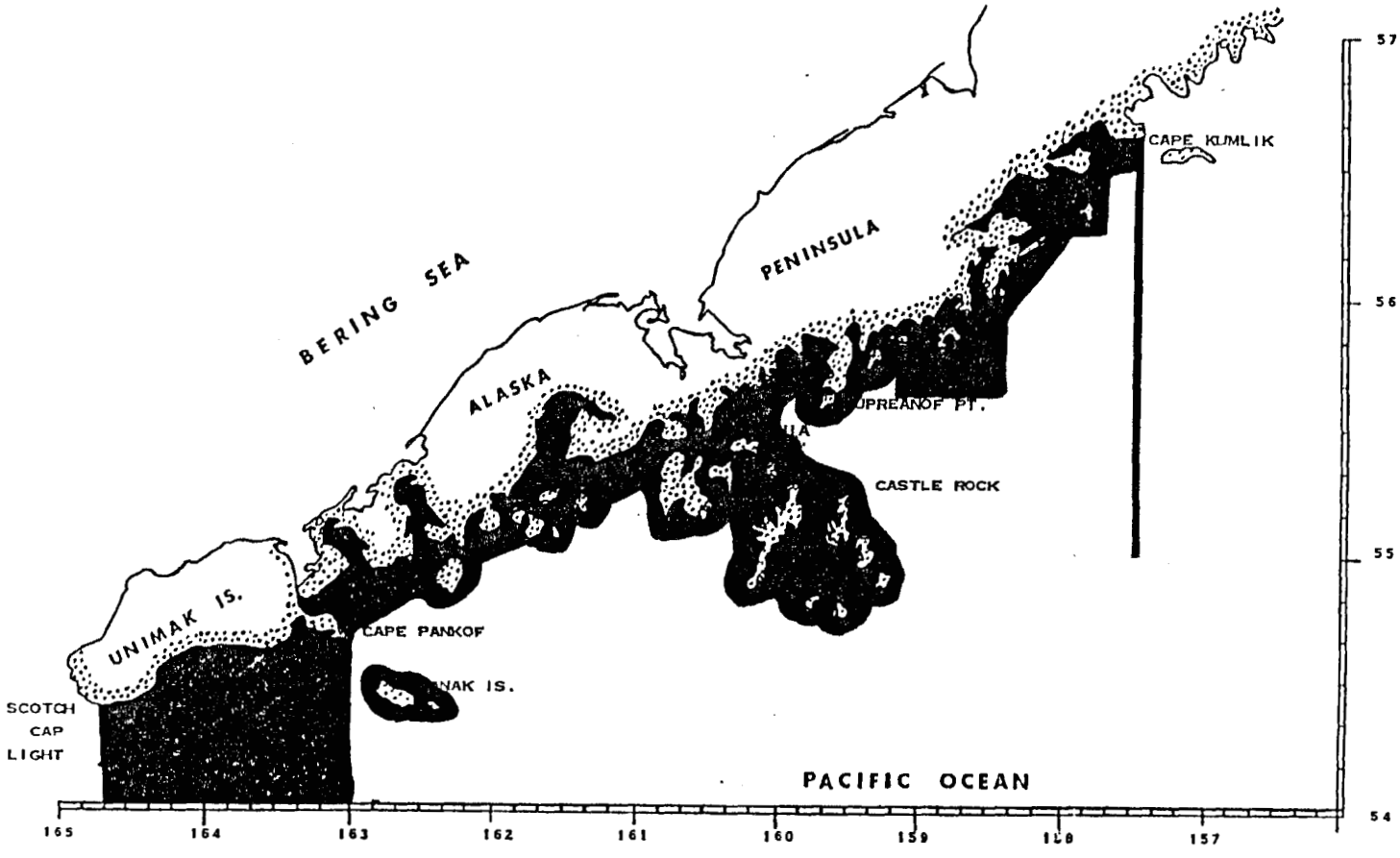

Figure 2. Alaska Peninsula Area scallop fishing closed waters.

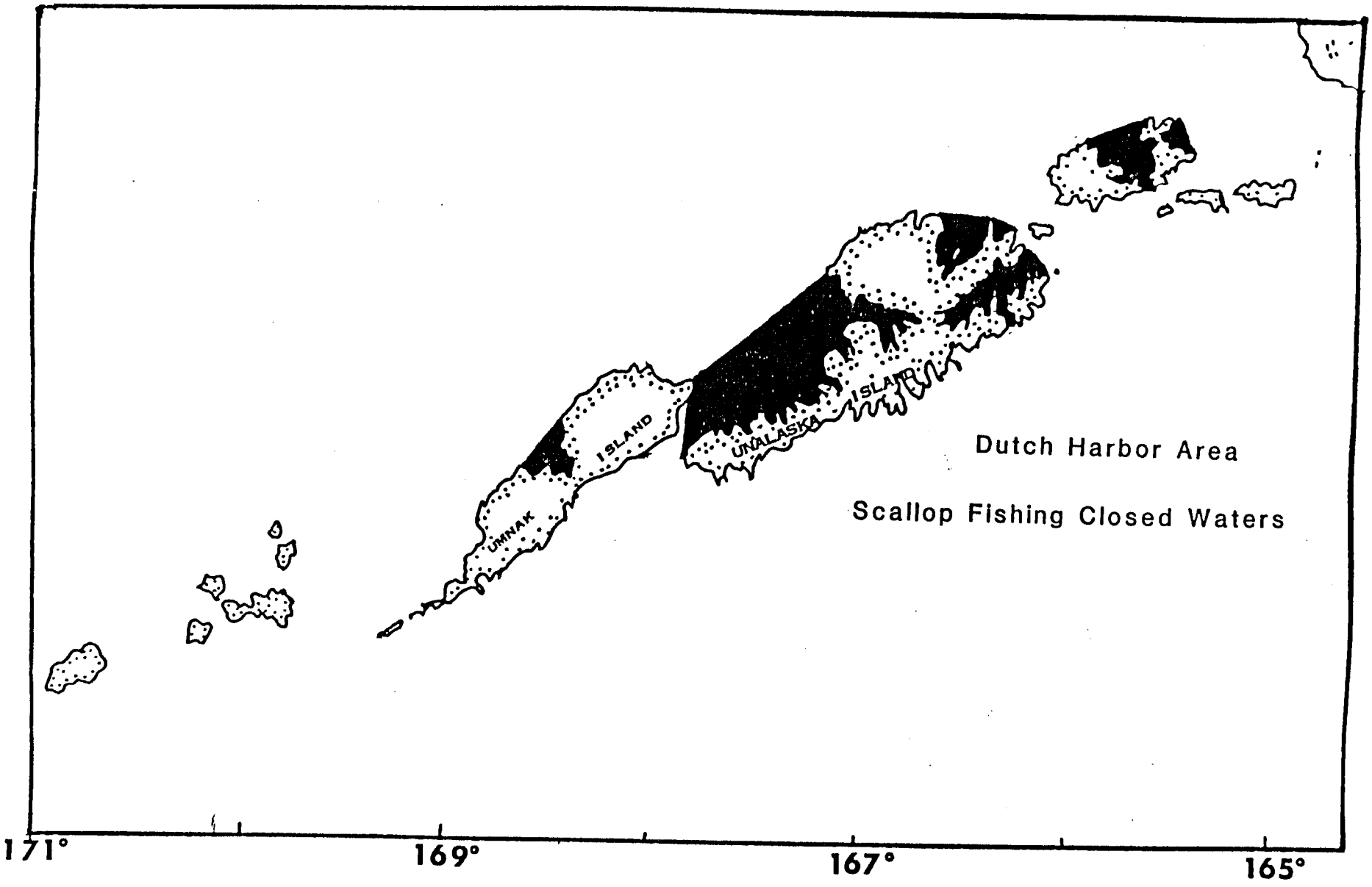

Figure 3. Dutch Harbor Area scallop fishing closed waters.

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 or 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 or 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.

1990 Fishery

A total of 49 divers registered to harvest urchins in the Kodiak area; however, landings were made by 25 divers. The urchin harvest for 1990 was 84,004 pounds with an average price of 84 cents per pound.

The Department did sample urchins from the commercial catch during 1990. Test diameter was measured with vernier calipers and recorded to the nearest millimeter (Figure 1).

Some urchins were sampled for percent of roe recovery. These urchins were weighed (whole weight) and cracked to expose the skeins of roe. The skeins were then removed from the urchin and weighed. Samples were taken during September and November. Roe recovery averaged 14% from all urchins sampled. These sample sizes were small and from specific sites around the Island and do not reflect the roe recovery around the entire Island of Kodiak.

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

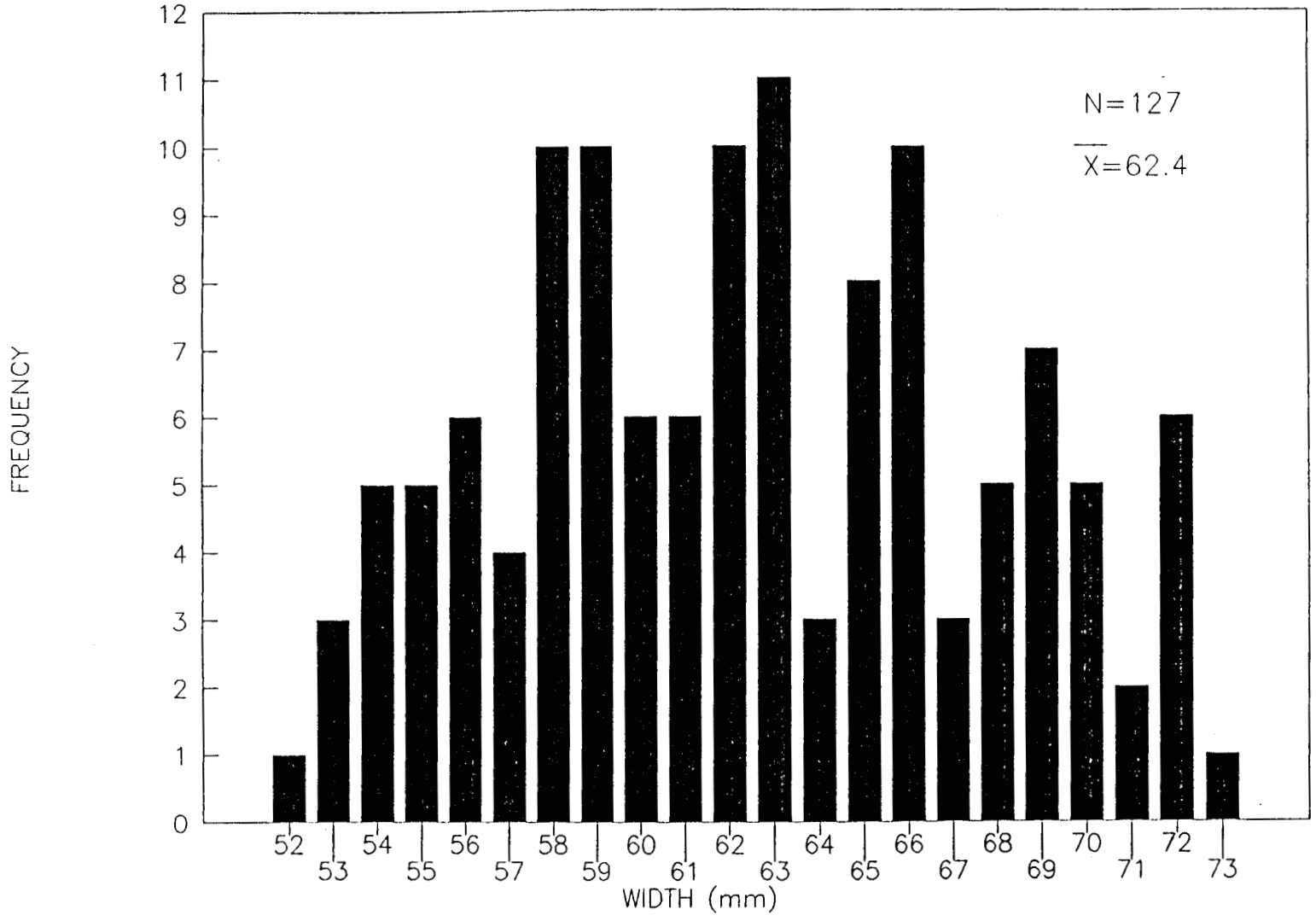

Figure 1. Kodiak Island sea urchin width frequency, 1990.

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.

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 - 1990.

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

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. This 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.

1990 Fishery

During 1990 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 - 1990.

Year	Registered Diggers[1]	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	8	1	400	400	1.00	400
1978	-	1	1,352	1,352	.73	1,000
1979	-	0	0	0	.00	-
1980	-	8	8,006	1,001	.79	6,325
1981	-	5	8,186[2]	1,637	1.00	8,186
1982	-	11	11,608[3]	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[4]	1,540	1.00	16,945
1986	-	4	3,993	998	1.00	3,993
1987	-	-	-	-	-	-
1988	-	-	-	-	-	-
1989	-	-	-	-	-	-
1990	-	-	-	-	-	-

[1] Represents registered diggers not actual diggers - no data available after 1977 due to statewide issuance of Interim Use Permits.

[2] Additional 985 pounds of hardshell clams harvested.

[3] Additional 1,506 pounds of hardshell clams harvested.

[4] Additional 1,496 pounds of hardshell clams harvested.

ALASKA PENINSULA

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

FEBRUARY 1991

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. However, too few vessels have participated to release catches.

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 high catch was the result of strong recruitment from 1978 through 1980. Recruitment has declined severely since that time. The fishery remained closed for the first time during the 83/84 season.

1990/91 Season Summary

As has been the case since 1983/84, the 1990/91 commercial fishery in Area 'M' was not opened. The closure was announced by Emergency Order 4-S-13-90 issued in Kodiak on August 29, 1990 (Table 6).

Stock Status

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

The 1990 survey was conducted aboard the R/V *Resolution* from August 20 to August 25. One hundred fifty-seven (157) 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 to be only 42,336 crabs; 18,421 males and 23,915 females. It was estimated that only 3,049 legal males populate the area (Table 5). The 1990 population estimate of king crabs has decreased substantially compared to the 1989 estimate of 400,618 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 1990.*

Brown King Crab

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

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

1990 Season

No vessels were registered to fish for brown king crab in Area 'M' during 1990.

Stock Status

Stock status is unknown at this time. However, no commercial quantities have been found 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				

*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					

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					

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							

*Based on only one sample

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

Year	Stations Fished	Pots Lifted	----Legals---- Number	CPUE	---Sublegals--- Number	CPUE
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	.7
1984	218	498	324	.65	25	.05
1985	138	410	36	.09	18	.04
1986	129	400	65	.16	52	.13
1987	145	434	11	.03	17	.04
1988[1]	106		45		27	
1989	167		19		215	
1990	157		4		16	

[1] 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	

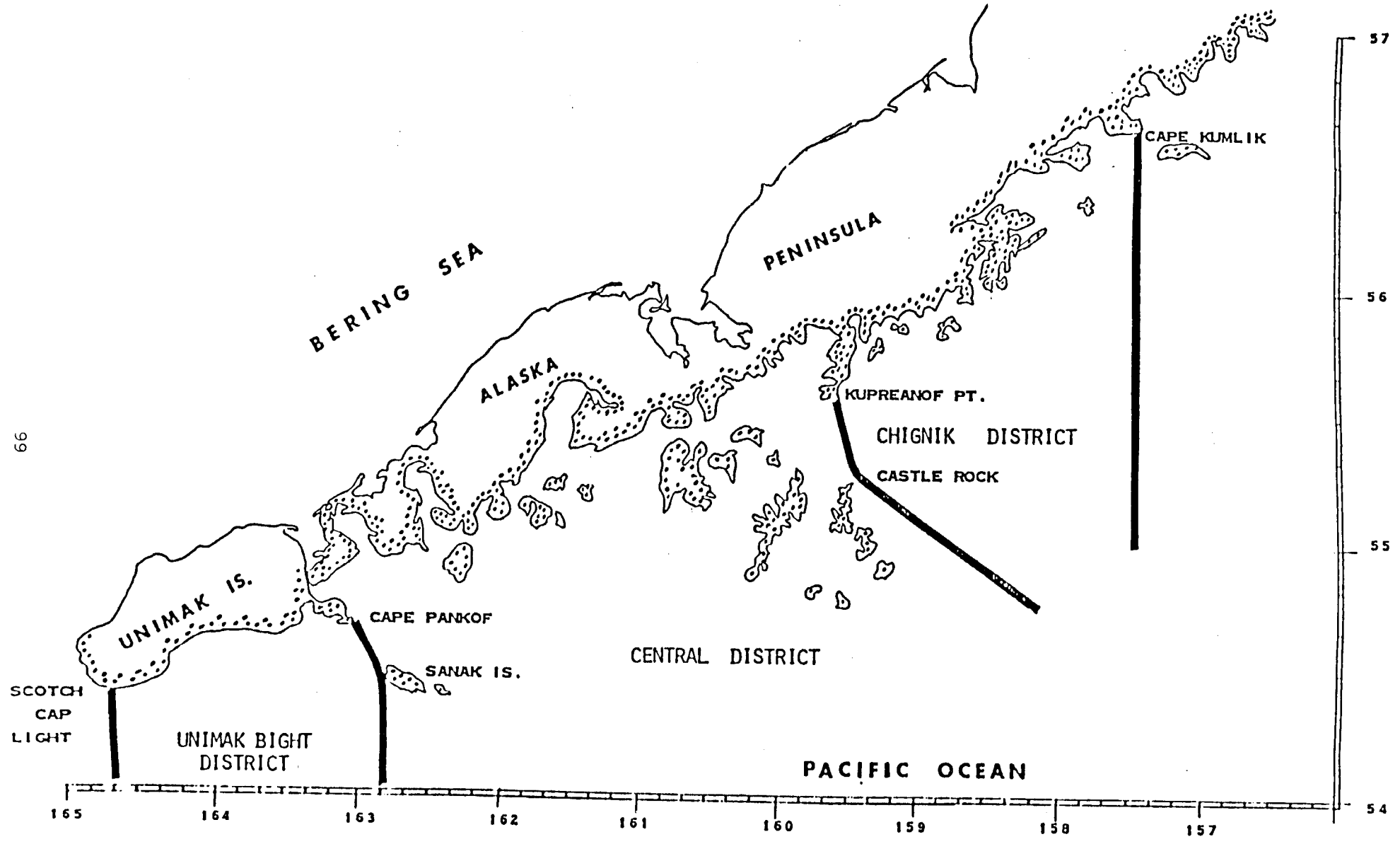

Figure 1. Alaska Peninsula Area 'M'.

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 6.9 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 crab with carapace widths equal to or greater than 5.5 inches. 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. Finally, 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 Mitrofania Island, Lighthouse Rocks, and the Semidi Islands were the most productive of all. Second, most of the fishing activity began in late March after closures had been made in the Kodiak and South Peninsula District fisheries. 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 of the time, 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 that there would be 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 harvest projections have depended upon 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 insignificant 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 size of the fleet. 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 sixty-five 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 molting period of the crab. 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.

1990 Fishery

The 1990 Tanner crab fishery in the Chignik District did not open. Emergency Order 4-S-16-89 was issued on November 3, 1989 closing the Chignik District to Tanner crab fishing.

A small harvest could have occurred in the Chignik District on Tanner crab; however, the Department believes the risk is too high due to the uncontrolled nature of effort and inability of the Department to accurately monitor removal of crab inseason.

Stock Status

In 1989 and 1990 the Chignik District was surveyed with a trawl. A total of 497,419 legal male crabs were estimated to populate the Chignik District in 1989. In 1990, the survey indicated that a total of 385,174 legal male Tanner crab populate the Chignik District.

Further details regarding survey information in the Chignik District can be obtained in the 1989 and 1990 reports entitled *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[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Price Pound[2]	Percent Recruits[3]
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					

[1] *Includes deadloss*
[2] *Computed only for live poundage where price information was available*
[3] *Recruits = newshell male crab from 137 to 163 mm carapace width*

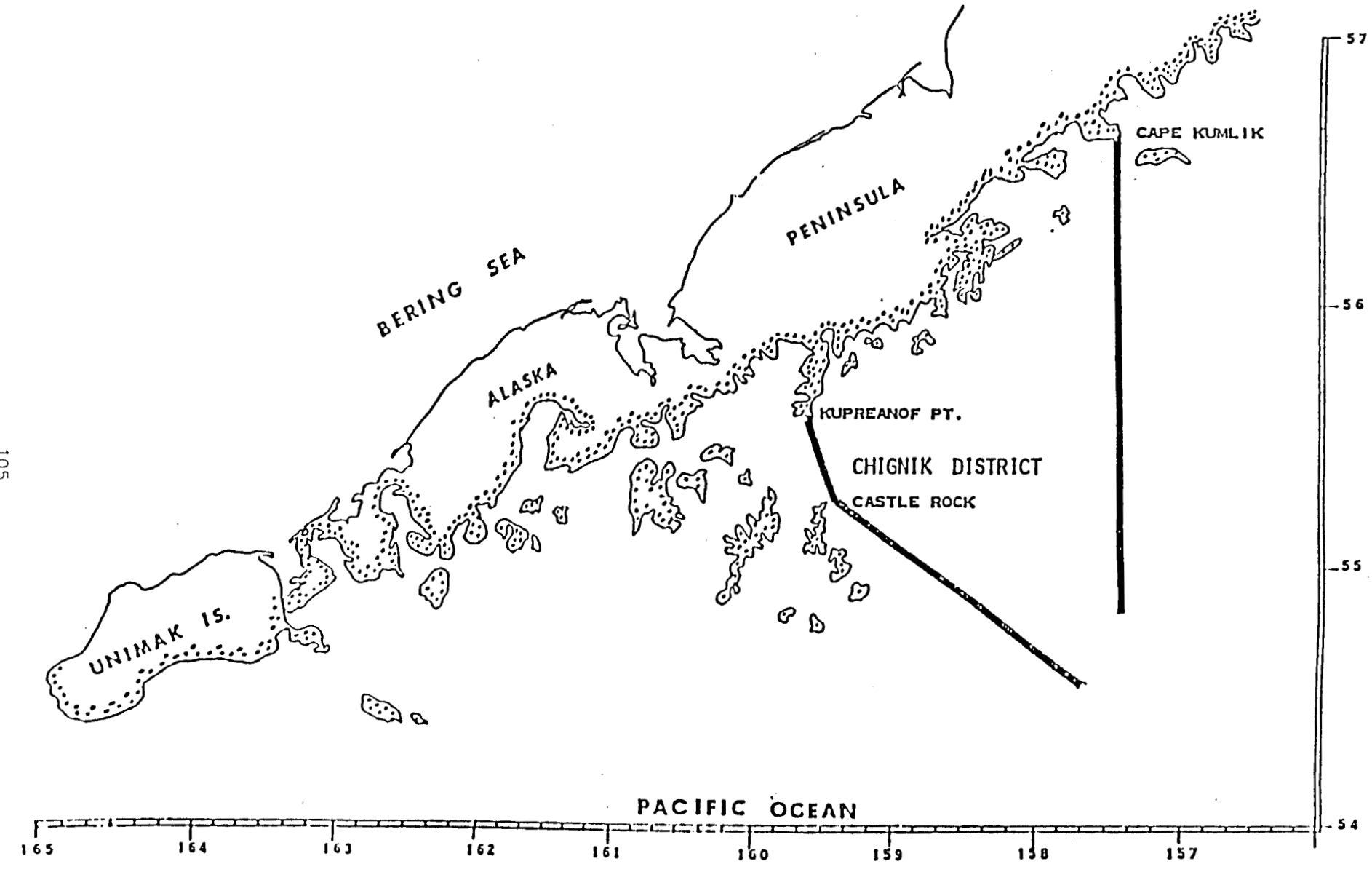

Figure 1. Chignik Tanner crab district.

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.

1990/91 Season Summary

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

Stock Status

The Alaska Department of Fish and game did conduct 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.

Table 1. Historic shrimp harvest statistics.

Year	South Peninsula Vssls.	South Peninsula Lndgs.	South Peninsula No. Pounds	South Peninsula Price/Lb.	Chignik Vssls.	Chignik Lndgs.	Chignik No. Pounds	Chignik 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	-

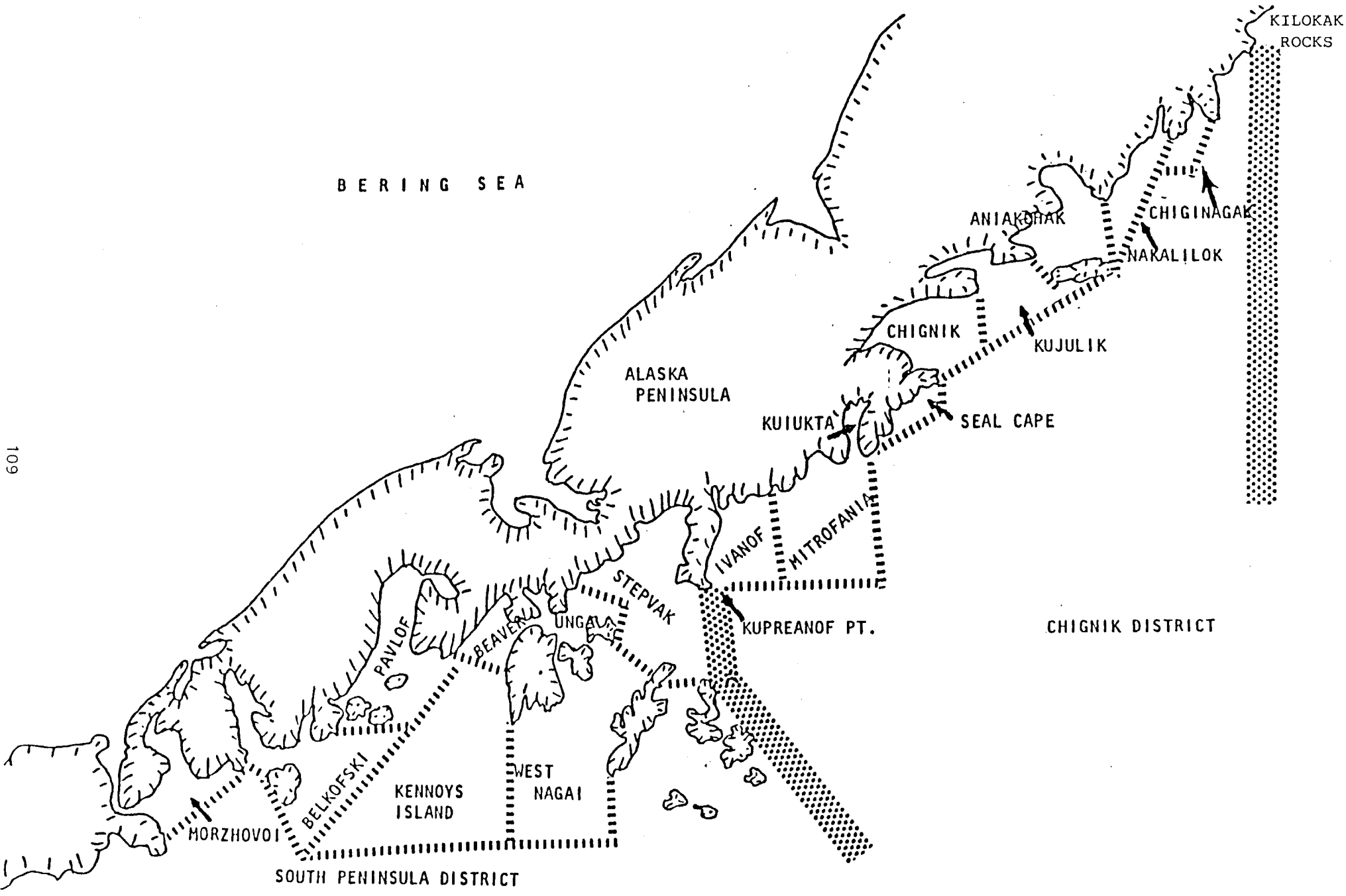

Figure 1. South Peninsula and Chignik shrimp sections.

