

WESTWARD REGION SHELLFISH REPORT TO THE
ALASKA BOARD OF FISHERIES

BY

WESTWARD REGION SHELLFISH STAFF

COMPILED BY WILLIAM E. NIPPES

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WESTWARD REGION REPORT
TO
THE BOARD OF FISHERIES
MARCH 1989

Introduction

The Regional Office is located in Kodiak with field offices in Sand Point and 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 (full time) consists of four Management Biologists, three Research Biologists, and one Secretary. Approximately twelve seasonal personnel are hired for shellfish assessment cruises, logbook programs, shipboard observations interviews, dockside sampling, and secretarial assistance.

The Westward Region's (Region IV) boundaries extend south from the latitude of Cape Douglas on the Alaskan 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 (3 species), Tanner crab (2 species), and Dungeness crab, with minor fisheries occurring for scallops, shrimp, clams, octopus and sea urchins. In 1988 approximately 500 catcher vessels, 22 catcher-processors, 20 shore-based processors, and 11 floating processors (Table 1) were actively engaged in harvesting and/or processing shellfish resources. The 1988/89 king crab catch was 20.0 million pounds valued at over 79.0 million dollars; the 1987/88 Tanner crab catch was 145.6 million pounds valued at \$2.36 per pound for C. bairdi and \$.77 per pound for C. opilio totaling 127.6 million dollars; the 1988 Dungeness catch was 2.3 million pounds valued at \$2.4 million. The value of the three major shellfish fisheries was 210 million dollars which was only exceeded by the 1978 - 1982 years when the value exceeded 250 million dollars (Table 2).

Shrimp

There was a small regional shrimp harvest in 1988 (Table 3). Poor production in 1986 and no harvest in 1987 discouraged fishermen and processors from harvesting in 1988. Their decision was due in part to more favorable conditions on the Washington and Oregon coast. The largest part of the 1988 catch came from catcher-processors working several species of fish and shrimp in the Bering Sea.

Historically important shrimp grounds surveyed in 1987 showed little or no stock improvement. Westward Region shrimp surveys were not conducted in 1988 due to lack of funding. The Westward staff anticipates an abbreviated survey of important shrimp stocks in 1989.

King Crab

The Westward Region 1988 king crab harvest was approximately 20 million pounds with the Adak brown king season in progress until August (Table 4). 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 area showing stability but at a low level was Bristol Bay. A total of 7.4 million pounds were harvested from Bristol Bay which is down slightly from the previous season's 12.3 million pound harvest (Table 4). The Bristol Bay stock is expected to change little in 1989 while stocks in the Kodiak, South Peninsula, Dutch Harbor, Pribilof, and St. Matthew Island areas are expected to at best maintain their current levels. Based on past fishery performance and survey information, the 1989/90 harvest is projected to fall between 15-20 million pounds. This projection is subject to revision after the 1989 summer surveys are completed.

Tanner Crab

The 1988 Tanner crab season produced 145.6 million pounds which is the peak production for Tanner crab in the region (Table 5). The catch in 1988 was comprised of approximately 93% 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 1988 Dungeness crab harvest in the Westward Region was 2.3 million pounds (Table 6). This was an increase in catch over the previous season but still about two thirds of the historic average catch. The Kodiak District produced the majority of the harvest in 1988 and is expected to do so again during the 1989 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 to be provided by a third party contractor and certified by the Department of Fish and Game.

The Department feels the mandatory observer program was an overwhelming success. The program which was operational in less than 148 days from its conception accomplished its objectives. Details of this new program are discussed in detail in this report.