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 5½ inches across the carapace was established. During the six seasons from 1974 through 1978/79 harvests ranged from five to eight million pounds (Table 1). The fishery peaked in 1978/79 when 8.6 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 1.8 million pounds (Table 1). Recruitment improved in the years 1985 through 1988 and harvests have ranged from 2 million pounds to 3.3 million pounds. In 1989 the harvest decreased to 1 million pounds and recruitment is also expected to decrease.

1990 Fishery

The 1990 Tanner crab fishery in the South Peninsula District did not open (Table 3). Emergency Order 4-S-16-89 was issued on November 3, 1989 closing the South Peninsula District to Tanner crab fishing.

Although South Peninsula could have had a small harvest, the Department believes 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

1990 was the third consecutive year that a trawl survey was utilized to assess the Tanner crab populations in the South Peninsula District.

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[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Price Pound[2]	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	3,961,251	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[3]	87	433,112	1,055,082	27,958	2.4	16	2.70	52.9
1990				NO OPEN SEASON					

[1] *Includes deadloss*
[2] *Computed for live crab only*
[3] *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) Avg.	Vssl. length (ft) Min-Max	Total Vessels	Pots Avg/Vssl	Pots Min-Max
1989	65	55	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	38-135	11,992	166	52-400
1980/81	43	63.7	38-122	6,579	154	40-400
1979/80	62	69	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	

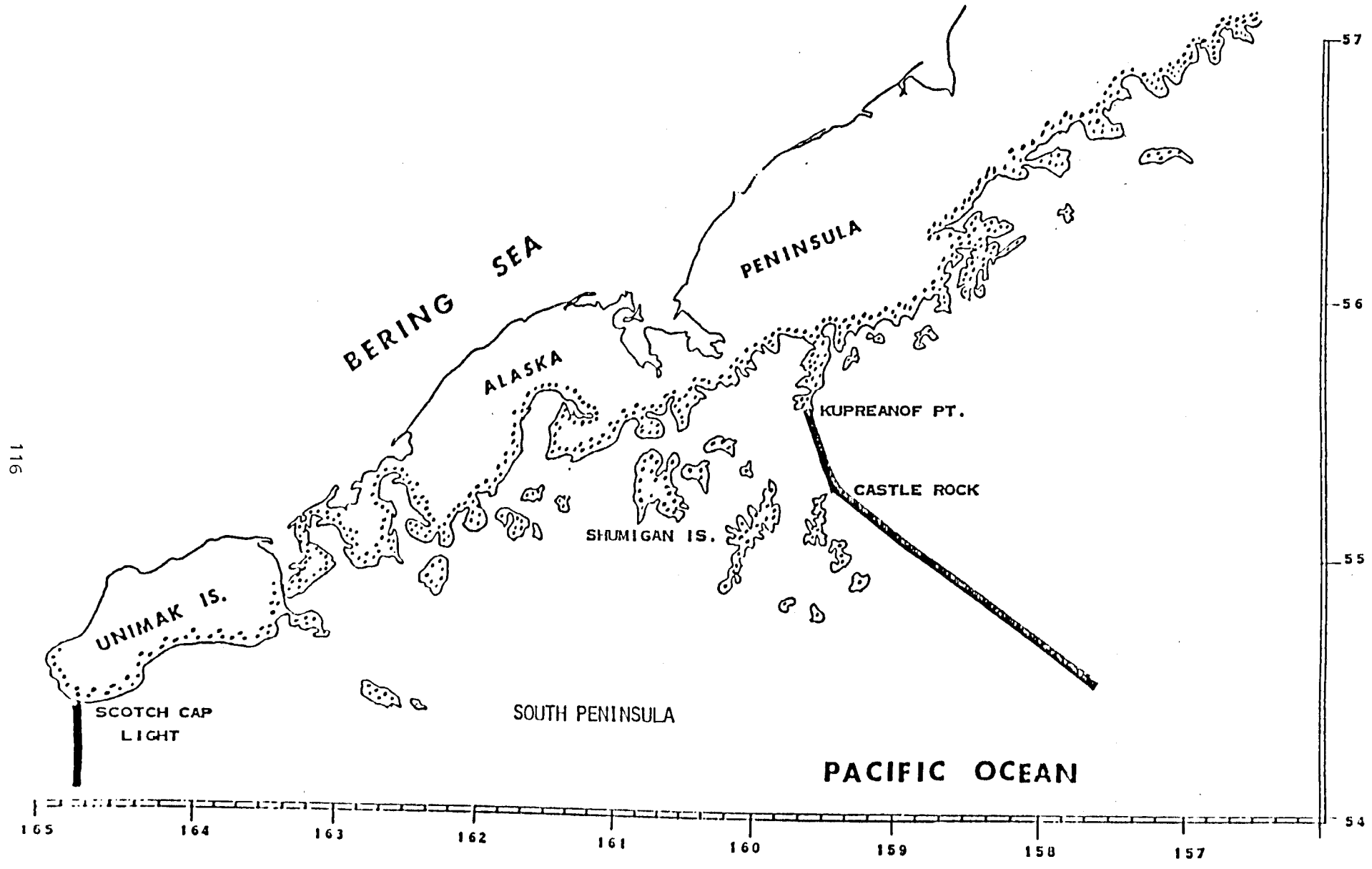

Figure 1. South Peninsula Tanner crab district.

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 or 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 has not been adequate to support any changes to the management system.

1990 Fishery

The Alaska Peninsula Dungeness crab season opened May 1st. A total of four vessels made ten landings for a total catch of 65,806 pounds (Table 1).

Stock Status

The small amount of data on the population size and structure in the Alaska Peninsula District is derived from the limited 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.) The very small samples taken during the last few seasons make it difficult to draw firm 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 to be stable (Tables 2 and 3). The drastic declines of the 1986 and 1987 harvests seemed to indicate a loss of stability and a significant decline in the population of Dungeness (Tables 2 and 3). Fishing pressure over the last seven seasons may have reduced the numbers of legal sized crabs that may have accumulated when there was little interest in the fishery. Though no samples were taken in 1988 or 1987, 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 1990 fishery. Dramatic cycles of low and high abundance have been observed in other Dungeness fisheries.

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

Year	Vssls	Lndgs	No. of Crab[1]	No. of Pounds[1]	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

NA = Not Available

[1] Includes deadloss

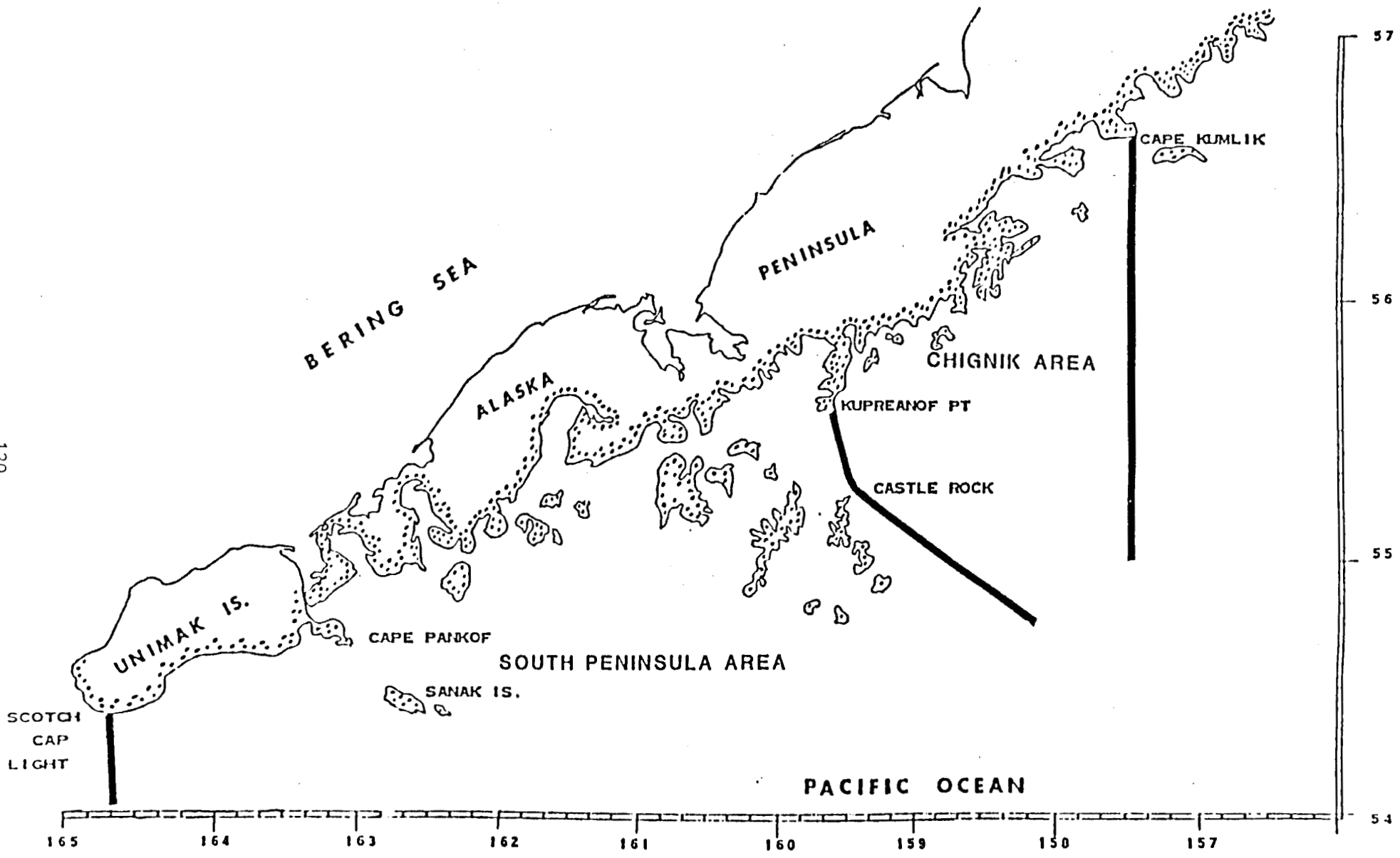

Figure 1. Alaska Peninsula Dungeness district.

ALASKA PENINSULA MISCELLANEOUS SPECIES

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 1990. 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 their own use as food or bait.

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 the trawls opened the octopus market, fishermen using pot and longline gear began to sell their incidental catch as well.

The 1990 catch of octopus was 11,504 landed by 20 vessels. Little 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

EASTERN ALEUTIANS MANAGEMENT AREA

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

MARCH 1991

BY

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DUTCH HARBOR RED KING CRAB

Introduction

The Dutch Harbor Area, or Statistical Area 'O', 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 'O' 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 'O' 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 'O' 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 Fishery

During July 1990, the Department of Fish and Game conducted, for the first time, a trawl survey of the Dutch Harbor area to assess crab stocks. This survey lasted 13 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 46 tows. Captured king crabs totaled 10 legal sized males and 1 sublegal male. No female king crabs were captured. This survey indicates a continuing low level of king crab abundance in the Dutch Harbor Area. Improvement is not apparent in these stocks, and many years will be required before they will recover to a fishable population.

Stock Status

Based on continued poor stock conditions observed during the 1987 and 1990 surveys, the red and blue king crab fishery in the Dutch Harbor area will remain closed to commercial king crab fishing during the 1990/91 fishing season.

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

Season	Opened	Closed	Vssls	Lndngs	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Min. Size	Average Price Per #
1968/69	01/01[2]	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						

[1]Includes deadloss
[2]Prior to 1968/69 fishery was open 12 months/year. 1968/69 season ran Jan. 1, 1968 to March 15, 1969.

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 of brown king crab during the ongoing 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 1). 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 1).

In 1984, the Board of Fisheries adopted staff proposals to lower the brown king crab size limit from 6½ inches to 6 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 managed to average 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 of September 1.

1990/91 Fishery

The fishery opened at 12:00 noon, September 1, concurrent to the blue king crab fishery at St. Matthew Island. Registrations and tank inspections were given to 12 vessels, including 2 catcher/processors.

The fishery occurred on historic grounds near the Islands of Four Mountains in both the Bering Sea and Pacific Ocean waters. By the end of September, 14 vessels had landed over 777,000 pounds of brown king crab, almost 100,000 pounds less than September 1989 (Table 3). With the opening of the Bristol Bay red king crab season scheduled for November 1, more effort moved into the fishery in October, and catches from sixteen vessels increased to over 828,000 pounds bringing the total to over 1.6 million pounds and near the historical average of the nine year fishery (Table 2, 3).

With the opening of the red king crab season on November 1, all but two catcher vessels left the fishery for Bristol Bay. The season total for the area was 1.7 million pounds, 134,000 pounds less than the previous season. Crab averaged 4.34 pounds each, comparable to last year, but the average catch per pot declined from ten in 1989 to seven for the 1990 season.

Stock Status

The Dutch Harbor brown king crab stocks are not surveyed, but mandatory observers have been required on the catcher processors fishing this area for three years. Analysis of the information being gathered will provide valuable insight to the fishery.

Table 1. Historic brown king crab catch in Dutch Harbor statistical Area 'O'.

Season	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	CPUE	Percent Oldshell	Avg. Wt.	Average Length	Pounds of Deadloss
1981/82	6	16	22,666	115,715	2,906	8	3.8	5.1	158.1	8,752
1982/83	49	136	227,471	1,184,971	29,369		8.0	5.2	158.1	47,479
1983/84	47	132	328,353	1,810,973	29,595	11	NA	5.5	NA	45,268
1984[2]	13	67	327,440	1,521,142	24,044	14	NA	4.6	161.2	70,362
1985	13	67	410,977	1,968,213	34,287	12	16.0	4.7	155.7	38,663
1986	17	71	400,389	1,869,180	37,585	11		4.7	NA	9,510
1987	22	77	299,734	1,383,198	43,017	7	25.0	4.6	149.6	24,210
1988[3]	21	57	323,695	1,545,113	40,869	8	23.0	4.8	154.3	22,960
1989/90	13	70	424,067	1,852,249	43,345	10	30.0	4.4	150.9	17,421
1990/91	16	68	395,502	1,718,848	54,618	7	3.0	4.3	147.5	42,800

[1]Includes deadloss

[2]Six inch permit season opened July 1

[3]Season opening date established September 1

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

Season	-----Season----- Opened	Closed	No. Pounds[1]	Size Limit	Price Per Lb.
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[2]	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[2]	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	12/15	1,852,249	6"	$ 3.50
1990/91	09/01	11/09	1,718,848	6"	$ 3.00

Table 3. 1990/91 preliminary Dutch Harbor brown king crab catch by month.

Month	Vssls	Lndgs	No. Crab[1]	No. Lbs[1]	Pots Lifted	Avg. Wt.	CPUE	Lbs. of Deadloss
Sept	17	28	173,787	777,168	21,780	4.47	8	0
Oct/Nov	16	40	221,715	941,680	32,838	4.25	7	42,800
Season Total	17	68	395,502	1,718,848	54,618	4.34	7	42,800

[1] Deadloss included

[2] Partial closure 9/27 west of 169°30'

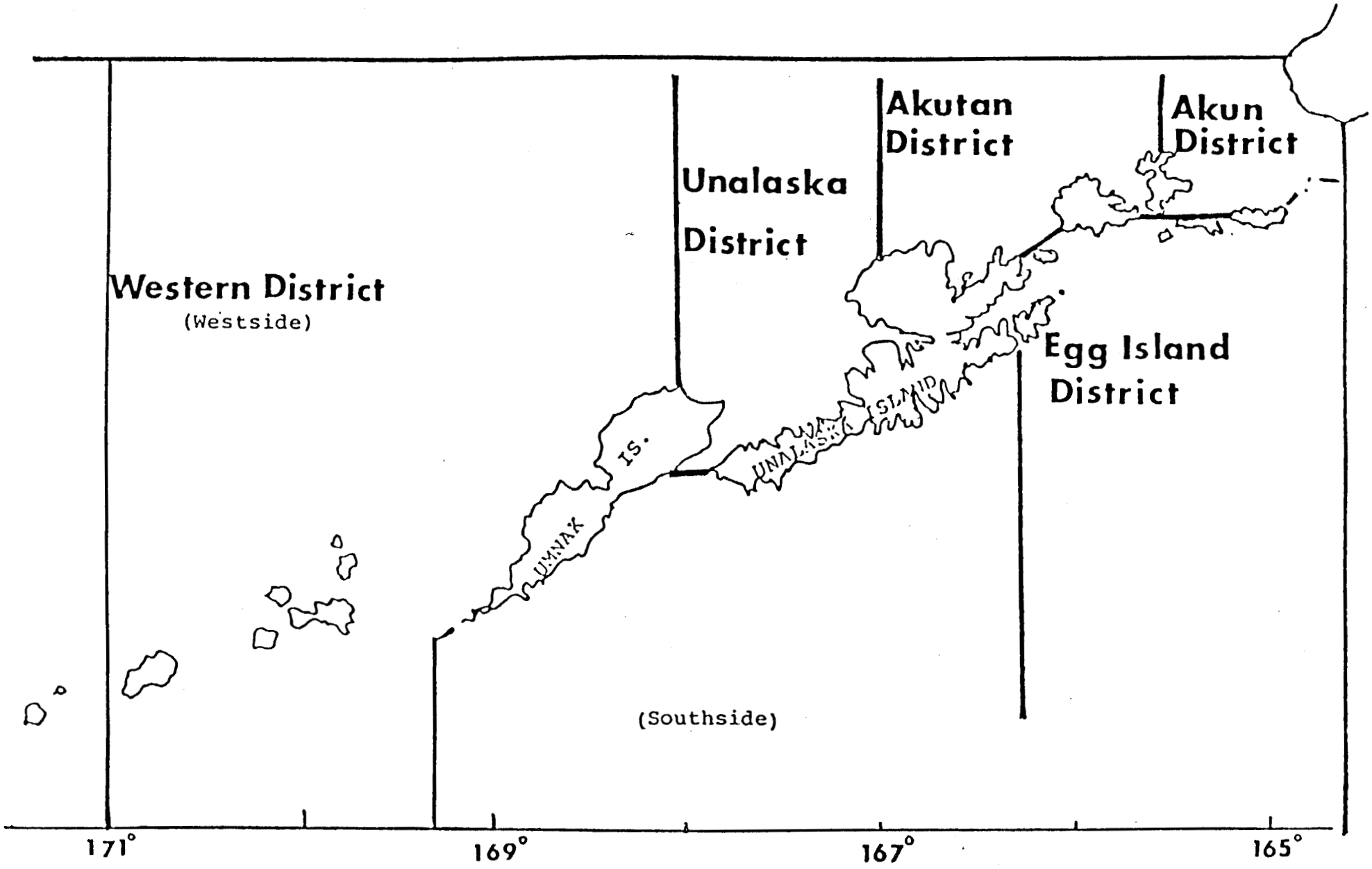

Figure 1. Dutch Harbor Statistical Area "O" and Districts.

EASTERN ALEUTIAN TANNER CRAB

Introduction

The Eastern Aleutian District's habitats are marginal for *Chionoecetes bairdi*, evidenced by the fact that the crab are found only in commercial quantities in a few of the 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 with vessels fishing the waters of Akutan and Unalaska Bays but has since expanded to include all areas known to be inhabited by Tanner crab.

1990 Fishery

The fishery opened at 12:00 noon, January 15 with ten vessels receiving tank inspections and registrations. All but one of these vessels were under 50 feet. As in past seasons, the most effort and catch occurred in Unalaska Bay which had a total catch of over 107,000 pounds (Table 3). The only other area that produced significant catches was the Makushin Bay area which produced 38,000 pounds (Table 3).

Catches in the entire district were less than half that of 1989 when over 326,000 pounds was harvested. Average weights for 1990 in the Unalaska Bay area were 0.2 pounds less than that of the 1989 season, but the average catch of 10 crab per pot remained the same. It appears that smaller crab may have been landed to support the higher average per pot.

The District was closed to fishing on April 9 along with the Bering Sea and Western Aleutian Districts. During the 1989 fishery, another 39,000 pounds were landed during April and May helping account for a higher catch.

Stock Status

The 1990 summer survey indicated a very small *C. bairdi* population in the Eastern Aleutian District, and for the first time, the Department of Fish and Game placed harvest guidelines on the areas surveyed. This information was released to the public by News Release on October 11, 1990. The District received a total harvest guideline of only 70,000 pounds but would be managed based on the inseason fisheries information received.

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

Season	Opened	Closed	Vessels	Landings	Crab[1]	Pounds[1]	Pots Lifted	Average Weight	CPUE	Price per Pound
1973/74	10/1	7/31	6	14	210,539	498,836	NR[2]	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	2,494,488	1.3	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

[1]Deadloss included beginning 1980

[2]No record

Table 2. *Chionoecetes bairdi* catch by month for the Eastern Aleutian District for 1990 season.

Month	Vssls	Lndgs	Crab	Pounds	Pots Lifted	Avg. Wt.	CPUE	Dead-loss (#s)
Jan	9	2	23,983	55,710	1,441	2.32	17	0
Feb	8	32	32,472	71,741	3,627	2.21	9	0
Mar	7	19	14,428	22,862	1,490	1.58	10	0
Apr	4	4	2,386	5,335	300	2.24	8	0
TOTAL	10	75	73,269	155,648	6,858	2.12	11	0

Table 3. *Chionoecetes bairdi* catch by statistical area for the Eastern Aleutian District, 1990.

Area	Lndgs	Crab	Pounds	Pots Lifted	Avg. Weight	CPUE	Deadloss (#s)
665335	35	31,678	60,618	3,392	1.91	9	0
665403	27	21,382	46,938	1,704	2.20	12	0
675331	7	9,327	21,982	975	2.36	10	0
All Others	6	10,882	26,110	787	2.40	14	0
TOTAL	75	73,269	155,648	6,858	2.12	11	0

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 separated 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. These 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, but continued long term 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).

1990 Fishery

The Eastern Aleutian District opened to fishing on May 1, but there was no effort until July. Effort was again by small local boats fishing in Unalaska Bay and delivering to shore plants or selling their catches across the docks.

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

Year	Season	Vssls	Lndgs	Crab	Pounds	Pots Lifted	Avg. Wt.	CPUE	Price Per Pound
1974	1-1/12-31	3	12	24,459	60,517	3,399	4.5	7	NR
1975	1-1/12-31			Confidential					
1976	5-1/12-31			No Catch					
1977	5-1/12-31			No Catch					
1978	5-1/12-31			Confidential					
1979	5-1/12-31			Confidential					
1980	5-1/12-31			No Catch					
1981	5-1/2-1			No Catch					
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	3	19	8,590	17,830	1,706	2.1	5	$ .70
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

ALEUTIAN ISLANDS TRAWL SHRIMP

Introduction

The Aleutian shrimp district of Area 'J' includes all waters west of the longitude of Cape Sarichef. The Aleutian District includes four separate sections: Unalaska Bay, Makushin Bay, Usof Bay and Beaver Inlet.

Historic Background

Shrimp has been fished in the Aleutian District since 1972 (Table 1). Catch and effort increased in subsequent years to a peak of 6.8 million pounds in 1977/78 (Table 1). Since 1978 the Aleutian shrimp fishery has suffered sharp declines in catches and reduced seasons (Tables 1).

1990 Fishery

There was no trawl fishery during 1990 although most offshore areas were open.

Stock Status

Though there have been no surveys in the Aleutian District since October 1983, shrimp stocks probably remain in a severely depleted condition.

Table 1. Historical trawl shrimp fishery statistics for the Aleutian District.

Season[1]	Opened	Closed	Vssls	Lndgs	Tows	Pounds	Average Price/#
1972	1/72	12/72			Confidential		
1973	1/73	12/73			Confidential		
1974	1/74	12/74	7	88	721	5,749,407	NR
1975	1/75	12/75	3	14	129	893,567	$ .065
1976	1/76	12/76	8	66	689	3,670,609	$ .072
1977-78	2/77	3/78	7	93	1,372	6,800,393	$ .12
1978-79	4/78	3/79	7	74	1,007	4,946,350	$ .15
1979-80	4/79	2/80	7	68	799	3,292,049	$ .20
1980	3/80	12/80	4	60	711	2,454,829	$ .23
1981	3/81	12/81	6	45	551	2,185,326	$ .22
1982-83	5/82	6/83[2]			Confidential		
1983			No Fishing				
1984			No Fishing				
1985			No Fishing				
1986			No Fishing				
1987			No Fishing				
1988			No Fishing				
1989			No Fishing				
1990			No Fishing				

[1] Season years: 1972 to 1976 by calendar year, 1977/78 ran Feb. 1977 to Mar. 1978, 1978/79 and 1979/80 Apr. to Mar. and 1980/81 hence Mar. to Feb.

[2] Catch occurred May and June 1982

ALEUTIAN ISLANDS SCALLOPS

Only one vessel fished the Eastern Aleutians District for scallops during 1990. Catches came from areas south of Unalaska and Akutan Islands.

Table 1. Historic scallop fishery statistics for the Eastern Aleutian 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			

WESTERN ALEUTIANS MANAGEMENT AREA

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

MARCH 1991

BY

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ADAK BROWN KING CRAB

Historic Background

The Adak (Area 'R') 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 inches.

1990/91 Fishery (Preliminary Report)

The fishery opened on November 1 concurrently 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 registered for the area.

With the small effort the fishery has received, catches were well below the 1989/90 fishery with only 1 million pounds being landed at the time of this writing. Currently, only two catcher processors and three catcher vessels are fishing the stocks. Some increased effort may occur as the ice and fishing conditions in the Bering Sea push the vessels off those grounds leaving only the Adak Area as an alternate choice.

Stock Status

The Adak brown king crab stocks are not surveyed by the Department, and there is no population estimate available. The fishery has produced over 70 million pounds of brown king crab in eight years, but due to decreased price and effort, this years's fishery may not produce the historic average of 8.75 million pounds.

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

Season	-----Season----- Opened	Closed	No. Vssls	No. Lndgs	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Percent Newshell	Avg. Lngth	Min. Size	Price/ Pound	Deadloss
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"	$2.00	125,073
1985/86[2]	11/01	08/15	49	386	2,452,048	11,124,759	202,401	4.5	12	86.3	151.3	6.0"	$2.50	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[3]	11/01													

[1]Deadloss included

[2]Size limit reduced to six inches

[3]Season in progress

Table 2. 1989/90 Adak, Area 'R', brown king crab catch statistics by month.

Mo.	No. Vssls	No. Lndgs	No. Crab[1]	No. Lbs.[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
Nov	54	95	277,080	1,160,236	48,982	4.2	6	14,477
Dec	35	54	235,762	972,364	31,625	4.1	8	25,555
Jan	16	35	165,069	689,965	18,145	4.2	9	22,693
Feb	17	46	237,600	992,428	25,692	4.2	9	8,120
Mar	20	48	325,191	1,286,573	33,055	4.0	10	5,300
Apr	21	57	375,277	1,534,859	43,178	4.1	9	22,099
May	19	47	250,938	1,018,851	31,266	4.1	8	1,980
Jun	15	43	228,282	960,195	29,990	4.2	8	0
Jul	17	55	261,751	1,087,846	43,541	4.2	6	500
Aug	13	25	113,238	459,083	18,679	4.1	6	0
Total	64	505	2,470,188	10,162,400	324,153	4.1	8	100,724

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

Mo.	No. Vssls	No. Lndgs	No. Crab[1]	No. Lbs.[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
Nov	6	14	73,707	308,812	5,399	4.2	14	0
Dec	7	19	136,390	552,435	11,196	4.1	12	7,000
Total[2]	7	33	210,097	861,247	16,595	4.1	12	7,000

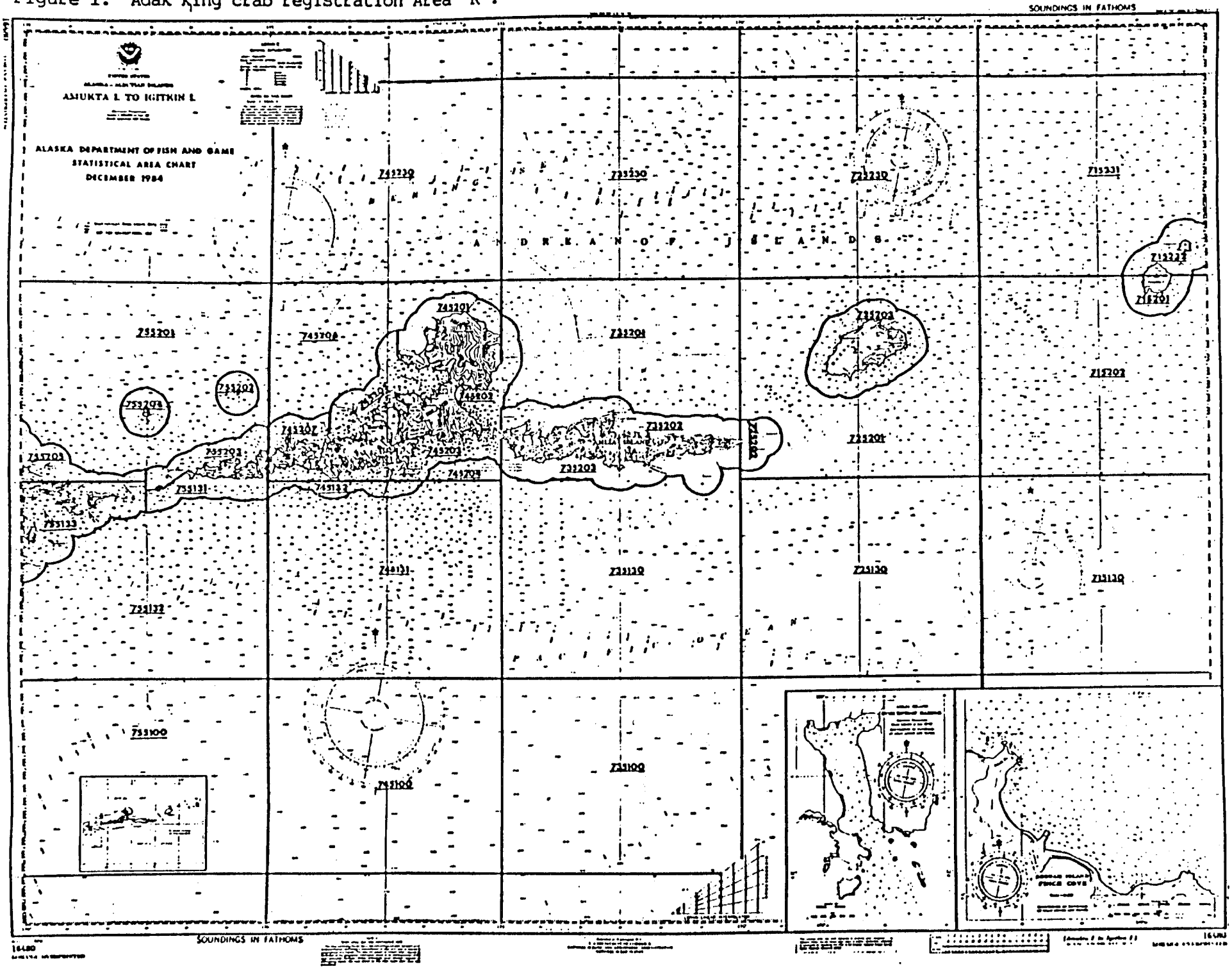
[1] Deadloss included

[2] Preliminary figures - season in progress

Table 4. 1989/90 Adak brown king crab catch by statistical area.

Stat. Area	No. Lndgs.	No. Crab	No. Lbs.	Pots Lifted	Avg. Wt.	CPUE	Dead-loss #
715201	5	16,012	65,632	2,573	4.1	6	3,160
715202	50	364,940	1,482,637	35,103	4.1	10	12,871
715231	29	157,094	633,221	26,204	4.0	6	26,942
715232	10	52,087	205,047	7,215	3.9	7	61,730
725130	5	13,824	66,181	3,519	4.8	4	44
725201	35	196,123	813,475	22,384	4.2	9	3,322
725230	5	28,846	110,649	3,663	3.8	8	0
735201	10	18,645	76,328	8,223	4.1	2	2,400
735230	4	9,690	42,307	3,180	4.4	3	0
755132	8	17,884	77,697	6,787	4.3	3	21
765132	14	46,326	195,421	9,556	4.2	5	1,500
785102	12	38,650	164,530	10,241	4.0	4	4,350
785131	17	5,668	241,678	9,861	4.3	6	0
785135	6	10,542	41,477	1,543	3.9	7	0
795102	5	23,004	90,699	2,570	3.9	9	0
795131	7	13,241	49,811	1,513	3.8	9	0
795132	20	68,125	261,263	7,250	3.8	9	0
795200	26	69,867	306,897	7,579	4.4	9	0
805103	12	51,395	216,733	6,682	4.2	8	0
805132	19	144,556	625,449	13,223	4.3	11	0
805201	18	31,620	136,621	8,605	4.3	4	90
815100	10	65,267	290,945	11,083	4.5	6	8,189
815131	6	18,705	81,622	3,752	4.4	5	0
825201	6	55,476	224,906	3,862	4.1	14	0
835130	7	20,226	85,278	3,383	4.2	6	0
835200	22	82,899	329,836	9,180	4.0	9	4,100
845130	9	42,080	176,441	6,088	4.2	7	0
845202	18	112,362	442,291	10,214	3.9	11	0
855200	11	115,622	457,404	7,521	4.0	15	3,500
855231	12	132,041	526,880	6,747	4.0	20	0
875232	7	54,305	221,614	10,886	4.1	5	0
OTHERS	80	393,066	1,421,430	53,963	3.6	7	13,505
TOTAL	425	2,077,122	8,740,970	270,190	4.2	7	87,219

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



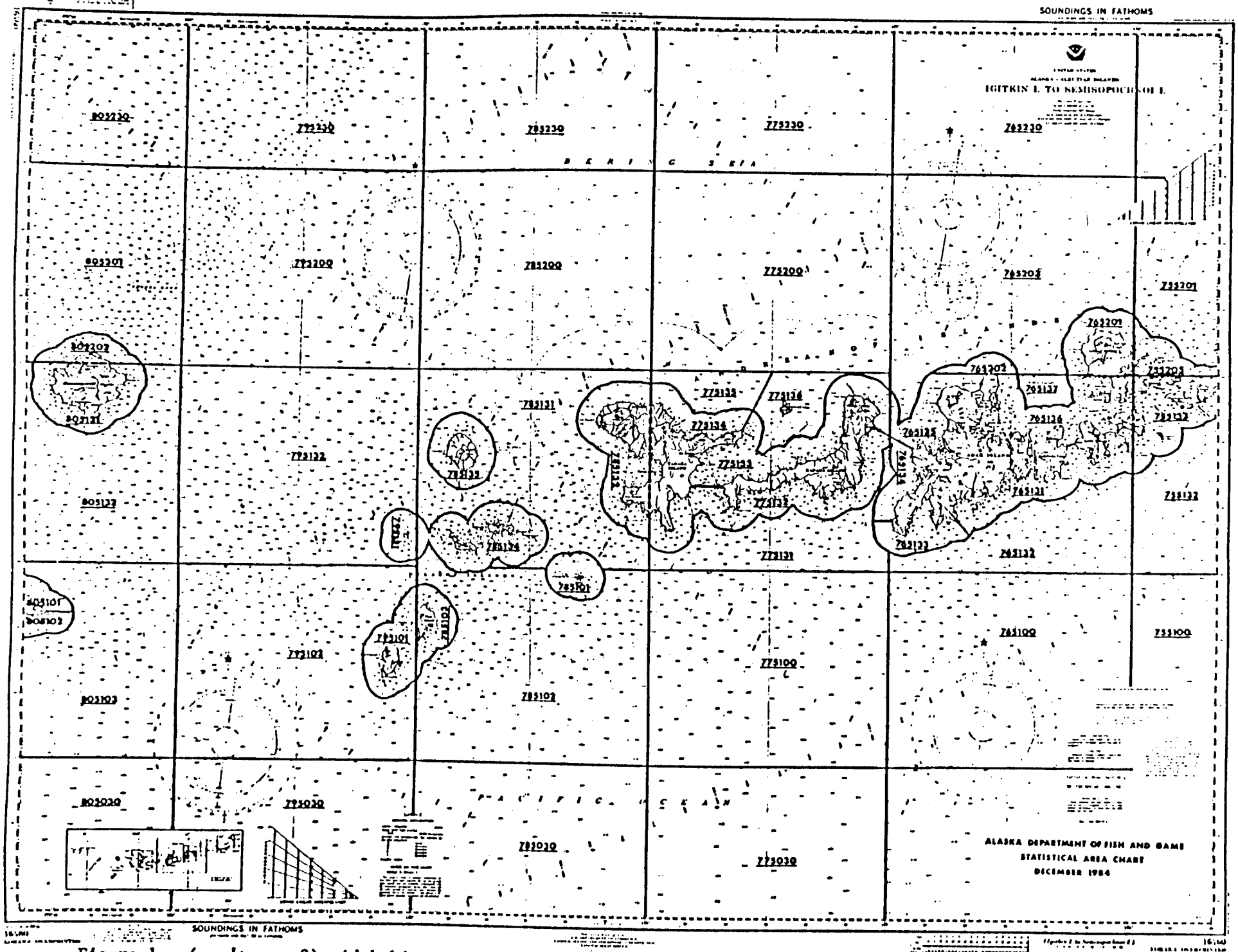
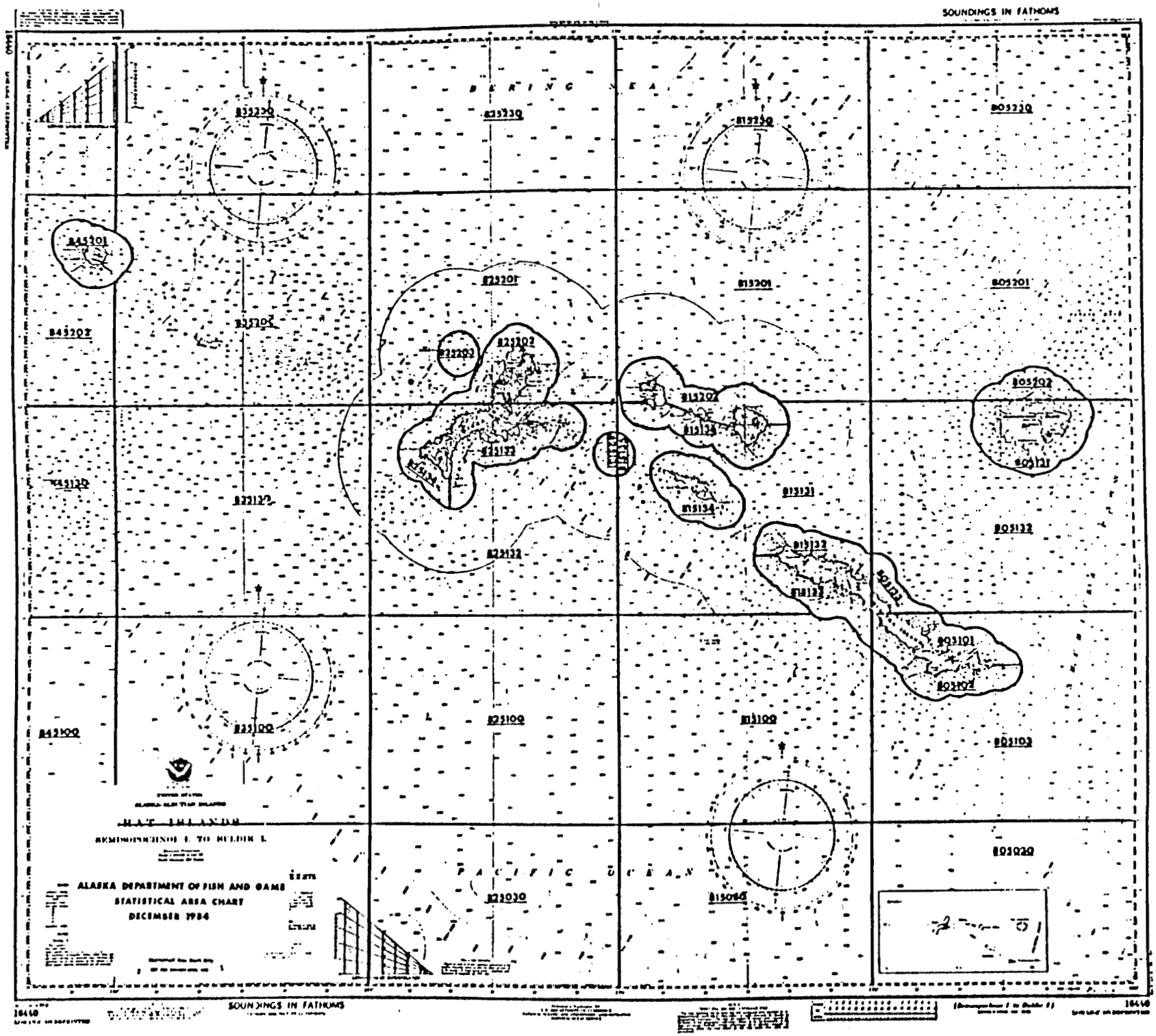


Figure 1. (con't pg. 2) Adak king crab registration Area "R".

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



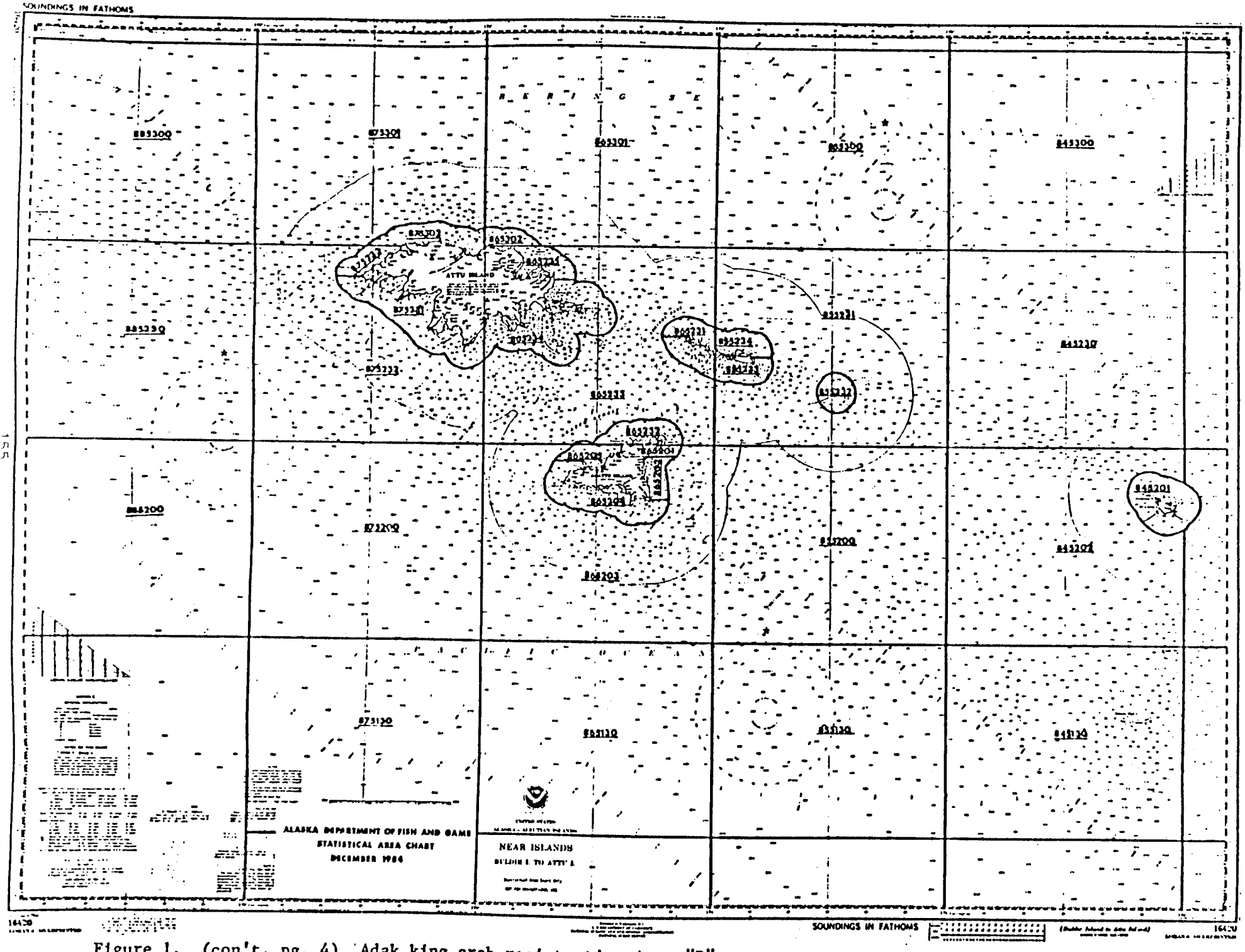


Figure 1. (con't. pg. 4) Adak king crab registration Area "R".

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. For a short time the expanding Dutch Harbor king crab fishery diverted effort, and Area 'R' catches dropped to 5.9 million pounds by the 1966/67 season.

From 1967/68 to the 1972/73 seasons, catches were relatively stable at 14 million to 18 million pounds. The large catches were maintained by several years of very 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 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 research surveys conducted in 1975, 1976, and 1977 concluded that several years of poor recruitment were the cause of the decline. A shell disease and 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 were able to fish for both species with the same gear but on different grounds.

1990/91 Fishery (Preliminary)

The red king crab fishery opened on November 1, concurrent with brown and Tanner crab fisheries in the area and to the Bristol Bay red king crab fishery (Table 2). Registrations and tank inspections were given to only four catcher processors as the majority of the fleet went to the Bristol Bay Area, contrary to public testimony during the spring Board of Fisheries meeting indicating that concurrent seasons would tend to distribute the fleet more evenly between fisheries. Four other vessels, including two catcher processors, registered for the area within a week of the opening.

Vessels that were first on the fishing grounds had good catches for several weeks, but after more vessels entered the fishery, catches declined and several of the catcher processors left the Adak Area and re-registered to fish *C. bairdi* in the Bering Sea after its opening on November 20.

Catches by six vessels, for November, were over 477,600 pounds; less than half of what was landed during the 1989/90 fishery (Tables 3 and 4). But considering only six vessels landed the 477,600 pounds, the average catch per vessel and average catch per pot was much higher than the previous season.

Almost the entire catch, to date, has come from the Semisopochnoi Island and Petral Banks Areas as in past seasons. Most of the effort has now left the Adak Area, and only a few vessels are reporting any catch of red king crab.

The red king crab season closed by regulation on February 15th with an expected catch of 800,000 pounds; the lowest harvest in three years which can probably be attributed to the small effort in the fishery.

Stock Status

The Adak red king crab stocks have not been surveyed since 1977; however, the Mandatory Observer Program has had 100 percent coverage on these grounds since 1988 and is producing valuable information on the fishery and stock condition. The stocks seem stable but very depressed in comparison to historic catches of the early 1970's (Table 1).

Table 1. Adak, Area R, historic red king crab catch[1]

Season	No. Vssls	No. Lndgs	No. Crab[2]	No. Lbs.[2]	Lifted	CPUE	Wt.	Recruits	Lngth	Min. Size	Dead-loss
1960/61	4	41	NA	2,074,000	NA	9	NA		NA	-	NA
961/62	8	218	NA	6,114,000	NA	NA	NA	NA	NA	-	NA
1962/63	9	248	NA	8,006,000	NA	NA	NA	NA	NA	-	NA
1963/64	11	527	NA	17,904,000	NA	NA	NA	NA	NA	-	NA
1964/65	18	442	NA	21,193,000	NA	NA	NA	NA	NA	-	NA
1965/66	10	431	NA	12,915,000	NA	NA	NA	NA	NA	6.5"	NA
1966/67	10	90	NA	5,883,000	NA	NA	NA	NA	NA	6.5"	NA
1967/68[3]	22	505	NA	14,131,000	NA	NA	NA	NA	NA	6.5"	NA
1968/69	30		NA	16,100,000	NA	NA	NA	NA	NA	7.0"	NA
1969/70	33	435	NA	18,016,000	115,929	NA	6.5	NA	NA	7.0"	NA
1970/71	35	378	NA	16,057,000	124,235	NA	NA	NA	NA	7.0"	NA
1971/72	40	166	NA	15,475,924	46,011	NA	NA	NA	NA	6.5"	NA
1972/73[4]	43	313	3,461,025	18,724,144	81,133	43	5.4	50.9	NA	6.5"	NA
1973/74	41	239	1,844,974	9,741,464	70,059	26	5.3	48.5	148.6	6.5"	NA
1974/75	36	97	532,298	2,774,963	32,620	16	5.2	48.6	148.6	6.5"	NA
1975/76	20	25	79,977	411,583	8,331	10	5.2	67.5	147.2	6.5"	NA
1976/77					C l o s e d						
1977/78	12	18	160,343	905,527	7,269	22	5.7	43.9	152.2	6.5"	NA
1978/79[5]	13	27	149,491	807,195	13,948	11	5.4	56.7	NA	6.5"	1,170
1979/80	18	23	82,250	467,229	9,757	8	5.7	42.8	152.0	6.5"	24,850
1980/81	17	52	254,390	1,419,513	20,914	12	5.6	65.2	149.0	6.5"	54,360
1981/82	46	106	291,311	1,648,926	40,697	7	5.7	55.5	148.3	6.5"	8,759
1982/83	72	191	284,787	1,701,818	66,893	4	6.0	49.9	150.8	6.5"	7,855
1983/84	106	248	298,948	1,981,579	60,840	5	6.6	30.4	157.3	6.5"	3,833
1984/85	64	113	206,751	1,367,672	50,685	4	6.6	31.4	155.1	6.5"	0
1985/86	35	89	162,271	906,293	32,478	5	5.6	40.0	152.2	6.5"	6,120
1986/87	33	69	126,146	712,243	29,189	4	5.6	NA	NA	6.5"	500
1987/88	71	109	211,712	1,213,933	43,433	5	5.7	65.3	148.5	6.5"	6,900
1988/89	73	156	266,053	1,567,314	64,374	4	5.9	39.0	153.1	6.5"	557
1989/90	56	123	196,070	1,118,566	54,513	4	5.7	NA	NA	6.5"	759
1990/91[6]	7	24	115,365	659,003	7,931	14	5.7	NA	NA	6.5"	0

[1]Includes catch from former Area 'S' now Western Aleutians District 'R'

[2]Includes deadloss

[3]Area 'S' fishery began

[4]Area 'S' continued until June

[5]Area 'S' eliminated - added to Area 'R'

[6]Preliminary figures

Table 2. Adak Area 'R' red king crab harvest composition by fishing season.[1]

Season	Season Opened	Season Closed	No. Pounds[2]	Size Limit	Price Per Lb.
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[3]	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[4]	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[5]	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[6]	11/01	02/15	659,003	6.5"	4.00

[1] Includes catch from former Area 'S' now Western Aleutians District Area 'R'

[2] Includes deadloss

[3] Area 'S' fishery began

[4] Area 'S' continued until June

[5] Area 'S' eliminated - added to Area 'R'

[6] Preliminary figures

Table 3. 1989/90 Adak, Area 'R', red king crab catch statistics by month.

Month	No. Vssls	No. Lndgs	No. Crab[1]	No. Lbs[1]	Pots Lifted	Avg. Wt.	CPUE	Dead-loss Lbs
Nov	52	87	169,165	970,433	42,729	5.74	4	759
Dec	24	25	17,152	91,869	9,750	5.36	2	0
Jan	4	6	5,162	30,977	1,208	6.00	4	0
Feb	3	5	4,561	25,287	826	5.54	5	0
Total	52	123	196,070	1,118,566	54,513	5.70	4	759

Table 4. 1990/91 Adak, Area 'R', red king crab catch statistics by month (Preliminary figures).

Month	No. Vssls	No. Lndgs	No. Crab[1]	No. Lbs[1]	Pots Lifted	Avg. Wt.	CPUE	Dead-loss Lbs
Nov	6	15	82,942	477,670	5,215	5.76	16	0
Dec	4	9	32,423	181,333	2,716	5.59	12	0
Total[2]	7	24	115,365	659,003	7,931	5.71	15	0

[1] Deadloss included

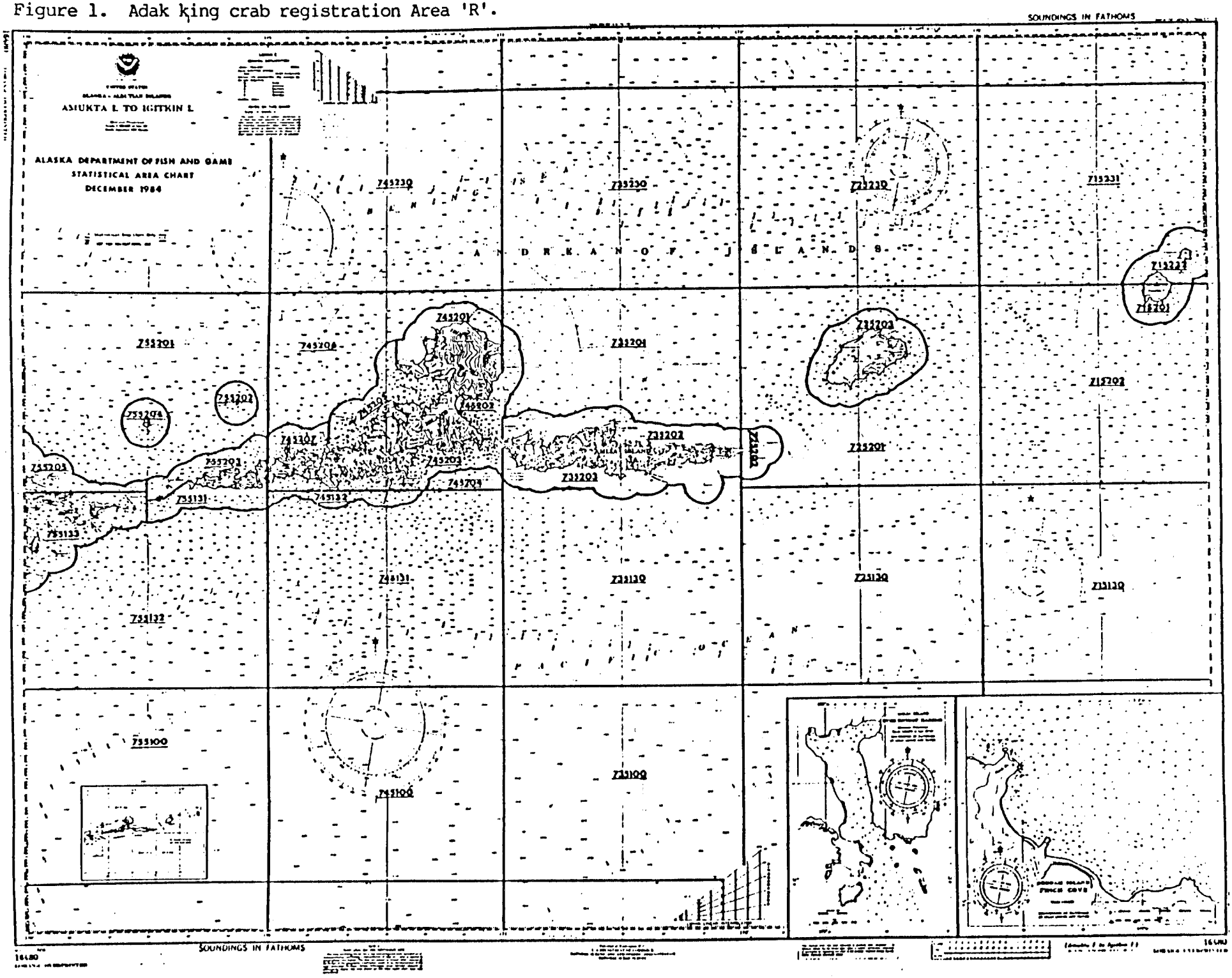
[2] Preliminary figures

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

Stat Area	No. Lndgs	No. Crab[1]	No. Lbs[1]	Lifted	Avg. Wt.	CPUE	Dead-loss Lbs.
725201	4	109	639	345	5.86	0	0
735201	11	7,552	48,730	3,744	6.45	2	0
745131	5	1,167	8,229	1,183	7.05	1	7
745202	6	1,162	7,479	2,328	6.44	1	0
755132	5	10,357	75,436	3,410	7.28	3	0
795200	21	50,712	276,345	7,053	5.45	7	22
805201	31	61,469	333,225	13,895	5.42	4	689
805202	4	12,285	68,352	2,860	5.56	4	41
Other	36	51,257	300,131	19,695	5.85	3	0
Total	123	196,070	1,118,566	54,513	5.00	4	759

[1]Deadloss included

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



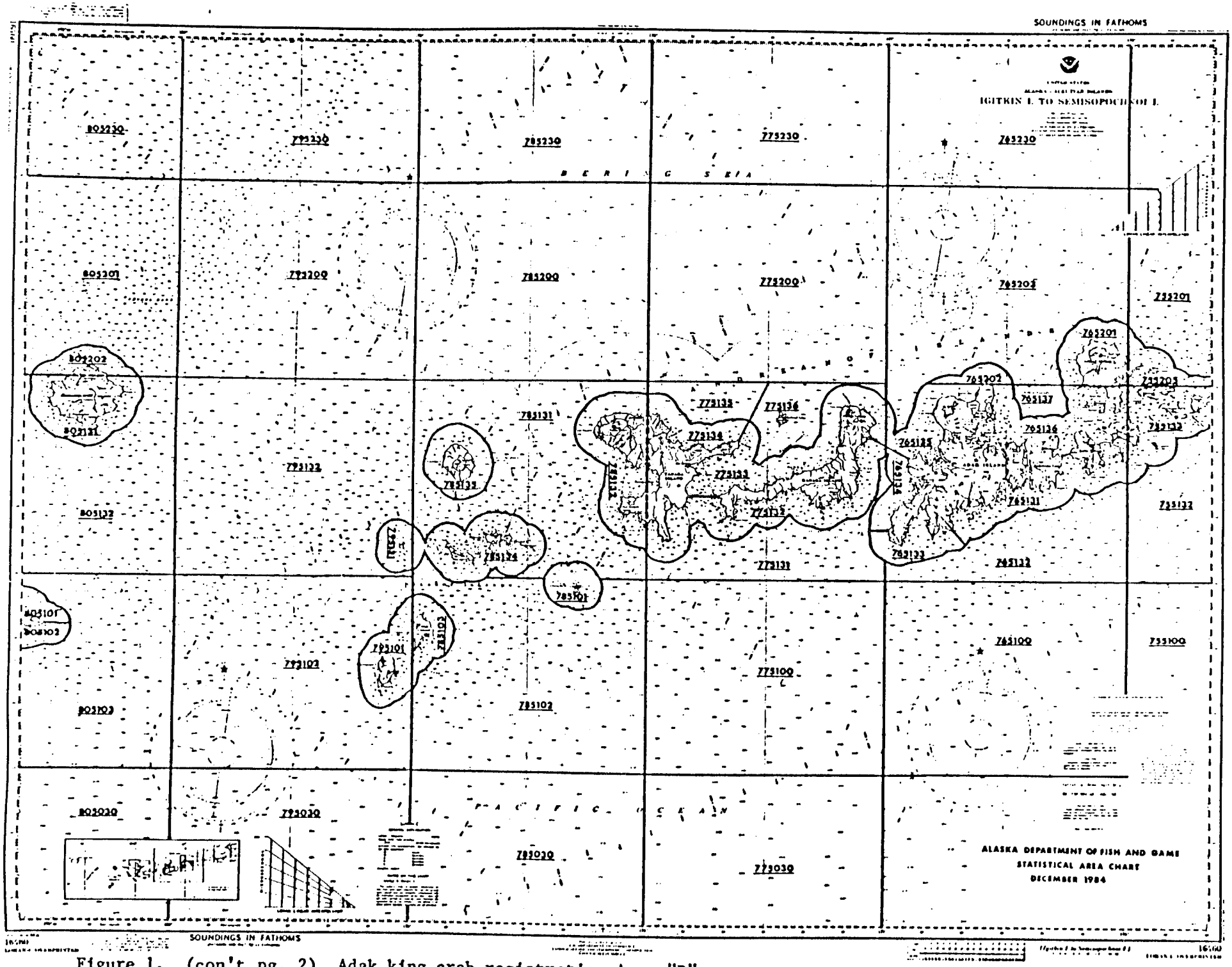
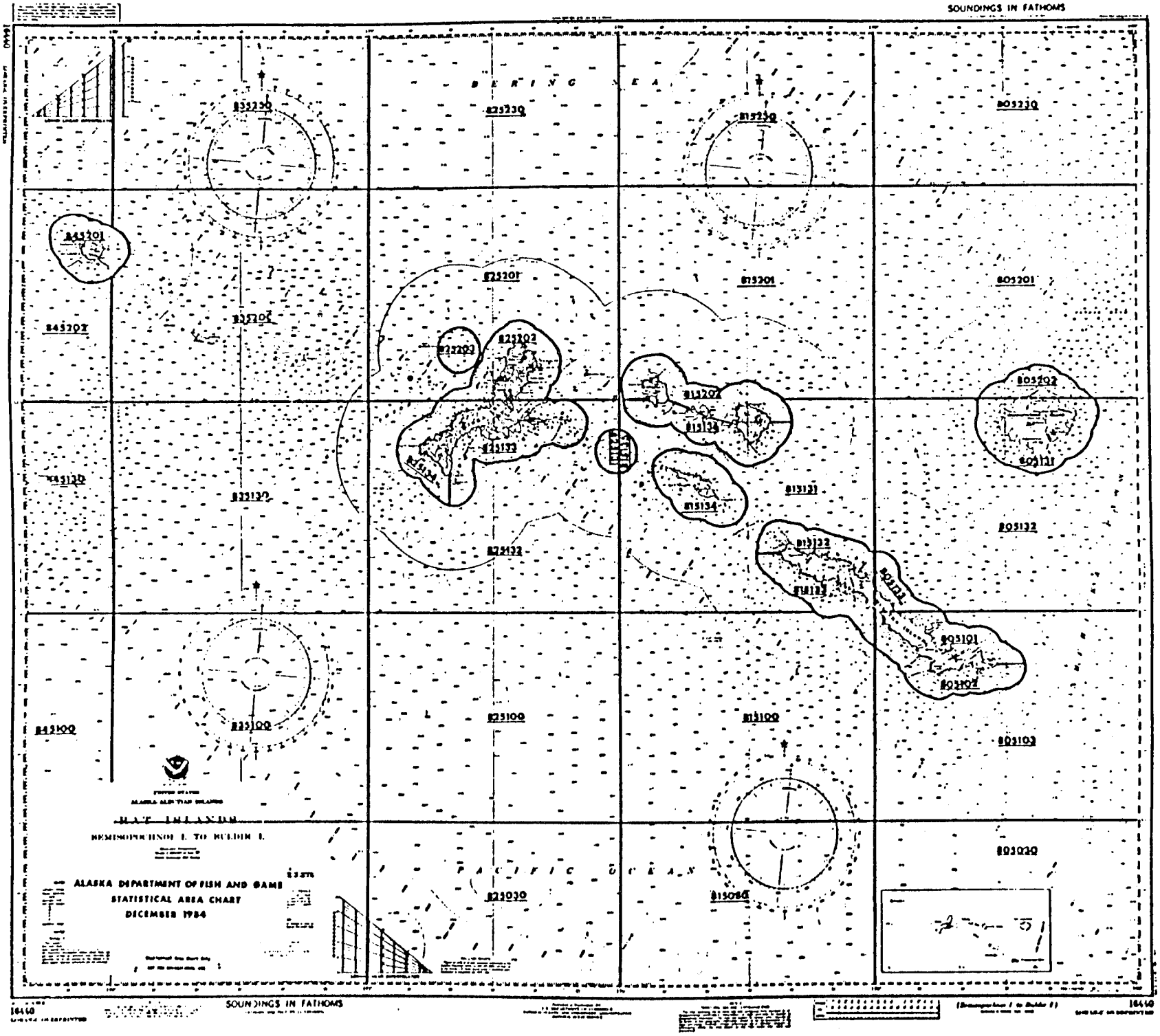


Figure 1. (con't pg. 2) Adak king crab registration Area "R".

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



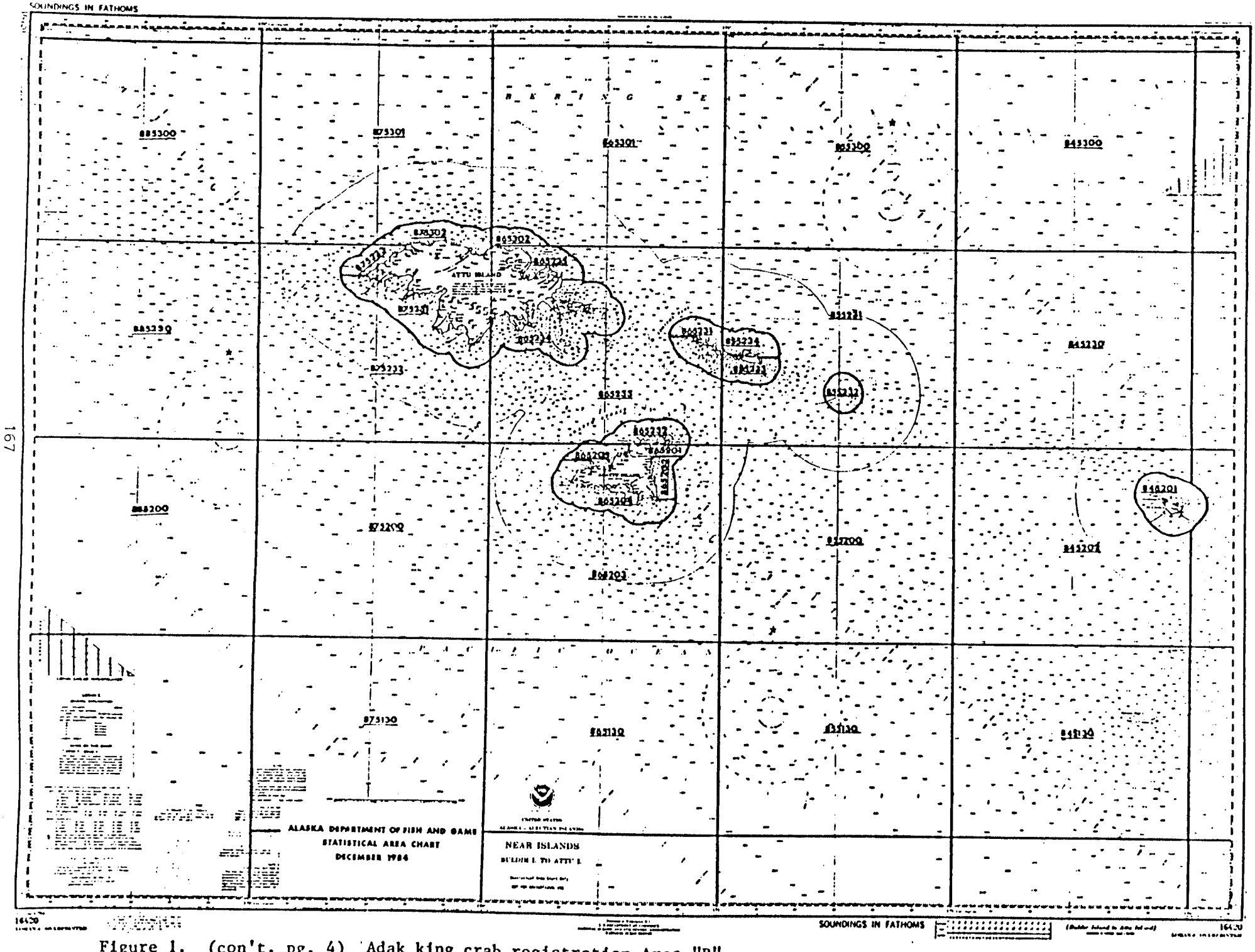


Figure 1. (con't. pg. 4) Adak king crab registration Area "R".

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 in conjunction with the red king crab fishery in the Area. 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 taken during the 1981/82 fishery (Table 1).

1989/90 Fishery

This fishery opens concurrently with the red and brown king crab fisheries in the Area. The large vessels do not target on the Tanner crab stocks in the Western Aleutians, and most of the catch was reported incidental to the red king crab fishery since both stocks share the same grounds.

A small boat fishery has developed at the Adak Naval Base with several vessels fishing the local harbor area and delivering and selling their catches locally to the Base residents or the service food facilities.

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

Year	Opened	Closed	Vssls	Lndgs	No. Crab[1]	No. Lbs.[1]	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

[1]Deadloss included

BERING SEA AREA

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

MARCH 1991

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 percent decline in *C. bairdi* stocks could be expected to occur 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 called the Eastern Subdistrict, industry and markets have turned to the smaller, 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.

1990 *C. bairdi* Fishery (Winter)

The 1990 winter fishery opened at 12:00 noon on January 15, 1990 with a harvest guideline of 29.5 million pounds. This opening should not be confused with the new fall 1990 fishery approved by the Board of Fisheries during the March meetings. Registrations and tank inspections were given to 50 vessels including five catcher processors that indicated they would be targeting on *C. bairdi*. Sixty other vessels were also registered for the *C. opilio* fishery.

With the increase in the quota and a good price, more effort was expected to target on the *C. bairdi* stocks north of the Alaska Peninsula. Vessels fishing for *C. opilio* in the Pribilof Islands Area also found a fishable *C. bairdi* population, and most vessels landed *C. bairdi* incidental to their *C. opilio* deliveries. Because of these incidental deliveries, the average catch per pot is somewhat smaller than it would be if only the directed fishery were reported. For example, the average catch per pot east of 166° West Longitude, the major *C. bairdi* grounds, is 27 crabs per pot, 12 crabs per pot higher than the season average of 15 crabs per pot (Tables 4 and 5).

Directed effort on *C. bairdi* east of 166° West Longitude dropped off in late February as catch per pot began to decline and the *C. opilio* fishery around the Pribilof Islands started to produce high catches. In addition to the poor *C. bairdi* catches, the ice edge forced the directed fleet off the major fishing grounds and on to less productive grounds nearer the Alaska Peninsula (Tables 4 and 5).

Average catch per pot continued to decline for the remainder of the fishery closing on April 9 with nine crabs per pot, a 17 crab per pot decline from the January fishery. New shell and molting king crab had already been observed in the fishery ranging from 8 to 35 percent of the king crab caught, and with a depressed king crab stock in the Bristol Bay Area, the fishery was closed. The season harvest of *C. bairdi* was 24.5 million pounds, the highest catch since 1982 (Table 1). A total of 179 vessels landed *C. bairdi* with 71 percent or 17.5 million pounds coming from the historic fishing grounds north of the Alaska Peninsula and east of 166° West Longitude (Table 5, Figure 1).

1990 *C. bairdi* Fishery (Fall)

During the spring 1990 Board of Fisheries meeting, the Board adopted regulations opening the *C. bairdi* fishery east of 166° West Longitude, seven days after the closure of the Bristol Bay red king crab fishery or on November 7 if there was no king crab fishery. During the meeting, industry representatives both from the processing and fishing sectors, testified in favor of this opening. Since these dates were within the biological seasons for Tanner crab in the Bering Sea, the Department had no objections to the proposed opening.

During late August and early September, a test fishery was conducted for the purpose of tagging both king and Tanner crab. Few *C. bairdi* crab were delivered during this time as industry did not want them. Again during October, another test fishery was conducted for the purpose of allowing "hands on" experience for observer candidates. A total of 661 *C. bairdi* were landed, yielding 1,576 pounds. The average weight of these crab was almost 0.1 pound larger than the winter fishery (Table 4).

The processor that purchased these crab indicated to the Department that recovery rates were below that desired by the market and shared this information with other companies on request. Much concern was expressed by industry over the recovery rates, and requests were made to delay the season and allow industry to test Tanner crab during the king crab fishery to determine if the fishery should open as scheduled. No such decision was made, and as scheduled, the *C. bairdi* season opened on November 20, seven days after the closure of the Bristol Bay red king crab season. Tank inspections and registrations were given in Dutch Harbor, Akutan, King Cove, and Port Moller to 200 vessels including 17 catcher processors. All remote processors and catcher processors were required to carry contract observers.

Gear from the red king crab fishery was allowed to remain on the fishing grounds, in stored condition, until the opening of the Tanner crab fishery. This allowed the fleet to start fishing rapidly, and over six million pounds of crab were landed within two weeks. Industry was still concerned over the quality of the crab but continued to buy throughout the month of December bringing the total for the month to over 21 million pounds.

During the holidays effort declined, and with the opening of the *C. opilio* fishery on January 15, most of the fishing effort moved to that fishery. Prices remained low; one dollar per pound for *C. bairdi*, and with the large harvest guideline for *C. opilio* (315 million pounds), only $.40 per pound was originally offered.

As of March 3, 1991, 35 million pounds of *C. bairdi* have been landed; 32 million pounds coming from the historic grounds north of the Alaska Peninsula. Some directed fishing is being conducted around the Pribilof Islands on the *C. bairdi* stocks in that area with approximately 3 million pounds landed.

Stock Status

According to the 1990 National Marine Fisheries *Service Report to Industry*, large males are widely distributed in the Bristol Bay Area. There was a small increase in the number of legal males but not as large an increase as the previous three years and the population is reaching its peak abundance.

The estimated abundance of prerecruits showed a decrease of 22 percent.

1990 *C. opilio* Fishery

The *C. opilio* fishery opened at 12:00 noon on January 15. In early November, a news release announced the Tanner crab harvest guideline for the Westward Region. The forecast for the Bering Sea *C. opilio* fishery was 139.8 million pounds based on four inch or larger crab; the desired size by the market. The harvest guideline was further broken down by subdistrict; 87.8 million pounds for the Eastern Subdistrict and 52 million pounds for the Western Subdistrict.

Industry was further notified in the news release that the harvest projections did not consider the sorting of crab by industry for any particular marketing characteristics; primarily the old shell or skip molt crab. Both subdistricts experienced large increases in these "dark shelled" crabs; 11 percent in the Eastern and 17 percent in the Western.

With a large population on the grounds, but split effort between the *C. bairdi* and *C. opilio* fisheries, initial weekly landings of *C. opilio* were down as much as 40 percent from the 1989 season. Landings in January totaled only 7.8 million pounds compared to over 18 million pounds for January 1989. Average catch per pot was also half that of the previous season (Table 9).

Monthly catches in 1990, from the Eastern Subdistrict, remained behind the 1989 season until the closure of *C. bairdi* east of 165° West Longitude, and the entire fleet targeted on *C. opilio*. With this increased effort in April, catches for the month exceeded 41.4 million pounds; 9 million pounds coming from the Western Subdistrict (Table 9). Average catch per pot remained well below the 1989 season's averages throughout the 1990 season; 178 and 135 respectively (Tables 6 and 8).

On April 4, the Department estimated that the harvest guideline for the Eastern Subdistrict would be reached, and the announcement closing the area east of 173° West Longitude was issued on April 10, 1990. The actual season harvest was 94.7 million pounds. The crab averaged 1.24 pounds each, and catch per pot averaged 149 crabs (Table 8).

After the remainder of the Eastern Subdistrict closed in late April, catches and effort in the Western Subdistrict increased dramatically, and in May, 129 vessels landed over 31 million pounds bringing the Subdistrict total to over 44 million pounds; 8 million pounds less than the preseason harvest guideline. Crab in the area appeared to be of good quality, unlike previous seasons when crab from this area were less desirable due to shell coloration.

The area's harvest guideline was expected to be reached by mid-June, and the fishery was closed on June 12. A total of 66.9 million pounds was harvested from the area; the largest ever from the Western Subdistrict (Table 7). Crab averaged 1.2 pounds each; the same as the Eastern Subdistrict, and there were no reports of high sorting due to shell coloration.

The *C. opilio* fishery in the Bering Sea produced a record catch of over 161.7 million pounds caught by 178 vessels. Crab were delivered to floater

processors at the Pribilof and St. Matthew Islands and to shore-based processors at Dutch Harbor, Akutan, King Cove, Kodiak and St. George in the Pribilof Islands. The fishery was valued at over $103.5 million.

1991 *C. opilio* Fishery

The 1991 *C. opilio* fishery opened by regulation at 12:00 noon on January 15 with a harvest guideline of over 315 million pounds; almost twice as much as was harvested during the 1990 fishery. The guideline was based on crab four inches or larger. The Eastern Subdistrict harvest guideline is 246.1 million pounds and the Western Subdistrict harvest guideline is 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 registered for the *C. bairdi* fishery in November.

During the 1990 Spring Board of Fisheries meeting, a proposal to close the entire Eastern Subdistrict (waters east of 173° West Longitude) on March 31 was adopted. The rationale for the closure was based on the protection of 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 felt that a regulatory closure was 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 would be illegal. A news release issued on December 18 informed industry of the decision. 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*.

As of March 3, 1991, 69.5 million pounds of *C. opilio* have been landed. Average catch per pot is higher than the 1990 season average of 135 crabs per pot.

Stock Status

National Marine Fisheries Service reports that the estimate of large males is 420.3 million crab; a 125 percent increase from last year, but males under the present market size of four inches show only a 25 percent increase.

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

Year	Vessels	Landings	Crab[1]	Pounds[1]	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	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	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

[1] Deadloss included

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

Season	Opened	Closed	Vessels	Pounds[1]	Avg. Wt.	CPUE	Price Pound
1968[2]			NA	17.9	2.8	5	NA
1969[2]			NA	1,008.9	2.9	12	NA
1970[2]			NA	1,410.7	2.1	29	NA
1971[2]			NA	166.1	2.7	8	NA
1972[2]			NA	199.2	2.8	6	NA
1973[2]			NA	301.9	2.3	8	NA
1974[2]			NA	5,044.2	2.0	115	NA
1974/75	7-29	6-15	28	7,028.4	2.5	72	$ .20
1975/76	8-1	7-15	66	22,358.1	2.5	63	.19
1976/77	8-1	7-7	83	51,455.2	2.5	68	.30
1977/78	9-15	6-15	120	66,430.9	2.5	51	.38
1978/79	11-1	5-24	144	42,547.2	2.5	42	.52
1979/80	11-1	5-11	157	36,614.3	2.5	30	.52
1981	1-15	4-15	165	29,630.5	2.5	21	.58
1982	2-15	6-15	125	11,008.8	2.3	10	1.06
1983[3]	2-15	5-22 6-15	108	5,273.9	2.3	8	1.20
1984	2-15	6-15	41	1,208.2	2.3	8	.95
1985	1-15	6-15	38	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	7,012.9	2.4	16	2.90
1990	1-15	4-09[4] 4-24[5]	179	24,549.3	2.3	15	1.85

[1] Figures given in thousands - deadloss included

[2] Incidental to the king crab fishery

[3] Partial Bering Sea closure

[4] East of 165° West longitude

[5] West of 165° West longitude

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

Season	Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1974/75	Southeastern		72	2,526,687	6,504,984	32,275	2.6	78	0
	Pribilofs		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	NR
1975/76	Southeastern		230	6,682,232	16,643,194	106,445	2.5	63	0
	Pribilofs		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	NR
1976/77	Southeastern		437	16,089,057	41,007,736	233,667	2.6	69	0
	Pribilofs		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	NR
1977/78	Southeastern		706	21,055,527	53,278,012	408,437	2.5	52	0
	Pribilofs		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		758	15,601,891	39,694,205	356,594	2.5	44	75,400
	Pribilofs		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...

[1]Deadloss included

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

Season	Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
1979/80	Southeastern		789	14,329,889	35,724,003	476,410	2.5	30	56,446
	Pribilofs		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		674	10,532,007	26,684,956	496,751	2.5	21	97,398
	Pribilofs		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		539	3,825,433	8,812,302	322,634	2.3	12	69,829
	Pribilofs		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		10	29,478	48,454	5,950	1.7	5	167
	Southeastern		287	1,984,673	4,633,354	192,538	2.3	10	52,879
	Pribilofs		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		91	470,181	1,099,142	44,546	2.3	11	4,688
	Pribilofs		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

[1]Deadloss included

continued...

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

Season	Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadlos
1985	Southeastern	38	143	1,278,109	3,139,041	96,976	2.4	13	14,096
	Pribilofs	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	98	248	897,059	2,210,394	112,334	2.5	8	10,724
	Western			N O C A T C H R E P O R T E D					
	TOTAL	98	248	897,059	2,210,394	112,334	2.5	8	10,724
1989	Eastern	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
	Western			N O C A T C H R E P O R T E D					
	TOTAL	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
1990	Eastern		1,105	10,708,996	24,529,165	701,924	2.3	15	87,475
	Western		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

[1]Deadloss included

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

Month	Vssls	Lndgs	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Dead-loss
Jan	84	95	1,470,800	3,445,000	56,358	2.34	26	4,160
Feb	142	302	3,916,876	9,009,251	220,155	2.30	18	34,295
Mar	166	346	3,838,668	8,762,509	264,597	2.28	10	35,420
Apr	159	289	1,491,580	3,332,539	170,027	2.23	9	13,600
TOTAL	179	1,032	10,717,924	24,549,299	711,137	2.29	15	87,475

[1]Deadloss included

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

Area	Landings	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Deadloss
605630	7	137,378	327,735	5,662	2.39	24	3,662
605700	5	88,157	201,895	3,386	2.29	26	2,000
615601	11	217,596	529,599	8,248	2.43	26	3,780
615630	70	1,233,375	2,879,395	5,5910	2.33	22	21,888
615700	12	345,817	787,472	14,250	2.28	24	4,650
625600	11	222,992	525,728	10,273	2.36	22	411
625630	11	174,675	408,270	5,702	2.34	31	1500
625700	4	221,213	506,773	4,147	2.29	53	150
635530	21	468,853	1,088,272	18,004	2.32	26	8,822
635600	46	1,633,389	3,728,178	59,311	2.28	27	17,659
635630	28	799,443	1,807,207	34,099	2.26	23	3,200
645501	12	130,062	304,427	5,759	2.34	23	0
645530	11	369,554	838,100	13,007	2.27	28	2,700
645600	32	886,198	2,002,996	29,118	2.26	30	563
645630	10	218,681	506,290	7,594	2.32	29	1,200
655530	6	76,957	173,307	5,245	2.25	15	400
655600	16	298,515	665,964	14,872	2.23	20	600
655630	6	105,718	235,089	3,129	2.22	34	0
665530	13	27,961	62,311	6,340	2.23	4	0
665600	17	116,027	263,482	11,745	2.27	10	0
675530	24	17,723	38,937	14,470	2.20	1	0
675600	35	72,060	157,307	18,342	2.18	4	0
675630	4	21,651	52,987	1,933	2.45	11	0
685530	11	11,105	25,098	4,915	2.26	2	0
685600	35	64,704	152,292	16,236	2.35	4	0
685630	40	283,768	640,770	21,054	2.26	13	1,600
695600	5	27,107	62,525	3,820	2.31	7	0
695631	34	334,028	779,241	17,554	2.33	19	740
695632	6	62,463	140,167	3,656	2.24	17	0

continued...

[1]Deadloss included

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

Area	Landings	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Deadloss
705600	15	70,572	157,251	8,922	2.23	8	0
705630	50	671,031	1,518,381	33,934	2.26	20	2,029
705701	41	386,609	891,178	24,158	2.31	16	3,500
705730	4	18,240	42,039	3,014	2.30	6	430
715600	4	10,532	22,495	1,505	2.14	7	0
715630	70	225,992	508,270	54,095	2.25	4	800
715700	86	212,443	477,077	48,255	2.25	4	3,396
715730	50	100,322	229,908	26,688	2.29	4	285
715800	4	1,280	2,643	1,515	2.06	1	0
725630	41	84,564	192,164	27,183	2.27	3	60
725700	41	45,287	104,680	18,814	2.31	2	750
725730	33	13,924	31,334	18,996	2.25	1	0
725800	10	2,594	5,789	5,602	2.23	1	0
735700	4	1,128	2,496	1,479	2.21	1	0
735730	6	6,847	15,520	4,368	2.27	2	0
735800	4	468	1,032	1,788	2.21	<1	0
OTHER	26	198,921	456,228	12,950	2.29	15	700
TOTAL	1032	10,717,924	24,549,299	711,137	2.29	15	87,475

[1]Deadloss included

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

Year	Vssls	Lndgs	No. Crab[1]	No. Pounds[1]	Pots Lifted	CPUE	% New Shell[2]	Avg. Wt.	Width (mm)[2]	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[3]	52	367	21,009,935	26,813,074	173,591	138	78.0	1.1	105.4	798,744
1985[4]	75	718	52,903,246	65,998,875	372,045	120	80.0	1.3	108.0	1,064,184
1986[5]	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	1.2	108.9	978,449
1988	171	1,285	105,716,337	134,060,185	766,907	137	71.2[6]	1.3	109.5	3,260,020
1989	168	1,341	112,618,881	149,455,848	663,442	178	85.2[6]	1.3	111.2	1,844,682
1990	178	1,566	129,841,024	161,742,748	962,394	135	97.4[6]	1.2	109.1	1,829,814

[1]Deadloss included
[2]Southeast and Pribilof Districts only
[3]North of 58° reopened until 12-31
[4]West of 164° opened through 12-31
[5]Open only west of 164° W. longitude
[6]Eastern and Western Districts combined

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

Season	Opened	Closed	Vssls.	Pounds[1]	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[2]	152	39,572,668	1.6	99	.21
1981	01-15-81	08-01-81 09-01-81[2]	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[3]	109	26,128,410	1.1	83	.35[2]
1984	02-15-84 08-01-84	08-01-84 12-31-84[4]	52	23,940,984 2,872,090	1.1 1.1	147 125	.30
1985	01-15-85 10-09-85	09-22-85 12-31-85[5]	75	57,446,554 8,552,321	1.2	142	.30
1986	01-15-86	09-24-86[6]	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 05-15-88	03-29-88 06-30-88	161 156 171	75,695,562 59,659,075 135,354,637	1.3 1.3 1.3	141 146 144	.75 .80 .77
1989	01-15-89	03-26-89 05-07-89	168	149,455,848	1.3	178	.75
1990	01-15-90	04-09-90[6] 06-12-90	170 146 178	94,759,945 66,982,803 161,742,748	1.2 1.2 1.2	149 119 135	.64[2]

[1] Deadloss included

[2] Varied according to size

[3] Partial Bering Sea closure

[4] North of 58° only

[5] West of 164° opened through 12-31-85

[6] 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[1]	No. Pounds[1]	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	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	51	1,092,655

continued...

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

Season	Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	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	139	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[1]	No. Pounds[1]	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	10	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	775,104
	Western	156	515	47,330,314	59,689,075	323,196	1.3	146	2,484,916
	TOTAL	117	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	170	933	76,298,273	94,759,945	513,481	1.2	149	1,050,555
	Western	146	633	53,542,751	66,982,803	448,913	1.3	119	779,259
	TOTAL	178	1,566	129,841,024	161,742,748	962,394	1.2	135	1,829,814

[1]Deadloss included

Table 9. 1990 season *C. opilio* catch by district and month for the Eastern Bering Sea.

Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
January								
Eastern	64	77	5,958,203	7,762,691	34,453	1.30	173	47,453
Western				Confidential				
Total	64	77	5,958,203	7,762,691	34,453	1.30	173	47,453
February								
Eastern	104	258	20,358,632	25,863,965	139,047	1.27	146	183,293
Western	6	6	444,106	542,359	2,611	1.21	205	6,800
Total	104	263	20,802,738	26,406,324	141,658	1.27	147	190,093
March								
Eastern	119	272	22,370,825	27,751,099	154,879	1.24	144	324,155
Western	16	19	2,494,550	3,209,717	10,880	1.29	299	7,500
Total	120	291	24,865,375	30,960,816	165,759	1.24	150	331,655
April								
Eastern	154	314	26,499,016	32,016,028	177,741	1.21	149	468,587
Western	58	83	7,342,309	9,409,794	104,607	1.28	70	35,458
Total	164	397	33,841,325	41,425,822	282,348	1.22	120	504,045

continued...

Table 9. 1990 season *C. opilio* catch by district and month for the Eastern Bering Sea continued.

Subdistrict	Vssls.	Lndgs.	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
May								
Eastern	20	13	1,111,597	1,366,162	7,361	1.23	151	27,067
Western	129	285	25,615,961	31,466,013	196,685	1.23	130	146,748
Total	144	298	26,727,558	32,832,175	204,046	1.23	131	173,815
June								
Western	112	239	17,646,455	22,354,920	134,130	1.27	132	582,753
Subdistrict Total								
Eastern	170	934	76,298,273	94,759,945	513,481	1.24	149	1,050,555
Western	146	632	53,542,751	66,982,803	448,913	1.25	119	779,259
Season Total	178	1,566	129,841,024	161,742,748	962,394	1.25	135	1,829,814

[1]Deadloss included

Table 10. 1990 *C. opilio* catch, by statistical area, for the Bering Sea.

Area	Landings	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
EASTERN							
655530	5	292,623	353,421	6,129	1.20	23	21,476
655600	9	421,841	520,245	6,680	1.23	63	2,700
665530	11	1,386,065	1,668,555	6,129	1.20	226	7,200
665600	21	1,091,949	1,351,842	10,747	1.24	101	7,200
665630	5	215,996	265,232	1,499	1.23	144	0
675530	34	4,564,413	5,485,254	6,129	1.20	226	21,476
675600	51	4,439,031	5,240,301	27,504	1.18	161	76,752
675630	10	557,239	691,635	3,907	1.24	147	4,250
685530	17	1,275,252	1,519,887	7,432	1.19	172	5,550
685600	47	3,609,290	4,322,880	24,388	1.20	148	37,122
685630	47	2,808,640	3,467,911	22,232	1.23	126	24,793
695600	8	771,389	930,436	3,887	1.21	199	11,000
695631	25	688,498	875,598	11,274	1.27	61	5,897
705600	19	1,352,826	1,657,884	10,190	1.23	133	21,631
705630	39	2,225,811	2,865,312	25,256	1.29	88	21,920
705701	32	1,706,370	2,144,452	17,756	1.26	96	15,070
715600	6	289,062	380,685	3,100	1.32	93	630
715630	104	8,382,196	10,554,451	53,113	1.26	158	82,638
715700	129	11,658,076	14,739,693	72,054	1.26	162	259,356
715730	61	6,159,034	7,627,114	34,474	1.24	179	61,564
715800	7	672,205	841,316	4,100	1.25	164	3,332
725630	52	5,085,914	6,368,003	33,109	1.25	154	78,465
725700	70	6,006,155	7,481,775	33,889	1.25	177	25,133
725730	62	6,521,865	8,223,486	36,638	1.26	178	201,431
725800	24	2,300,592	2,872,312	12,559	1.25	183	24,568
OTHER	38	1,815,941	2,310,265	39,306	1.27	46	29,401
TOTAL	933	76,298,273	94,759,945	513,481	1.24	149	1,050,555

continued...

Table 10. 1990 *C. opilio* catch, by statistical area, for the Bering Sea continued.

Area	Landings	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
WESTERN							
735700	12	859,383	1,116,804	6,382	1.30	135	1,900
735730	44	4,234,360	5,437,290	78,150	1.28	54	31,685
735800	71	6,501,804	8,282,057	50,098	1.27	130	148,373
735830	23	1,672,697	2,096,169	11,922	1.25	140	30,500
735900	16	1,181,454	1,526,541	8,929	1.29	132	10,533
745830	4	488,057	621,998	3,950	1.27	124	2,200
745900	6	166,181	221,980	2,265	1.34	73	1,000
745930	6	258,154	329,161	1,836	1.28	122	4,044
755900	29	2,554,799	3,242,774	18,230	1.27	140	35,935
755930	27	2,262,343	2,850,240	16,708	1.26	135	40,153
756000	29	2,349,070	2,919,821	16,026	1.24	147	124,961
756030	8	430,119	640,590	4,074	1.49	106	0
765900	8	562,570	701,714	4,222	1.25	133	18,100
765930	23	2,872,058	3,193,836	15,794	1.11	182	18,075
766000	66	5,225,447	6,621,438	35,627	1.27	147	66,813
766030	20	1,578,290	2,023,065	13,274	1.28	119	23,625
775900	4	452,688	542,375	3,420	1.20	132	7,500
775930	8	447,449	566,853	5,240	1.27	85	4,000
776000	56	5,778,754	6,472,400	41,559	1.12	139	15,510
776030	36	3,101,323	4,130,598	25,581	1.33	121	42,645
776100	20	1,170,607	1,443,761	11,935	1.23	98	12,775
786000	24	2,237,504	2,909,967	12,992	1.30	172	9,350
786030	26	2,475,453	3,182,504	906	1.25	64	1,100
786100	23	1,561,762	1,972,840	13,338	1.26	117	47,156
OTHERS	44	3,120,425	3,936,027	46,455	1.26	67	81,326
TOTAL	633	53,542,751	66,982,803	448,913	1.25	119	779,259
SEASON TOTAL	1,566	129,841,024	161,742,748	962,394	1.25	135	1,829,814

[1]Deadloss included

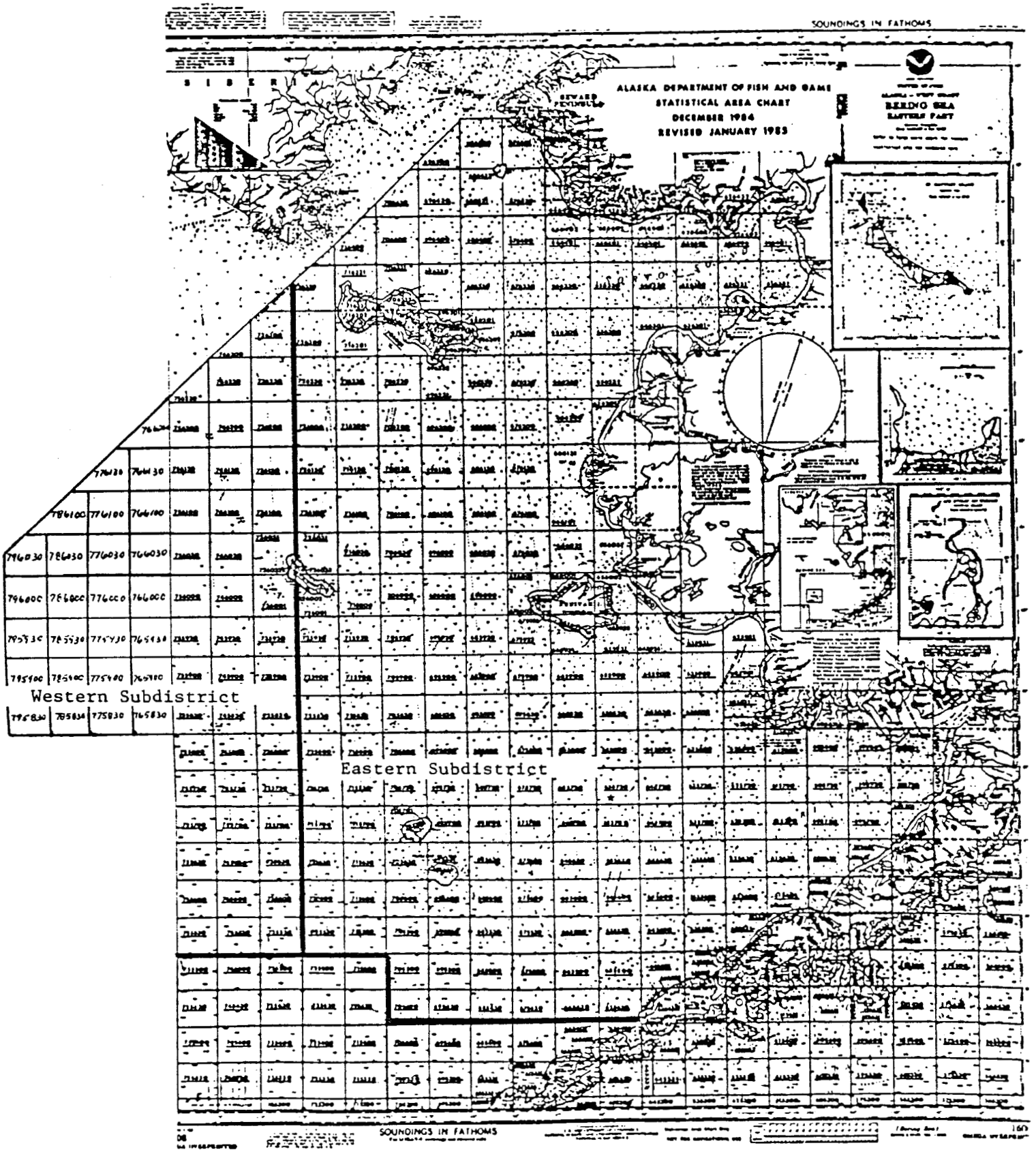

Figure 1. Bering Sea District of Statistical Area "J".

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. U.S. fishermen entered the Eastern Bering Sea king crab 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 the high abundance of predators also contributed to the closure decision.

1990 Fishery

The Bristol Bay Area opened to fishing at 12:00 noon on November 1 with a harvest guideline of 17.1 million pounds. This opening date was adopted by the Board of Fisheries during the Spring meeting when industry requested and supported a later opening for better quality and to bring the Tanner and king crab fisheries closer together in the Bering Sea.

Registrations and tank inspections were given at Port Moller, King Cove, Akutan and Dutch Harbor to 240 vessels of which 20 were catcher processors. This is the largest effort ever recorded for the red king crab fishery including the effort levels of the early 1980's when 236 vessels registered (Table 1). A total of over 68,000 pots were estimated to be on the fishing grounds; 11,000 more than the 1989 fishery and 16,000 more than the 1988 fishery.

All catcher processors and remote floater processors were required to have observers onboard during processing operations. In addition to the contract observers, Department samplers were placed on three of the 14 floater processors at Port Moller to conduct registrations and tank inspections and additional Department personnel were placed on three floaters to collect PIT tags placed in Bristol Bay red king crab. After the opening, only one Department sampler was left at Port Moller to monitor the fishery and to assist contract observers if any questions arose.

All catcher processors and floater processors were required to report, in code, their catches every other day. In addition, catcher processors reported their area of operation, pots pulled and a sampling condition. As in the past few years, individual codes were also given to 20 catcher vessels. Although the Department requested a list of interested participants from the three fishing organizations, none were received, but some members did volunteer. The rest of

the vessels were asked at the time of tank inspection to participate. Daily reporting by the catcher vessels was not as good as it has been during the 1988 and 1989 seasons with no more than 14 vessels ever reporting. Reporting procedures took from 1½ to 2 hours every other day, working around daily processor schedules, normal traffic and weather broadcasts. Numerous complaints were received by the staff from the public concerning the amount of time that the Department was tying up the airways. Other means and methods of reporting will have to be considered in the future.

With the harvest guideline of 17.1 million pounds comparable to last season's 16.5 million pounds harvest guideline, the Department expected the season to be comparable to that of 1989. Vessel effort and average size of the vessels increased over the 1989 season. The average keel length of the vessels increased from 106.0 feet in 1989 to over 110 feet in 1990. With this increase in vessel size, the average number of pots per vessel also increased from 259 in 1989 to over 290 in 1990.

Average catch per pot started out at nine crabs per pot and quickly increased to over 18 crabs per pot as the catcher processor fleet began to fish the large quantities of gear that they had placed on the grounds. During the next three reporting periods, average catches were 14 crabs per pot. Based on this information, the Department projected a harvest at 17.1 million pounds. The announcement for the closure was made on November 9 for November 13. At the time of the announcement, the Department estimated 1.5 million pounds of crab were being caught daily, equating to approximately 13.5 million pounds. After the closure announcement, catches remained high, and an additional 7 million pounds was harvested during that three day period bringing the season total to 20.4 million pounds; the largest harvest since the collapse of the fishery in 1982 (Table 1). The ex-vessel value of the fishery exceeded 102 million dollars.

The catcher processor fleet averaged over 135,000 pounds per vessel while the catcher only vessels averaged only 80,000 pounds. Catcher processors averaged 14 crabs per pot compared to 12 crabs per pot for the catcher only vessels (Table 4).

The 1990 Bristol Bay red king crab fishery covered over 23,400 square miles about the same as the 1989 fishery (Table 3, Figure 1). The majority of the catch, 87 percent or 17.8 million pounds, came from just six statistical areas, and two of these statistical areas produced half of the season total catch (Table 3, Figure 1).

Stock Status

The National Marine Fisheries Service estimated the legal male population in 1990 for the Bristol Bay Area to be at 9.2 million crab; about two million crab less than the 1989 estimate. Based on the performance of the fisheries in each year, it appears that the 1989 estimate may have been high. Prerecruit and juvenile crab showed no change between the 1989 and 1990 surveys, and it appears there will be little recruitment of juveniles into this population for several years.

Table 1. Historic U.S. Red King Crab catch in the Bristol Bay Registration Area 'T' of the Bering Sea, 1966 to 1990.

Year	Vessels	Landings	No. Crab[1]	No. Pounds[1]	Pots Lifted	Avg. Wt.	Avg. Length	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

[1]Deadloss included

Table 2. Bering Sea red king crab harvest composition by fishing season, 1973 through 1990.

Season	Opened-Closed	Catch[1]	Percent Recruit[2]	Percent Post Recruit[2]	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	- $ .84
1974	07/29-10/12	41.9	60	40	6¼" 03/01-10/31 6½" 11/01-01/18	- $ .38
1975	08/01-11/16	51.3	21	79	6¼" 03/01-10/31 6½" 11/01-02/28	- $ .38
1976	08/15-12/07	63.9	56	44	6½"	$ .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 10/25-12/15	32.0 1.5	- 14	- 86	6½" 7"	- $1.50
1982	09/10-10/10	2.7	68	32	6½"	$3.05
1983	N O C O M M E R C I A L F I S H E R Y					
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

[1] Deadloss included

[2] Recruits figured at 149 mm - all previous years, 155 mm

Table 3. 1990 Bristol Bay king crab catch by Statistical Area.

Stat Area	Lndgs	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Dead-loss #
615601	NA	46,834	304,807	3,378	6.50	14	2,400
615630	NA	240,606	1,593,334	23,677	6.62	10	21,554
615700	NA	65,924	430,909	6,260	6.53	10	3,820
625531	NA	9,709	64,252	1,130	6.61	8	1,380
625600	NA	310,731	2,038,618	26,367	6.56	12	27,166
625630	NA	879,303	5,780,480	76,436	6.57	11	20,048
625700	NA	126,284	811,571	11,893	6.42	11	6,362
635600	NA	404,372	2,616,129	30,875	6.46	13	6,747
635630	NA	672,462	4,390,446	47,502	6.52	14	17,269
635700	NA	206,179	1,326,242	18,997	6.43	11	3,247
645600	NA	48,098	301,298	4,363	6.26	11	2,034
645630	NA	33,730	220,118	2,779	6.52	12	0
Others	NA	76,094	484,138	8,474	6.36	9	4,500
Totals	330[2]	3,120,326	20,362,342	262,131	6.50	12	116,527

[1] Deadloss included

[2] Actual landings

Table 4. Comparative average catches of catcher/processor vs catcher vessels.

	SEASONS					
	1990	1989	1988	1987	1986	1985
Number of Catcher Processors	20	18	20	21	12	12
Number of Catchers	219	193	180	215	147	116
Pounds of CP Catch	2,708,805	1,334,083	994,546	2,342,142	1,182,866	820,013
Percent of CP Catch[1]	13.3	13.0	13.5	19.0	10.4	19.6
Average CP Catch	135,440	74,116	49,727	111,530	93,572	68,334
Average Catcher Catch[2]	80,220	46,273	35,515	46,265	69,463	28,922
Average CPUE CP's	13.9	9.4	7.8	13.8	12.1	14.2
Average CPUE Catchers	12.0	7.9	8.2	8.9	11.7	9
Total Catch	20,276,979	10,264,791	7,387,258	12,289,067	11,393,934	4,174,983
Average # Pots Pulled CP's	1483	1,289	1,039	1,376	1,502	898
Average # Pots Pulled Catcher	1061	961	730	893	1,091	640
CP Range Catch	41,458- 265,151	21,905- 185,408	19,796- 98,875	5,300- 268,750	34,097- 179,415	19,865 120,924

[1]CP total catch divided by Total Catch

[2]Total catch less CP catch divided by number catcher only vessels

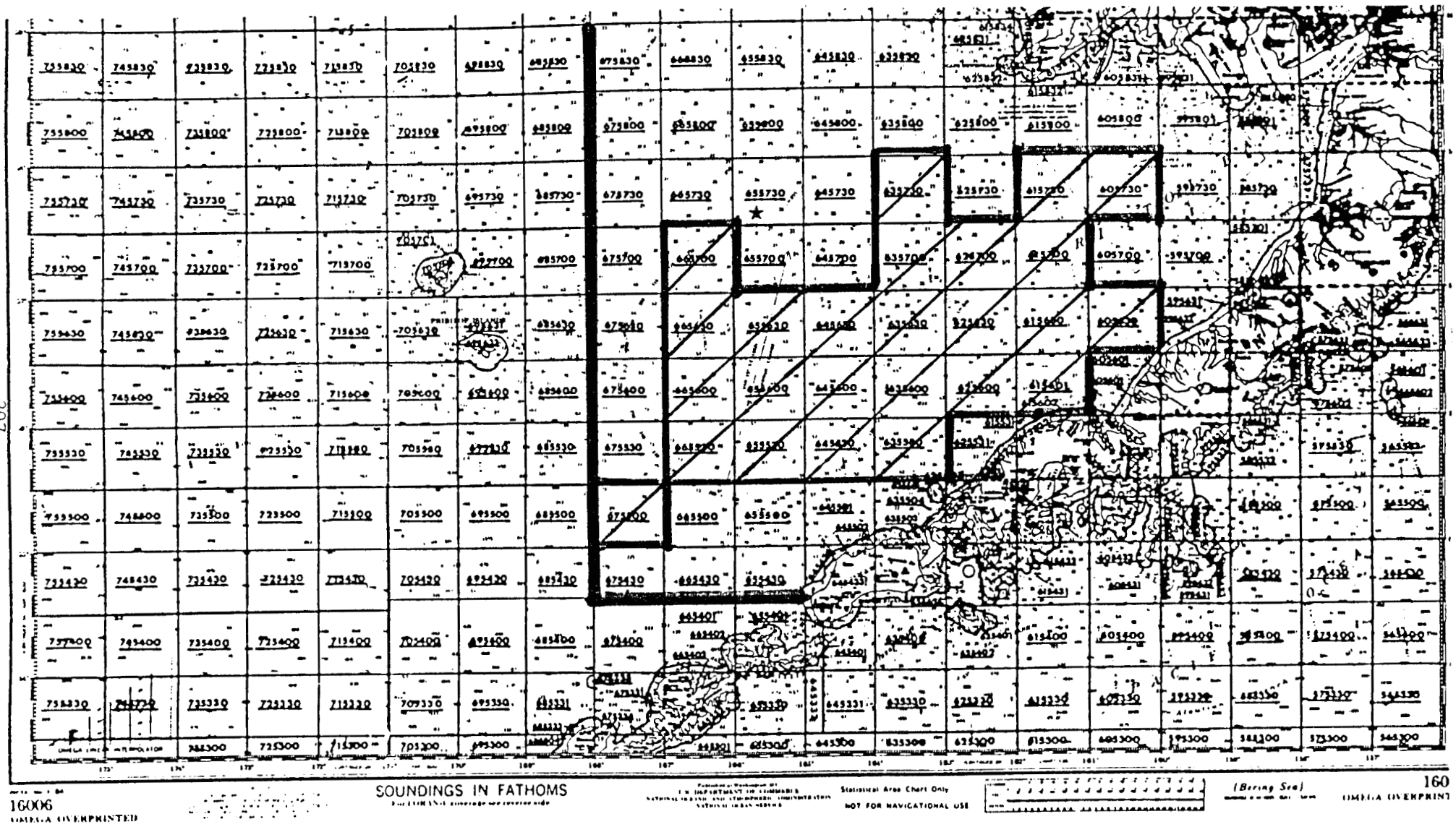

Figure 1. 1990 red king crab catch distribution in the Bristol Bay Area.

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 of blue king crab has remained consistent with that of the red king crab in the Pribilofs. The CPUE of 26 crabs per pot has never again been attained with 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 - 1990

The 1990 National Marine Fishery Service survey of the Pribilof District blue king crab stocks estimated the mature male population to be 1.6 million crabs, and the number of legal males to be 620,000; a 64 percent increase over the 1989 estimate. Based on the new king crab harvest strategy endorsed by the Board of Fisheries in March of 1989, at a .2 exploitation rate the mid-point harvest guideline for this area would have been 1.2 million pounds.

A great deal of concern was expressed over these large numbers by both the National Marine Fisheries Service and the Alaska Department of Fish and Game staff. In the August 10th news release from Kodiak releasing the 1990/91 Westward Region red and blue king crab harvest levels, the public was told that the Pribilof District fishery was possible, but due to the survey data not being fully analyzed at that time, a further news release would be made on or before September 1st.

After the August 10th news release was made public, much of the fishing industry, both processors and fishermen, and the local Native Corporation at the Pribilofs, voiced great concern over the opening to both the staff and the Commissioner. Upon further review of the NMFS data, a news release on August 24th announced that the Pribilof District would not open as previously announced due to little change from the 1989 and 1990 overall population abundances. It further stated that with the large variations in the abundance estimate, the population had a high probability of being well below the suggested threshold for the District's blue king crab stocks.

St. Matthew - 1990

On August 13, 1990, after reviewing the National Marine Fisheries Service survey of the St. Matthew area, a news release from Dutch Harbor announced the mid-point harvest guideline of 1.9 million pounds for the Area. In addition to asking for industry cooperation with placement of Department personnel onboard floater processors to conduct registrations and tank inspections, the Department announced that due to the expectations of high effort levels, after effort levels were obtained the closure for this fishery would be announced. At the time of the news release, a four day season was expected.

Registrations and tank inspections were given on the grounds to 31 vessels, 7 of which were catcher processors. This effort level was 38 less vessels than the 1989 season and 9 less catcher processors. Only 6,000 pots were registered for the season; less than half of the 1989 fishery.

With this effort level, and based on past effort levels, average weights, catches and general fishery performance, a six day season was estimated closing the area to fishing on September 7th.

All processing vessels were covered under the Mandatory Observer Program. In addition, Department personnel onboard the floaters found several contract observers that needed additional help correcting their data. This observer information may not have been usable otherwise.

With the closure of the fishery announced before it opened, observers were only required to report twice. The final report on September 7th was to include all catch to date. Floater processors gave their final report after their processing was completed.

The six day season yielded a catch of 1.7 million pounds (Tables 2 and 4). Unlike the previous three and four day seasons, the average catch per pot for catcher processor and catcher only vessels were identical at 15 crabs per pot (Table 5). The catcher processors, which tend to be larger vessels with more gear onboard, pulled more pots than the catcher only vessels. The disparity between the number of pots pulled by catcher processors and catcher only vessels decreased by less than half, from 36 percent in 1989 to only 18 percent in 1990 (Table 5). As stated in last year's report, it appears that during shorter three to four day seasons, catcher processors, which are capable of carrying and setting a lot of gear at one time, have a distinct advantage over smaller vessels with less gear.

Since the 1990 shellfish regulations were not in effect for the St. Matthew fishery, there was a great deal of confusion over the new regulation adopted by the Board pertaining to the sixty hour delivery time from St. Matthew to Dutch Harbor or Akutan. Both the Departments of Fish and Game and Public Safety agreed that the old regulation, 48 hour delivery period, was still in effect and would be enforced. Any infraction of this regulation would be dealt with individually by the local Protection Officer in Dutch Harbor. Whether due to the conflict with the regulations or because of the processing capabilities on the grounds, only two vessels landed blue king crab in Dutch Harbor, both well within the 48 hour delivery period.

Three floater processors and three catcher processors bought product on the fishing grounds. During the 1989 season, six floaters and five catcher processors purchased crab on the grounds. The on-the-grounds price was $3.40 per pound bringing the value of the fishery to over 5.7 million dollars.

Stock Status

The 1990 National Marine Fisheries Service summer survey indicates a small increase of 12 percent in legal males, and the prerecruit males show a decline of 22 percent. This population still appears to be depressed and should be managed accordingly.

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

Year	Vssls	Lndgs	Crab[1]	Pounds[1]	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								

[1]Deadloss included

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[1]	Pounds[1]	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[2]	164	235	1,931,990	9,454,323	133,944	14	26.7	4.8	137.2	828,994
1983[3]	13	13	11,264	52,557	3,975	3	-	4.7	-	3,500
1984[2]	90	169	841,017	3,764,592	73,320	11	34	4.5	135.48	31,983
1984[3]			No Reported Landings							
1985[2]	79	103	484,836	2,427,110	51,606	9	9	5.0	138.98	2,613
1985[3]			No Reported Landings							
1986[2]	38	43	219,548	1,003,162	22,093	10	10	4.6	134.33	32,560
1986[3]			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[1]	Pounds[1]	Pots Lifted	CPUE	Percent Oldshell	Avg. Wt.	Avg. Length	Pounds Deadloss
1987[2]	61	62	234,521	1,075,179	28,440	8	5	4.6	134.13	400
1987[3]			No Reported Landings							
1988[2]	46	46	302,053	1,325,185	10,160	13	65	4.4	133.29	22,358
1988[3]			No Reported Landings							
1989[2]	69	69	247,641	1,166,258	30,853	8	9	4.7	134.55	3,754
1989[3]	5	9	1,652	4,518	2,402	-	-	-	-	0
1990[2]	31	38	391,405	1,725,349	26,264	15	4	4.4	134.28	17,416
1990[3]			No Reported Landings							

[1]Deadloss included

[2]St. Matthew

[3]St. Lawrence - red and blue

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

Season	Opened	Closed	Species	Catch[1]	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			.75
	July 15	July 31	Red[2]	353,683	4 3/4"	
1981	July 15	Aug. 21	Blue	4,627,761	5 1/2"	.90
	July 15	Sept. 3	Red[2]	63,983	4 3/4"	
1982	Aug. 1	Aug. 16	Blue	8,844,789	5 1/2"	2.00
	Aug. 1	Aug. 16	Red[2]	3,690	4 3/4"	2.00
	May 1	Aug. 1	Brown	193,507	5 1/2"	2.00
1983[3]	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[2]	-	4 3/4"	-
	May 1	Dec. 31	Brown[3]	-	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"	-

continued...

[1] Deadloss included

[2] Does not include Norton Sound

[3] Some of Northern District open until September 20

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

Season	Opened	Closed	Species	Catch[1]	Size Limit	Price Per Lb.
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
1989	Sept. 1	Sept. 4	Blue	1,166,258	5 1/2"	2.90
			Blue	**	5 1/2"	NA
	Aug. 1	Sept. 4	Red[2]	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"	

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

[1]Deadloss included.

[2]Does not include Norton Sound.

Table 4. Bering Sea (Northern District) blue king crab catch by statistical area, for the 1990 season St. Matthew Island.

Stat Area	Lndgs	Crab[1]	Pounds[1]	Pots Lifted	Avg. Wt.	CPUE	Pounds Deadloss
726001	13	111,867	509,729	8,450	4.56	13	4,202
736001	21	263,424	1,142,316	2,931	4.34	16	12,614
Other	4	16,114	73,304	1,469	4.55	11	600
TOTAL	38	391,405	1,725,349	12,850	4.41	15	26,264

[1]Deadloss included

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

	SEASONS				
	1990	1989	1988	1987	1986
Number of Catcher/Processors	7	15	9	13	6
Number of Catchers	24	54	37	48	32
Pounds of C/P Catch	447,320	462,034	462,851	336,460	207,745
Percent of C/P Catch	25.9	39.6	34.9	31.3	20.7
Average C/P Catch	63,903	30,802	51,428	25,881	34,624
Average Catcher Catch	53,251	13,041	23,306	15,390	21,498
Average CPUE C/P's	15	11	16	10.5	11.8
Average CPUE Catchers	15	7	12	7.5	9.5
Total Catch	1,725,349	1,166,258	1,325,185	1,075,179	1,003,162
Average # Pots Pulled C/P's	983	618	706	540	625
Average # Pots Pulled Catcher	807	399	432	446	473
C/P Range Catch	27,403-111,507	16,744-43,650	39,375-71,170	15,010-50,319	24,651-43,007

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	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	1.1	1,325,000	1.5
1989	1.7	1.7	1,166,000	1.7
1990	1.9	1.9	1,725,000	1.9

BERING SEA BROWN KING CRAB

1990 Permit Fishery - Pribilof District

Only one vessel registered to fish the District, and after a few days returned to Dutch Harbor without any crab.

Northern District

Some interest was expressed to fish this district after the closure of the St. Matthew blue king crab season in September, but because of observer and registration requirements, these vessels decided not to fish the Area.

Stock Status

There are no population estimates made for the Bering Sea brown king crab stocks.

Table 1. Historic brown king crab catch in the Pribilof District of the Bering Sea, Area 'Q'.

Year	Vessels	Landings	Crab[1]	Pounds[1]	Pots Lifted	CPUE	Avg. Wt.	Average Length	Pounds Deadloss
1981/82				Confidential					
1982/83[2]	10	19	15,330	69,970	5,252	3	4.6	150.5	570
1983/84[3]	50	115	253,162	856,475	26,035	10	3.4	127.3	20,041
1984[4]			NO REPORTED LANDINGS						
1985				Confidential					
1986				Confidential					
1987				Confidential					
1988				Confidential					
1989				Confidential					
1990			NO REPORTED LANDINGS						

[1]Deadloss included

[2]6½" season

[3]5½" season

[4]Permit fishery July through December

Table 2. Historic brown king crab catch in the Northern District of the Bering Sea, Area 'Q'.

Year	Vessels	Landings	Crab[1]	Pounds[1]	Pots Lifted	CPUE	Avg. Wt.	Average Length	Pounds Deadloss
1982/83	22	30	51,714	193,507	7,825	6	3.7	138.2	957
1983/84	NO REPORTED LANDINGS								
1985	NO REPORTED LANDINGS								
1986	NO REPORTED LANDINGS								
1987	11	29	101,618	424,394	14,525	7	4.2	142.2	11,750
1988	11	23	36,270	160,441	11,672	3	4.4	150.2	14,000
1989	Confidential								
1990	NO REPORTED LANDINGS								

[1]Deadloss included

MISCELLANEOUS SHELLFISH BYCATCH

During 1990, shellfish bycatch has been documented on fish tickets by bottom trawl vessels. The catch of these species is small compared to the overall population of the species reported, and the usage varies from total discard to octopus used for food and bait. None of the vessels involved were registered for shellfish.

TABLE 1. 1990 REPORTED BOTTOM TRAWL FISH TICKET BYCATCH STATISTICS BY AREA

Species	Bering Sea	Eastern Aleutians	Western Aleutians	Total
Octopus[1]	56,764	1,618	519	58,901
Landings	50	4	2	56
Tanner Crab[2]	83,271	21,883	115	105,269
Landings	57	8	3	68
King Crab[2]	8,149	9	2,225	10,383
Landings	21	2	12	35
Scallops[2]				0

[1] 58,270 pounds delivered as food or bait

[2] All discraded at sea

BERING SEA HYBRID TANNER CRAB

SHELLFISH MANAGEMENT REPORT

TO

ALASKA BOARD OF FISHERIES

MARCH 1991

BY

WILLIAM E. NIPPES

WESTWARD REGION SHELLFISH/GROUNDFISH MANAGEMENT COORDINATOR

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HYBRID TANNER CRAB

The two species of Tanner crab, *C. opilio* and *C. bairdi*, that exist in the Bering Sea mate with one another producing hybrid Tanner crab. The best estimate of hybrid crab numbers is 4.4 million males of marketable size (4 inches or larger). This compares to 1,446.2 million legal *C. opilio* males and 45.185 million legal *C. bairdi* males ($5\frac{1}{2}$ inches and larger), Figure 1.

The distribution of legal *C. bairdi* is shown in Figure 2, the distribution of large *C. opilio* in Figure 3 and the large hybrid distribution is in Figure 4. As can be seen, the hybrids occur in the overlap of *C. opilio* and *C. bairdi* crab stocks.

The overall number of hybrids in comparison to other Tanner crab is small. The issue of allowing the harvest of hybrids was addressed by the Department in a December 18, 1990 news release, Figure 5. The issuance of the prohibition on the harvest of hybrids was prompted by enforcement problems encountered with *C. bairdi* undersize harvest. For several years most undersize *C. bairdi* cases assembled did not get to court. In part, this was due to the presence of hybrid crab in the catches. In addition to documenting undersize crab, the defense that the small crab were hybrids also had to be addressed. The success of prosecution in 1990 was very disappointing with only one of the 30 cases advanced to the District Attorney making it to court, Figure 6.

Once industry started harvesting *C. opilio* in mid-January, an increased number of sublegal *C. bairdi*, as well as the first appearance of hybrids, appeared in the catch. Department estimates of undersize *C. bairdi* in the catch prior to January 15th was 1.9%. Since the opening of *C. opilio* on January 15th, it has jumped to 6.2% based on Dutch Harbor landings. Estimated hybrid deliveries are 6% of the total crab delivered.

At the Alaska Board of Fisheries meeting in Cordova during early February, the Department presented an emergency regulation to allow possession of hybrid Tanner crab. This emergency regulation was adopted by the Board and became effective on February 12, 1991. At the time this was adopted, the Department informed the Board it was considering ways to address the biological concerns we had with harvesting small *C. bairdi*.

Since that time the legal system has assured the Departments of Public Safety and Fish and Game that prosecution of these cases can and will be made. Due to this increased sensitivity by the legal system, 16 cases have been filed or have gone to court since early February with at least as many in progress.

The staff sees no reason to disallow the retention of hybrid Tanner crab during the open season for other Tanner crab. The only concerns would be if the legalization of hybrids hampers enforcement of either *C. opilio* or *C. bairdi* regulations. We further suggest a male only harvest with a 3.1 inch minimum shell width if the *C. opilio* fishery is open or a 5.5 inch minimum shell width if only the *C. bairdi* fishery is open.

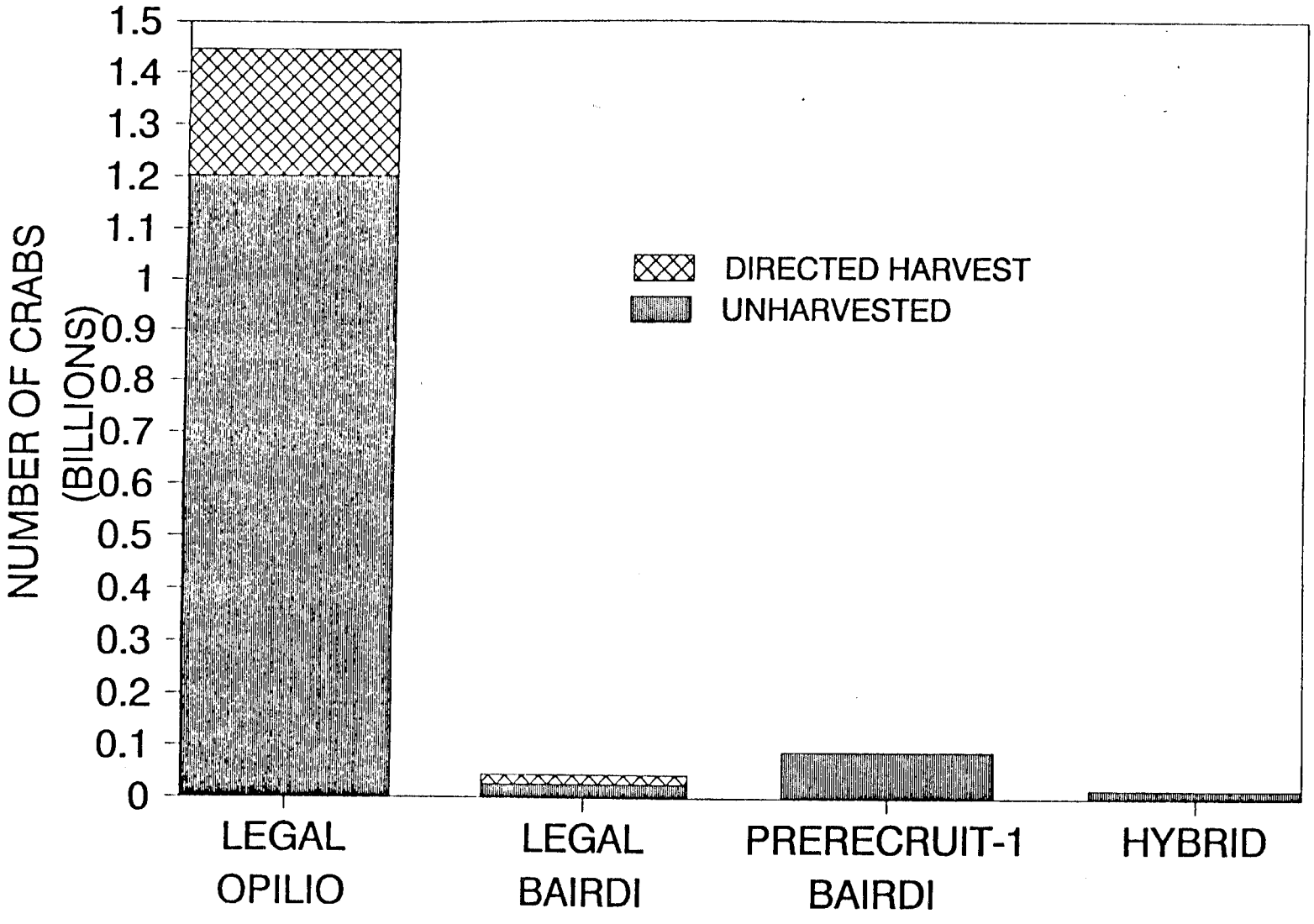


FIGURE 1. 1991 BERING SEA TANNER CRAB POPULATIONS.

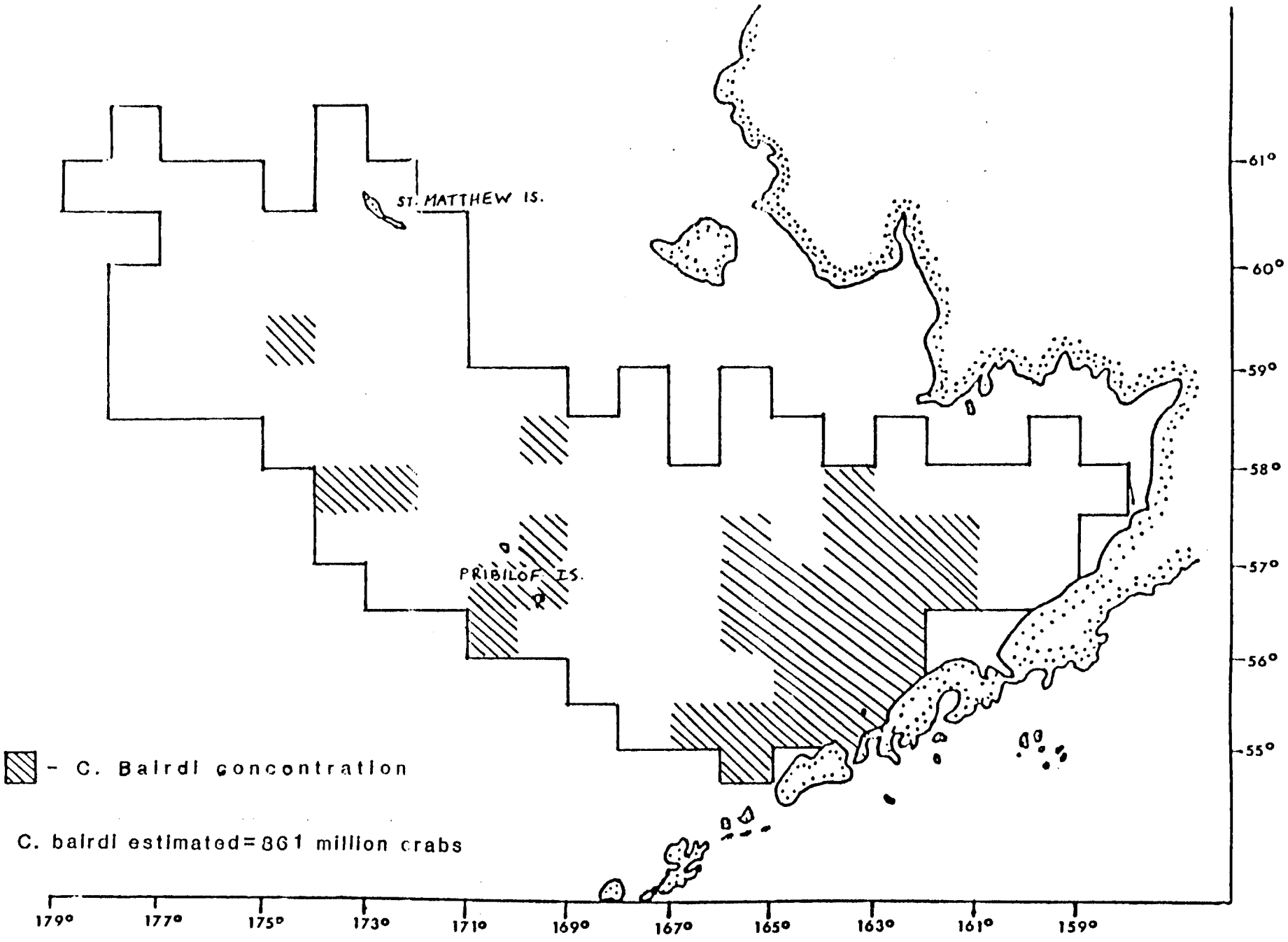


Figure 2. Distribution of Bering Sea C. bairdi Tanner Crab, 1990 NMFS Survey

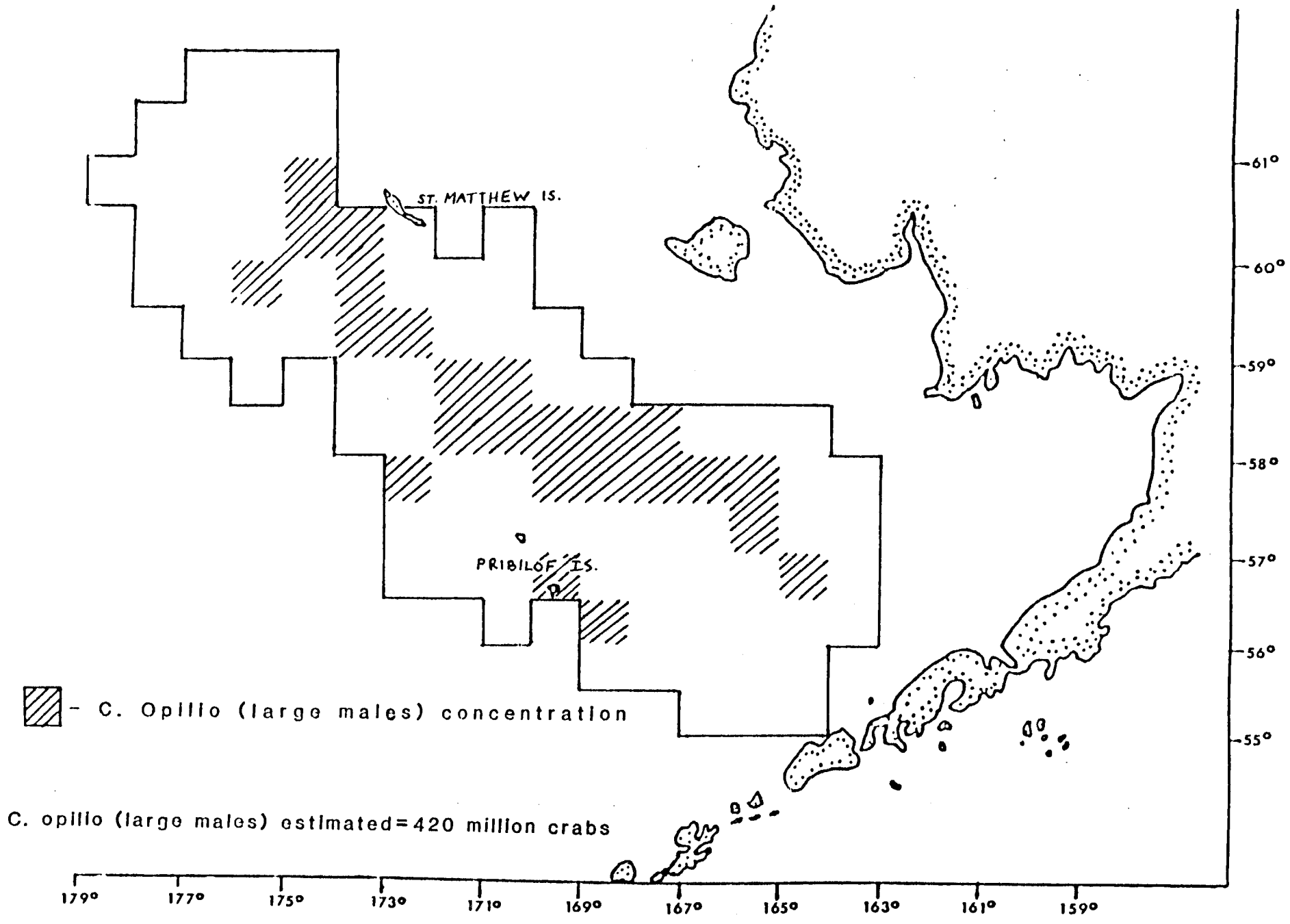


Figure 3. Distribution of Bering Sea Large Male C. opilio Tanner Crab, 1990 NMFS survey

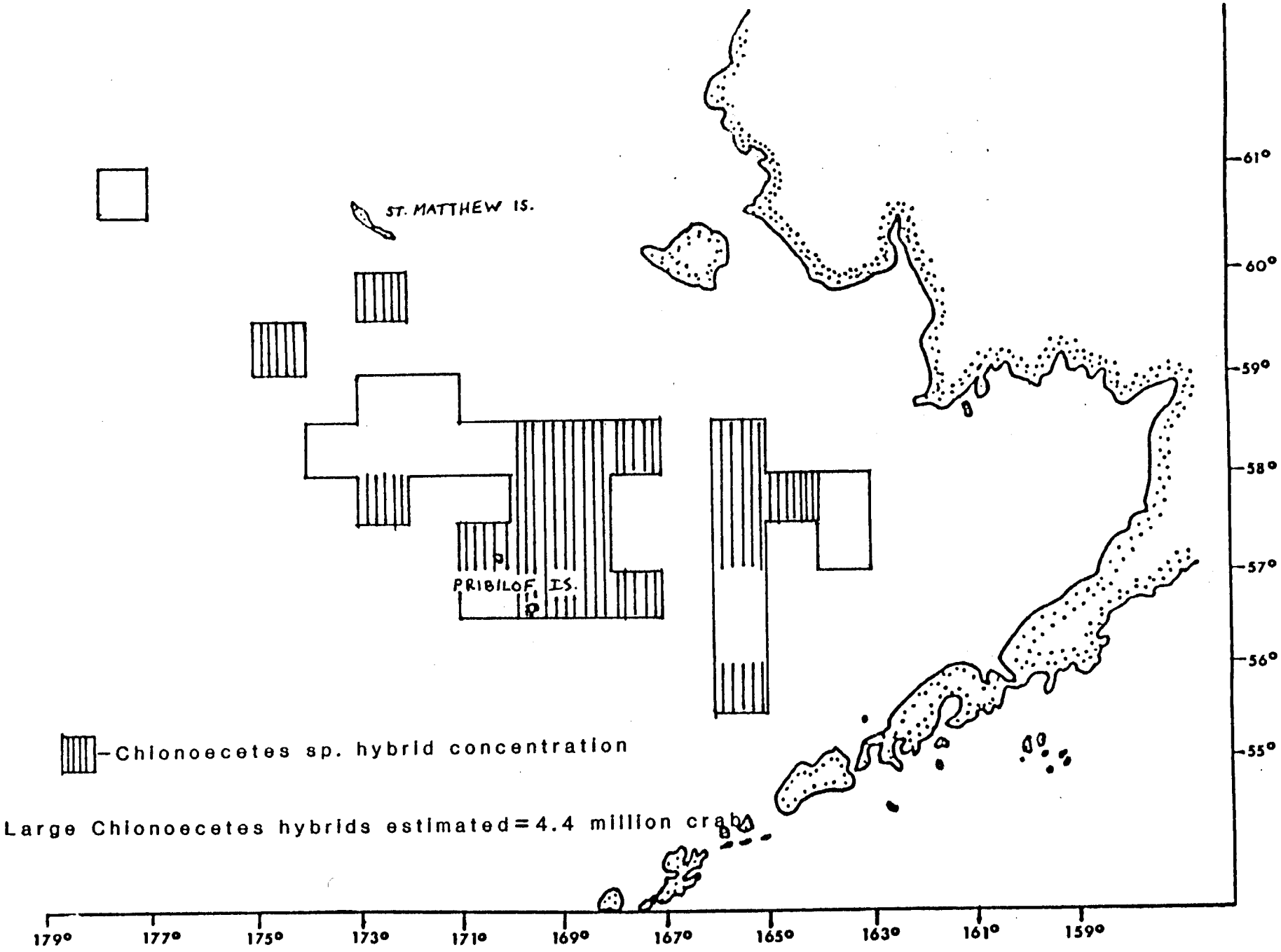
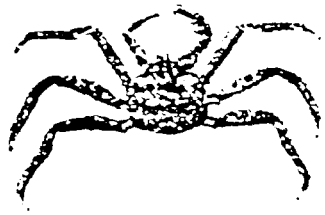


FIGURE 4. Distribution of large Bering Sea hybrid Tanner Crab, 1990 NMFS Survey.

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT
OF FISH & GAME

STATE OF ALASKA

Department of Fish and Game
Don W. Collinsworth, Commissioner

Denby Lloyd, Director
Division of Commercial Fisheries

Westward Region

211 Mission Road
Kodiak, Alaska 99615

Contact: William E. Nippes
Westward Region
Shellfish/Groundfish
Management Coordinator

IMMEDIATE RELEASE

Date: December 18, 1990

ATTENTION BERING SEA CRAB FISHERMEN

Current Tanner crab regulations establish fishing seasons for *Chionoecetes bairdi* and *Chionoecetes opilio* Tanner crab.

Alaska statute 16.05.920 states that a person may not take, possess, transport or sell fish and game unless that activity is permitted by statute or regulation.

Hybridized *C. bairdi* X *C. opilio* crab do exist in the Bering Sea, but their incidence has been estimated at less than 1% of the total Tanner crab population. Since current regulations do not establish a fishery on these crab, their retention is prohibited.

Vessel operators possessing hybrid *C. bairdi* X *C. opilio* are in violation of AS 16.05.920.

FIGURE 5. DECEMBER 18, 1990 NEWS RELEASE

UNDERSIZE CASES BERING SEA *C. BAIRDI* 1990

Total cases advanced to District Attorney: 30

Cases which proceeded to court: 1

Percent undersize range from: 6.3% to 47%

Average undersize for all cases: 17.4%

FIGURE 6. UNDERSIZE CASES BERING SEA C. BAIRDI 1990.

STATE OF ALASKA
MANDATORY SHELLFISH OBSERVER PROGRAM REPORT
TO
ALASKA BOARD OF FISHERIES

MARCH 1991

BY

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STATE OF ALASKA MANDATORY SHELLFISH OBSERVER PROGRAM

Summary

Since the inception of the State of Alaska Mandatory Shellfish Observer Program in September, 1988, the placement of shellfish observers onboard catcher processors has served as a deterrent in the retention and harvesting of undersized crab. Data collected by observers were used for in-season management of the 1990-1991 Bering Sea *C. bairdi* fishery. As data forms are more standardized, observer data will be incorporated more into the management of the longer crab seasons.

As a result of the March 1990 Board of Fisheries meeting, higher qualification standards for observer candidates were maintained; the degree of difficulty was increased for certification exams and the passing score of 80 percent was increased to 90 percent. As a result of these directives, higher qualified observers were attained; consequently higher quality data were collected.

The system of the third party contract method of hiring and training observers is not the most desirable program from a fishery management perspective. Consideration should be given to replacing it with a fully funded State or Federal program allowing training, certification and placement of observers by the State.

Introduction

In April 1988, the Alaska Board of Fisheries adopted regulations requiring onboard observers for all vessels that process king crab and *C. bairdi* Tanner crab in Alaska waters. Although the regulation 5 AAC 39.645 applies statewide, the Program has had the most activity in the Bering Sea and Aleutian Islands fisheries.

The Mandatory Observer Program was adopted after the Board received historic catch data on catcher processors operating in the Bering Sea and Aleutian Islands fisheries. Alaska Department of Fish and Game staff reports to the Board

indicated large catch discrepancies between catcher only vessels and catcher processors and concluded that the only way to explain the difference is that sublegal crab were being processed by the catcher processors. The Board also agreed that the Observer Program would be the only means of obtaining much needed biological information from the shellfish fisheries.

The cost of the Program is to borne by industry with vessels hiring observers through third party contractors. An observer must be onboard vessels during all processing operations unless waived by the Department.

The Department developed guidelines and certification requirements for the observers and provided data collection standards, forms and training. Contractors are to provide training for observer candidates, but in giving the first four certification exams in 1988, the staff found the candidates ill-prepared. The three day review provided by the staff prior to each exam, turned into a three day "mini-training class" for those first four certification exams. Since that time, contractors have provided all training. Observers were in place beginning with the Bristol Bay red king crab fishery on September 25, 1988. Reporting and data collecting criteria were established for each fishery.

Certification Process

To ensure observers were trained, conflict of interest requirements were met and observers were represented by contractors; four certification courses were conducted in 1988. The four three-day classes; one in Seattle, two in Anchorage and one in Dutch Harbor, certified 82 people of the 100 that attended. Three ADF&G staff members and the Fish and Wildlife Protection Officer from Dutch Harbor conducted the courses.

Industry, through contractors, was to provide trained people to be certified. This was the case in Seattle as people attending the course were experienced ex-National Marine Fisheries Service observers. Both Anchorage sessions turned out to be training courses as well as certification courses. The courses began with an orientation explaining the roles of industry, contractors and the Department. The actual certification consisted of two parts: 1) the final

review of crab identification, crab measurement, sampling objectives and procedures, regulations, radio codes and procedures and 2) a practicum consisting of a written test and identification of crab species.

A fifth certification course was given in August of 1989 at the University of Alaska Anchorage (UAA). A two-week training course was conducted by Professor John Doyle of the Alaska Sea Grant Program, University of Alaska Fairbanks (UAF) for contractor's prospective observers. Some contractors elected to conduct their own training courses, and all trained prospective observers were given the certification exam at UAA by the Observer Coordinator from Dutch Harbor.

Three certification exams were given in October and December of 1990 in Dutch Harbor. Training for the exams was provided by the UAF Sea Grant Program and by individual observer contractors that chose to provide their own training. As directed by the Board of Fisheries in March of 1990, the passing grade was increased from 80 percent to 90 percent, and new qualifications passed by the Board were strictly adhered to for all new observer candidates.

For the first time, observer candidates as part of their exam in 1990, were placed on crab vessels that were delivering to shore-based processing plants enabling the observer candidates to experience first-hand working conditions with crews and live crab. Observer candidates performed biological sampling in the vessel holds and interviewed vessel operators as they would on the fishing grounds.

Application

The Mandatory Observer Program was initiated for the 1988 Bristol Bay red king season which began September 25, 1988. The Program has been active for over two and a half years with observers participating in nine annual fisheries. Observers attend a briefing session prior to each opening and are required to be onboard their respective vessels as part of the tank inspection and registration procedures. Observers are briefed at the local Fish and Game area office, given a crab identification test and if available, taken to the local processors by staff personnel to identify and measure crab being delivered.

In March 1990, the Board of Fisheries passed regulations that observers could not work longer than 90 days on any one vessel in 12 consecutive months. The Board also required first-time observers to return within 30 days of their deployment to area offices responsible for the fisheries. This allows the observer coordinators to check the data and correct any mistakes ensuring viable data for the remainder of their trip.

During the Bristol Bay king crab fishery, daily reports were required from all observers. Observers report, in code, the number of legal males, pots pulled, sampling conditions and statistical areas fished during the previous twenty-four hour period. One hundred percent reporting was experienced by contract observers during this fishery. Reports are received on a weekly basis in other fisheries.

After the closure, or when they leave their vessels, observers are debriefed individually in the respective ADF&G area office. Sampling forms are reviewed with each observer to ensure that all notes, explanations and observations are understood by the Department staff and forms are filled out correctly and ready for entry into the database. Questions pertaining to harassment, illegal crab, fishing ethics and general fishing operations are asked, and if necessary, the local Fish and Wildlife Protection Officer interviews the individual. Additional time is spent with people who have experienced problems.

Results

Preliminary data indicates that the observers' presence onboard the catcher processors has served as a deterrent in the harvesting and retention of undersized crab (Table 1). This should not suggest that all catcher processors or floating processors have taken undersized crab in the past nor that all problems have been corrected.

Increasing the passing grade, maintaining more strict qualifications and more intense training programs have produced a more qualified and capable group of observers. Thirty-seven observer candidates participated in three exams given in 1990, of which twenty-nine candidates passed with a grade of 90 percent or better.

Since the inception of the Program, there have been 212 occasions to use observers with 242 observers participating in nine annual fisheries (Table 2). The observers accumulated 311 man-months of activity in two and one half years of the Program's existence (Table 3). Briefing and debriefing frequencies can be seen in Figures 1, 2 and 3. Depending upon the individual and the problems they may have encountered during their trip, average briefings and debriefings take fifty-six minutes (Figure 4).

The purpose of the 30 day regulation is to eliminate mistakes while obtaining data and filling out data forms with first-trip observers. There are eight areas in which mistakes may be made on the forms. Number of errors for first-time observers were combined and plotted against their test scores (Figure 5). Regardless of their test scores, thirty-six percent of those observers made mistakes on fifty percent or more of their data. This reconfirms the necessity of examining data of first-time observers within the 30 day period. Another survey was taken of first-time and veteran observers who did not experience the 30 day return requirement. The Department has experienced that one hundred percent of those observers surveyed made some mistakes in filling out their data form. Thirty-six percent of those observers made fifty percent or more of the mistakes on data forms regardless of how many trips were made.

Problems Encountered With Onboard Observer Program

Problems encountered with industry:

1. Vessel owners/operators selecting their own observers from lists provided by contractors.
   Update: Status unknown

2. Owner/operators have changed contractors to get "less experienced, less strict" observers.
   Update: Status unknown

3. Industry has offered gratuities to observers to "turn their heads."
   Update: Problem ongoing

4. Observers were put ashore before product was processed or offloaded.
   Update: Problem ongoing

5. Not reporting catch figures on schedule as required.
   Update: Problem ongoing

6. Vessel has denied access or information to observer.
   Update: Problem ongoing

7. Vessel took advantage of inexperienced observers by working them on deck, wheel watches, maintenance, etc.
   Update: Status unknown

8. Failure to return first-time observers to respective Fish and Game offices within 30 day requirement for debriefing.
   Update: Problem ongoing

9. Observers placed in a compromising position when, through no fault of their own, they are discharged by the vessel operator or owner before completing the contracted trip; therefore not getting paid by the contractor.
   Update: Problem ongoing

Problems encountered with the contractors:

1. Allowing vessel owners and operators to scan observer lists and choose their own observers.
   Update: Status unknown

2. Having family members involved in the same fishery, i.e., as cooks, deckhands, processors, etc.
   Update: Problem ongoing

3. Having a financial interest in the same fishery.
   Update: Problem ongoing

4. Hiring family members as observers.
   Update: Problem ongoing

5. Not properly training observers.
   Update: Training has improved by approximately 50 percent. In the first exam given in August 1990, 43 percent of the observer candidates passed, while in the fourth exam given in January 1991, 89 percent of the observer candidates passed.

Problems encountered with the observers:

1. Substance abuse.
   Update: Problem ongoing

2. Accepting gratuities.
   Update: Status unknown

3. Incorrectly measuring and aging crab.
   Update: Problem ongoing

4. Failure to complete data forms.
   Update: Problem ongoing

5. Submitting fictitious data forms.
   Update: Status unknown

6. Not complying with reporting schedule.
   Update: Problem ongoing

7. Inaccurate reporting of coded data.
   Update: Problem ongoing

8. Observers making arrangements directly with industry for contracts.
   Update: Status unknown

9. Observers not notifying the Department of improper activities.
   Update: Status unknown

10. Observers being over zealous in regulation enforcement, when in actuality they have no enforcement authority.
    Update: Problem ongoing

11. Not completing duties due to seasickness.
    Update: Problem ongoing

Problems involving Fish and Game:

1. Training and testing program is too lenient.
   Update: Instructors have worked closer with staff in Dutch Harbor to upgrade their training program. Staff in Dutch Harbor increased the number of questions on the exam concentrating on problem areas experienced by observers. In addition to the written exam, each observer candidate is placed onboard a vessel making a shore plant delivery. They conduct an interview and sample the catch with supervision from staff dockside samplers.

2. Failure to detect erroneous or missing data in a timely manner.
   Update: Problem ongoing due to limited staff

3. Allowing observers to be briefed and debriefed in area Fish and Game offices not responsible for the management of that particular fishery.
   Update: All observers since the 1990 Norton Sound red king crab season have been briefed and debriefed in area Fish and Game offices responsible for the management of their particular fishery.

4. No recertification procedure or time limit for observers who have never worked in that capacity.
   Update: It is now regulation that an observer who has not been deployed on a vessel in twelve consecutive months is required to be recertified.

5. Inadequate standards for certification and decertification of contractors.
   Update: Contractors are now required to fill out conflict of interest forms, supply a copy of their Alaska Business License and notify the Department of any changes in their corporate structure.

6. No adequate means to rescue observers from vessels.
   Update: Problem ongoing.

7. Allowing catch reports in long-term fisheries to go unreported for several weeks.
   Update: Reporting has improved considerably.

8. Performing contractors' job by being a go-between for vessel and observer.
   Update: Problem ongoing.

9. Providing contractors' employee lists to other competing contractors.
   Update: All certified observers are placed on a list and provided to all contractors as required by law.

10. No method of routinely evaluating observers by vessel operator or owner.
    Update: Staff provide vessel operators or owners with a "fill in the blanks" evaluation for their observer for each trip.

11. Not providing adequate briefing and debriefing facilities.
    Update: Problem ongoing, new facilities planned in September.

12. Failure to set up formal review board for decertification of observers and contractors.
    Update: A formal review board has been established for decertification of observers and contractors.

13. Failure to follow up with reliable debriefings of observers on catcher processor vessels that may be transporting product out of state.
    Update: Problem ongoing, some cooperation with NMFS.

14. The observer manual needed more explicit instructions in filling out forms, measuring crab, etc.
    Update: Observer manuals have been improved have been improved by placing colored pictures in them depicting how to correctly measure and identify crab. All forms with explicit directions and examples for filling them out were placed in the appendices.

1991 *C. opilio* Season

Mandatory observers were placed onboard catcher processors targeting *C. opilio* in 1991 for the first time since the inception of the Program. In the spring of 1990, the Board of Fisheries deemed it necessary for observer placement onboard these vessels due to the possibility of processing undersized *C. bairdi* as *C. opilio*.

The fishery is ongoing at the time of this writing, but preliminary reports from observers indicate that many vessels are sorting to marketable size, not by legal specie size. Vessels are processing and marketing sublegal *C. bairdi* as *C. opilio*, while others are processing legal size *C. bairdi* but packaging them with *C. opilio* and not differentiating the poundage by specie on fish tickets.

During the March 1990 meeting, industry indicated to the Board of Fisheries that there was no problem in the *C. opilio* fishery, but with the placement of observers in the fishery, observer reports and data indicate that there is a considerable problem with sorting of *C. opilio*, *C. bairdi* and hybrids.

Conclusion

The Mandatory Shellfish Observer Program, as drafted, has two major goals: enforcement and data collection.

The Program has had varied success at obtaining it's objectives. During the first few months of the Program, there was a tremendous reduction of illegal crab

retention due to the mere presence of observers onboard vessels. This result slowly eroded due to the inconsistency of the quality and frequent turnover of observers.

As higher standards of qualifications for observer candidates and higher qualifying exam scores were strictly adhered to by the Department, the quality of observers increased considerably. Consequently, the rate of turnover for observers diminished, and a consistently higher quality of reporting, logging, and documentation of illegal activities has been maintained.

The collection of biological data was greatly lacking or non-existent in the beginning of the Program. In addition to the upgrading of observers, training, examination and updated observer manuals, gathering of biological data has also been improved. For example, in 1990 the Bristol Bay red king crab season was managed entirely from data provided by mandatory observers as no Department of Fish and Game staff personnel were involved in the scheduled reporting. In addition, data from long-term fisheries such as Adak brown king crab and Bering Sea *C. opilio* fisheries are being slowly incorporated into in-season management. Reliable bycatch data from the 1990 Bristol Bay red king crab fishery substantiates the average catch per unit effort (CPUE) derived from edited fish tickets. Other bycatch data is used for groundfish harvest level estimates.

Many of the failures of the Program relate directly from the Department's inability to directly control hiring, training and placement of observers onboard vessels. The Department reacts by decertifying observers or contractors only after a problem has occurred and has been documented to warrant such action.

The system of the third party contract method of hiring and training observers is not the most desirable program from a fishery management perspective. Consideration should be given to replacing it with a fully funded State or Federal program allowing training, certification and placement of observers by the State.

Table 1[1]. 1987 and 1988 mean values for catcher processor vessel and catcher vessel with length between 130 ft and 170 ft.

Variable	Catcher vessels		Catcher Processor vessels		Ratio of means	
	1987	1988	1987	1988	1987	1988
Pounds landed	54,844	40,131	136,074	53,817	2.48	1.34
Number of pot lifts	1,013	795	1,396	1,043	1.37	1.31
Pounds per pot lift	58.5	54.4	92.4	50.9	1.58	0.94
No. of pots registered	300	316	398	410	1.32	1.30
Lbs. per pots registered	183.0	126.9	330.3	132.4	1.80	1.04
Vessel length (ft)	152	151	155	158	1.01	1.05

[1]Data Source: REGIONAL INFORMATION REPORT NO. 4K89-1 ALASKA DEPARTMENT OF FISH AND GAME DIVISION OF COMMERCIAL FISHERIES, WESTWARD REGION. By: Dana Schmidt and B. Alan Johnson

Table 2. Distribution of observers by area, species and vessels type.

Bristol Bay	1988	1989	1990
Species	Red king	Red king	Red king
Number Catcher Processors/ Observers	20/20	18/18	20/20
Number Floater Processors/ Observers	5/3[1]	12/12	15/15
Man Months	10.7	16.1	20.5

Adak	1988/89	1989/90	1990/91
Species	Red/Brown king	Red/Brown king	Red/Brown king
Number Catcher Processors/ Observers	16/32	14/14	Ongoing
Number Floater Processors/ Observers	6/9[2]	5/5	Ongoing
Man Months	99.5	77.3	Ongoing

Dutch Harbor	1988	1989/90	1990/91
Species	Brown king	Brown king	Brown king
Number Catcher Processors/ Observers	1/1[3]	6/9	Ongoing
Number Floater Processors/ Observers	0/0	2/3[2]	Ongoing
Man Months	0.5	7.7	Ongoing

continued....

[1] Two floater processors waived

[2] One observer replacement

[3] Observer Program initiated after season opened

Table 2. Distribution of observers by area, species and vessel type (continued).

St. Matthew	1988	1989	1990
Species	Blue king	Blue king	Blue king
Number Catcher Processors/ Observers	0/0	15/15	7/7
Number Floater Processors/ Observers	0/0	6/6	3/3
Man Months	0	9.8	5.3

Bering Sea	1988[4]	1989	1990
Species	*C. bairdi*	*C. bairdi*	*C. bairdi*
Number Catcher Processors/ Observers	0	5/6[2]	9/11[2]
Number Floater Processors/ Observers	0	0/0	9/13[2]
Man Months	0	8.4	38.8

Bering Sea	1988[4]	1989	1990
Species	Brown king	Brown king	Brown king
Number Catcher Processors/ Observers	0	2/2	0
Number Floater Processors/ Observers	0	0/0	0
Man Months	0	1.2	0

continued....

[4]Observer Program not in affect

Table 2. Distribution of observers by area, species and vessel type (continued).

South Peninsula	1988[5]	1989	1990
Species	*C. bairdi*	*C. bairdi*	*C. bairdi*
Number Catcher Processors/ Observers	0	0/0	0
Number Floater Processors/ Observers	0	2/2	0
Man Months	0	0.9	0

Norton Sound	1988[5]	1989	1990
Species	Red king	Red king	Red king
Number Catcher Processors/ Observers	0	7/7	4/4
Number Floater Processors/ Observers	0	0/0	0/0
Man Months	0	1.6	2.0

Chukchi Sea/St. Lawrence	1988[5]	1989	1990
Species	Red/Blue king	Red/Blue king	Red/Blue king
Number Catcher Processor/ Observers	0	5/5	0
Number Floater Processors/ Observers	0	0/0	0
Man Months	0	2.3	0

[5] Observer Program not in affect

Table 3. Summary of observer activities.

Year	-----Trips---- C/P	F/P	Observers	Man Months	Contractors
1988	37	11	65	119.1	8
1989	70	27	104	125.3	6
1990	40[1]	27[1]	73[1]	66.6[1]	7
Total	147	65	242[2]	311.0	6[3]

[1] Does not include observers in ongoing fisheries that overlap calendar years

[2] Does not match trip totals due to trips involving multiple observers

[3] Six active contractors as of this printing

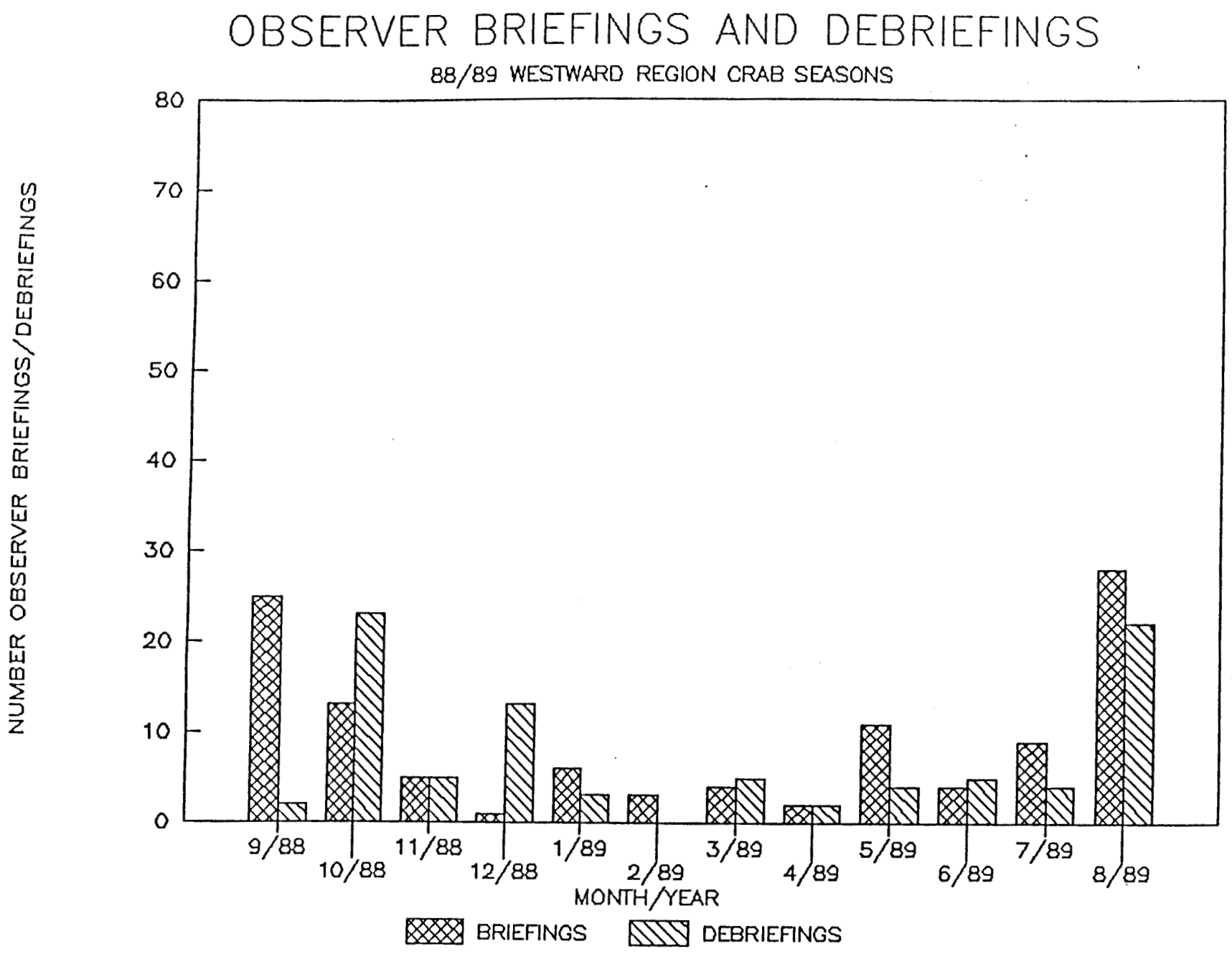

Figure 1. Number of observer briefings and debriefings per month in the 1988/89 Westward Region crab seasons.

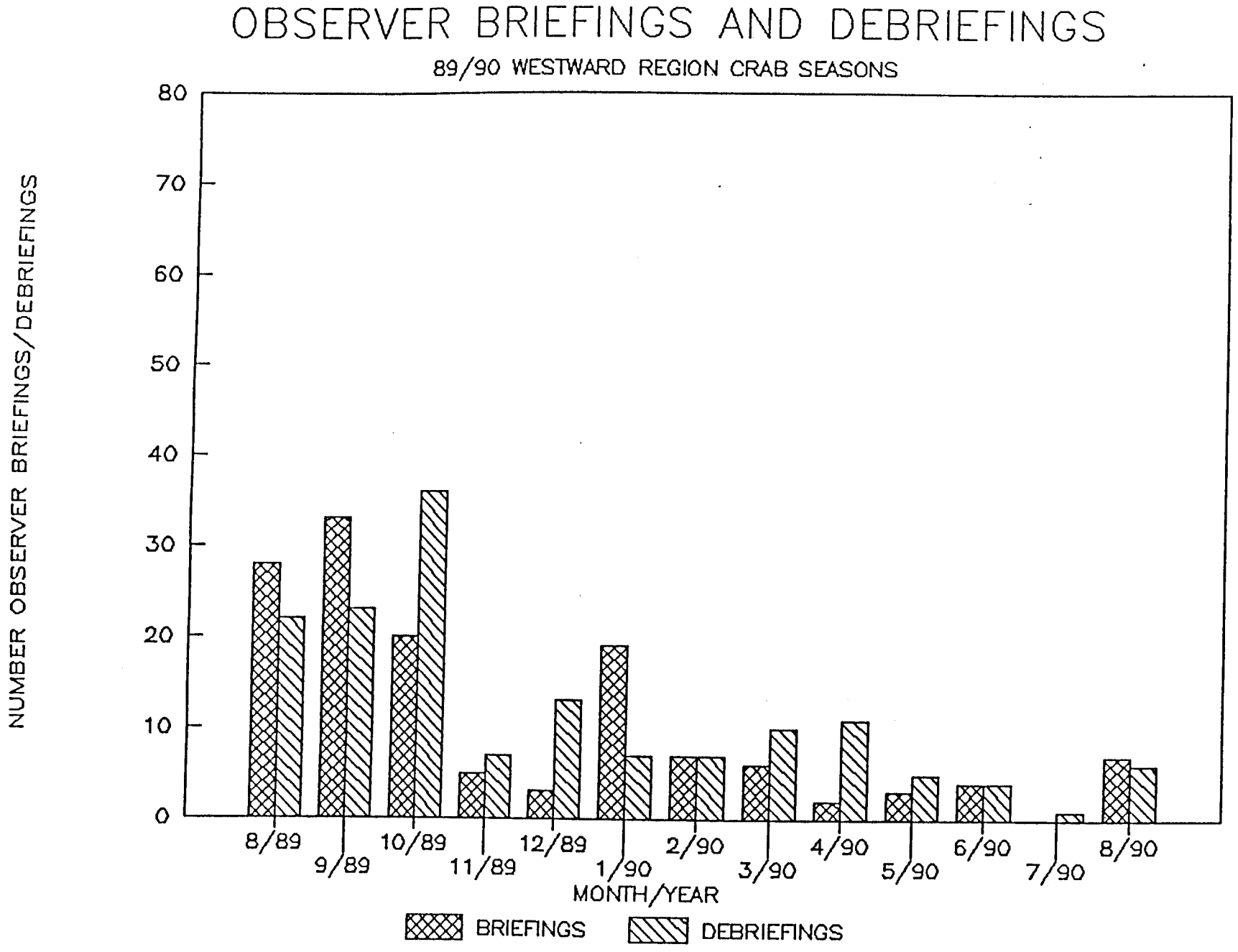

Figure 2. Number of observer briefings and debriefings per month in the 1989/90 Westward Region crab seasons.

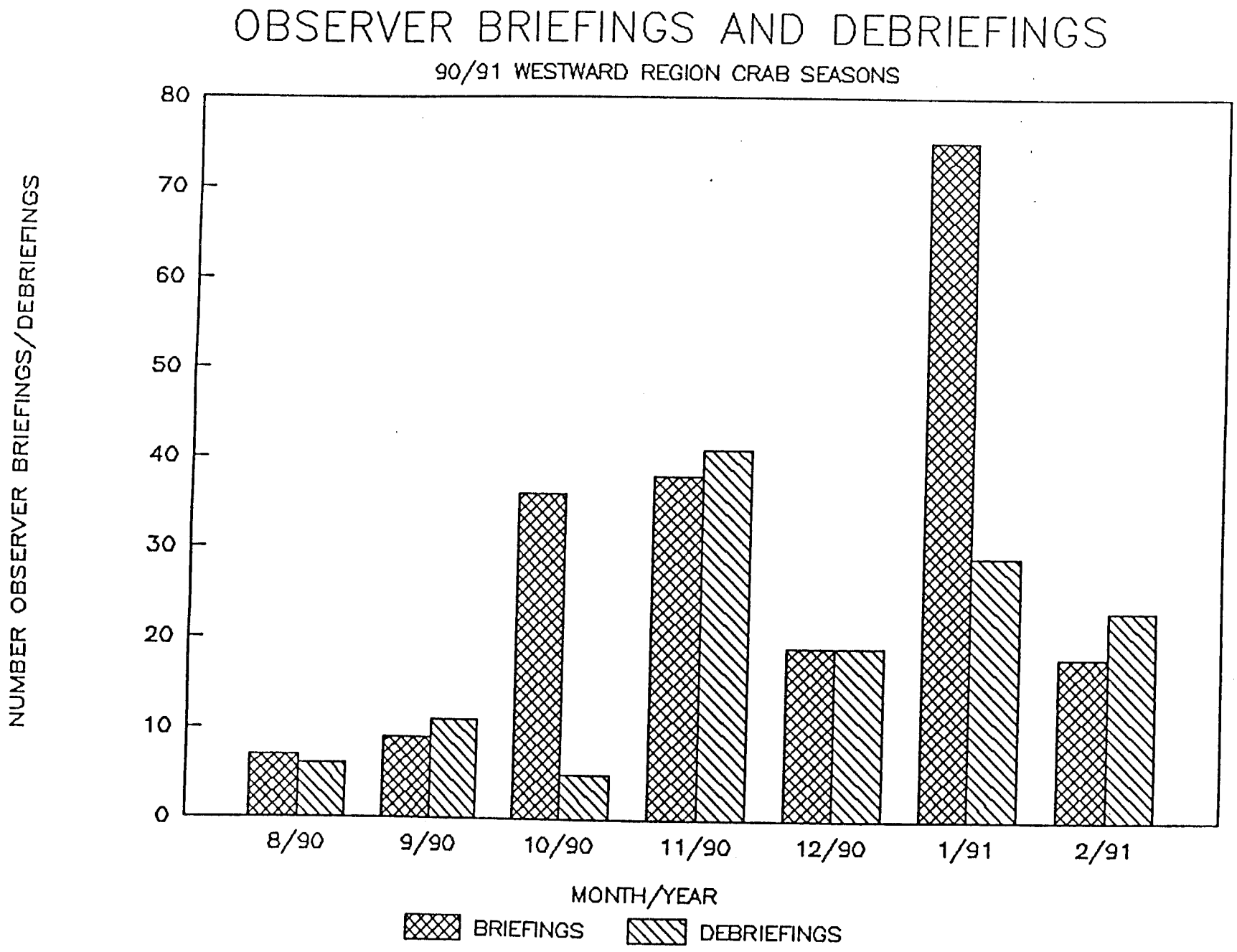

Figure 3. Number of observer briefings and debriefings per month in the 1990/91 Westward Region crab seasons.

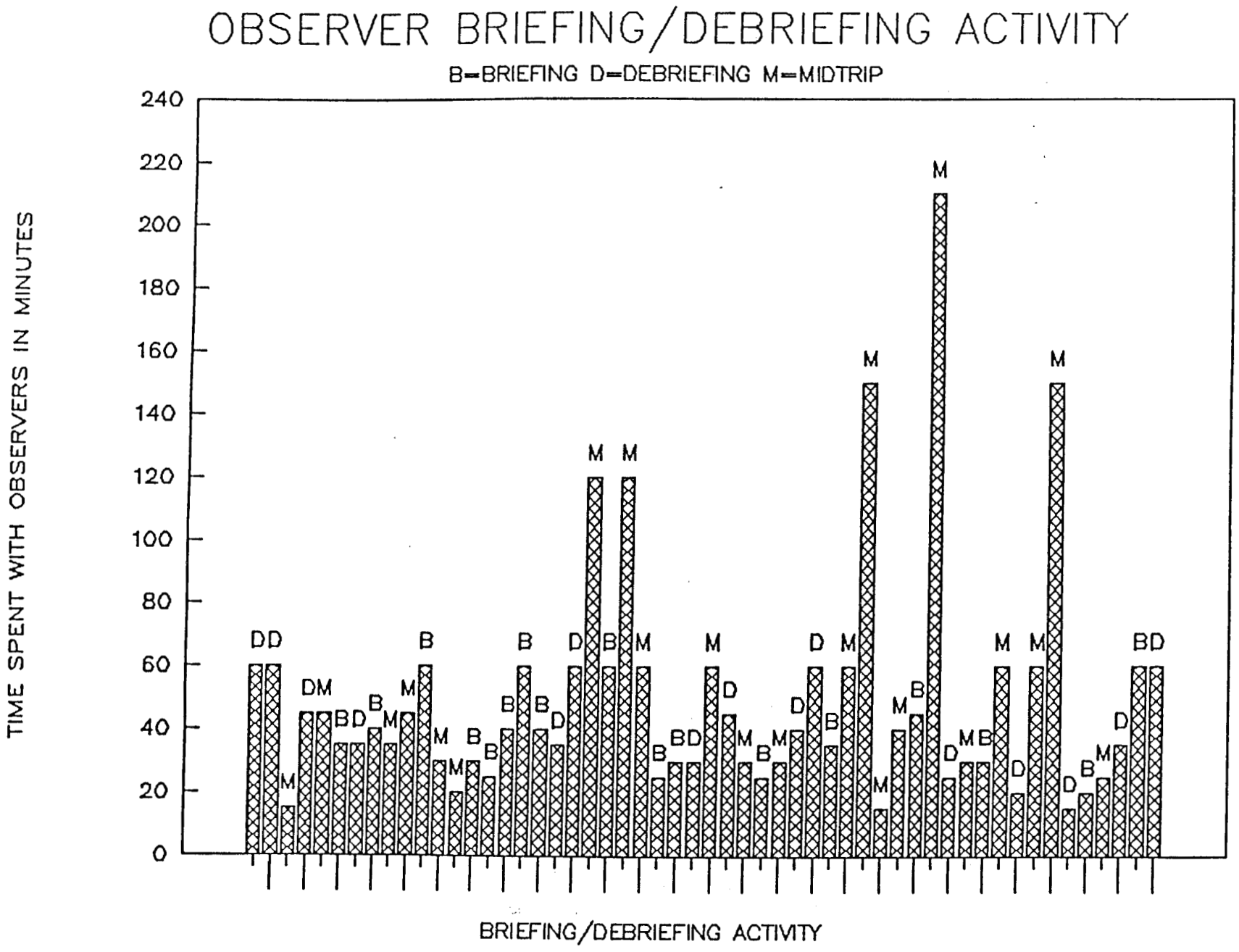

Figure 4. Time spent with observers briefing and debriefing in minutes.

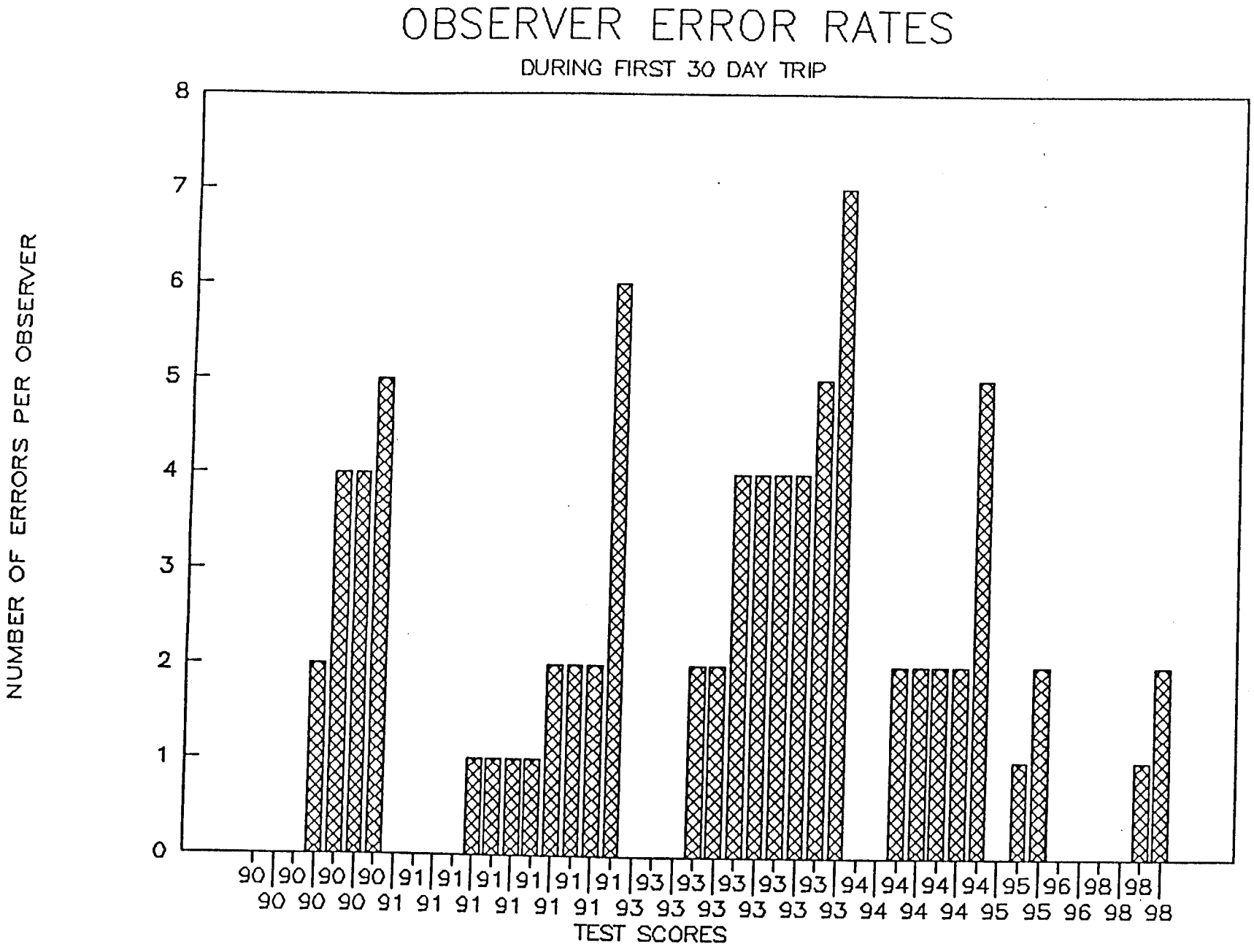

Figure 5. Observer error rates during first 30 day trip. Test scores without errors have not presently made an observer trip.

WESTWARD REGION
SHELLFISH RESEARCH REPORT
TO
ALASKA BOARD OF FISHERIES

MARCH, 1991

BY

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WESTWARD REGION SHELLFISH RESEARCH REPORT

Summary

Research efforts of the Westward Region address crab population assessment programs for the Kodiak and Alaska Peninsula Areas dealing with the development of harvest guidelines. Methods employed and the results of these resource surveys are summarized in the management sections of this document and in an annual regional information report. The methodology for conducting population assessment surveys with trawls is being improved by the application of more stringent statistical analysis of both experimental design and survey catch results. Concerted efforts are being made to better relate survey catch results with the performance of the commercial fisheries.

The red king crab populations in the Westward Region, with the exception of Bristol Bay, remain precariously low. Tanner crab populations in the Bering Sea appear to be healthy with abundant recruitment to commercial sizes. Tanner populations from Kodiak to the Western Aleutians remain depressed and support small volume fisheries compared to previous years. The blue king crab population continues to support a fishery at St. Matthew Island while the Pribilof population remains closed to fishing due to a depressed population. Golden or brown king crab populations support a small fishery at Dutch Harbor. The Adak golden king crab population has supported a fishery averaging 10 million pounds for the past five seasons.

Research efforts are continuing to focus on two separate studies addressing the dynamics of fluctuating numbers of crab within populations throughout the Region. We have completed the second year of a program to determine if recruitment to a fishery can be predicted years in advance by measuring the magnitude of larval crab settling out of the water column. This study is being conducted near Kodiak and assumes that larval settling is a major component in determining future populations of commercial sized animals. The first year of actually measuring the magnitude of settling for red king crab was completed. A successful collector was manufactured and deployed in historic red king crab habitat, and an estimate of the number of crab settling was obtained. A series of settling events will be monitored over several years before we finally evaluate this

technique as a management tool. Additionally, this research has provided data on growth, molt frequency and the timing of settling of young red king crab. The techniques and equipment developed during this study may have applications on future crab population rehabilitation experiments.

A new method of tagging red king crab was developed adapting passive, integrated transponder (PIT) tag technology in use with salmonids. Alaska Department of Fish and Game research biologists consulted with engineers and salmon biologists working with PIT systems to design a PIT tagging system to be used on the Bristol Bay red king crab population. Successful development of such a system would allow the determination of population parameters and fishery performance on the tagged population.

A large scale pilot project was completed on the Bristol Bay population utilizing test fish funds. Tagging was accomplished utilizing a chartered crab vessel in August and tag recovery was accomplished at shore-based and floating processors during the commercial fishery in November. The technique for PIT tagging king crab was successful and may undergo further testing with new tags that may be detectable over a greater distance. Recovery of PIT tags needs automation in order to be successful in a short, high volume fishery such as Bristol Bay red king crab. A report on the results of this project will be available for industry review. We are continuing work on research and development of an automated recovery system. Eventually, this methodology may be transferable to other king and Tanner crab fisheries.

A project was initiated to study molting frequency of large male *C. bairdi* and *C. opilio* Tanner crab. A controversy exists over whether male Tanner crab continue to molt and grow in size after they achieve sexual maturity. The answer to this question would help determine at what size and age yield per recruit is maximized. The Bering Sea *C. opilio* population is being monitored by examining the hairs on the maxillae (mouthpart) of individual crabs to reveal if the crab is preparing to molt. Additionally, our research biologist in Dutch Harbor is quantifying the occurrence of hybrid Tanner crab in the commercial fishery.

Reports produced by the research staff during 1990 and available to the public are as follows:

Westward Regional Information Report 4K90-2, *Comparison of Catcher-Processor Vessel and Catcher Vessel Fishing Performance in the 1989 Bering Sea Red King Crab Fishery.*

Westward Regional Information Report 4K90-13, *Determination of Experimentally Induced Non-Observable Mortality on Red King Crab.*

Westward Regional Information Report 4K90-16, *Management Plan For Westward Area King Crab Stocks: Kodiak Island Red King Crab, Bristol Bay Red King Crab, St. Matthew Blue king Crab, Pribilof Islands Blue King Crab.*

Westward Regional Information Report 4K90-20, *Sea Urchin Injury -- Assessment of Oil on Green Sea Urchins, Stongylocentrotus droebachiensis, in the Kodiak Island Area.*

Westward Regional Information Report 4K90-29, *Development of Artificial Collectors for Late Larval thru Early Benthic Stages of Red King and Tanner Crabs.*

Westward Regional Information Report 4K90-30, *Summary of Mandatory Observer Program - Report of September , 1990 to: The North Pacific Fisheries Management Council.*

Canadian Atlantic Fishery Scientific Advisory Committee 90/11, *A Critical Look at the Idea of Terminal Molt in Male Snow Crabs, Chionoecetes opilio.*