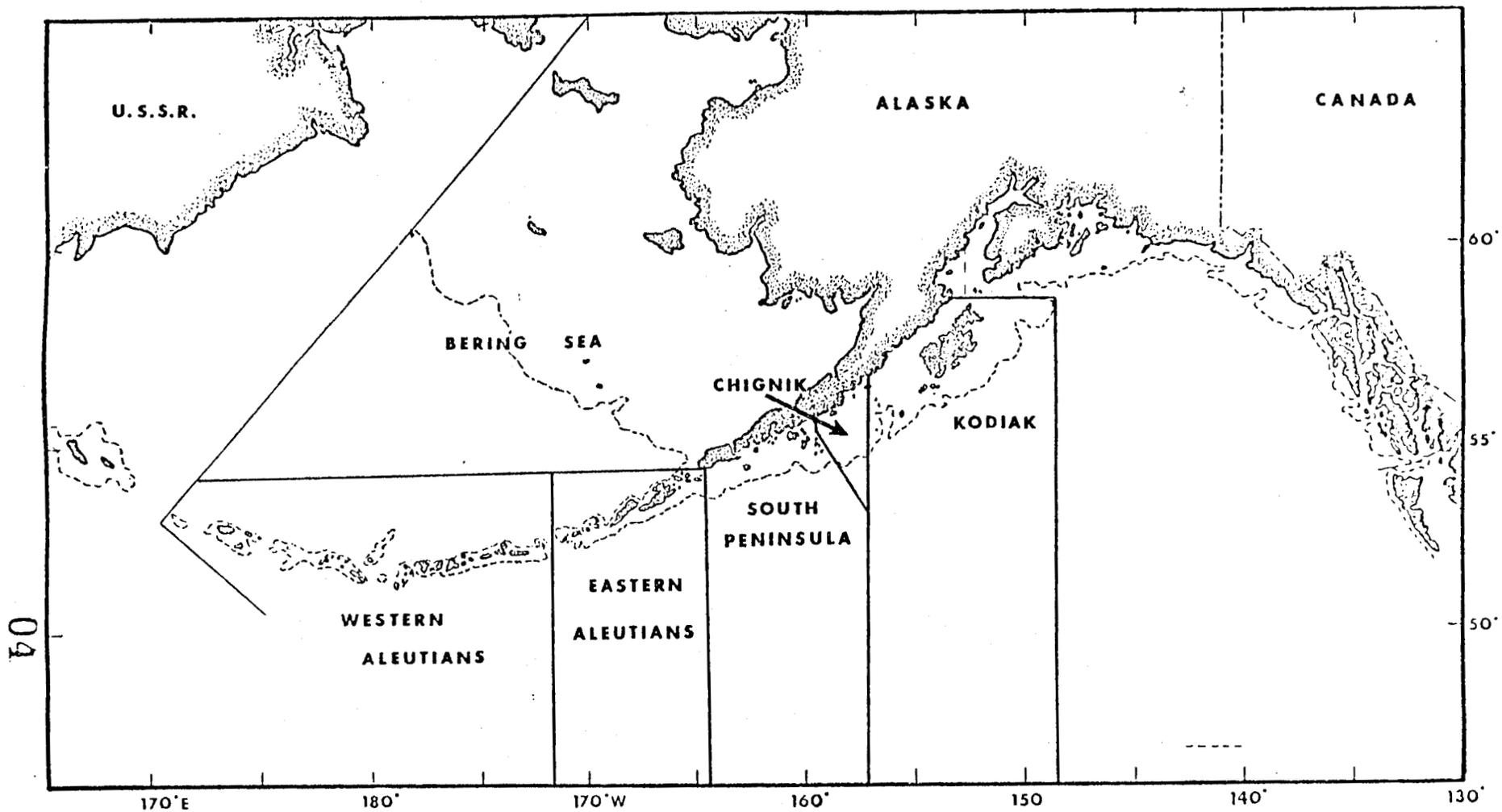


FIGURE 1. TANNER CRAB DISTRICTS— WESTWARD REGION

Table 1. Shellfish processors operating in the Westward Region during the 1988/89 Fishing seasons.

Location	Company	*Products	Superintendent
Kodiak	Alaska Fresh Seafoods	KTMD	Dave Woodruff
	All Alaskan	KTMD	Tim Blott
	Alaska Pacific Seafoods	TMD	John Severe
	Cook Inlet Processing ¹	TMD	Wayne Selby
	East Point Seafoods	KTMDS	Jim Major
	International Seafoods	T	David Rogers
	Kodiak King Crab	KTMD	Stewart Litton
	Skokum Chuck	TD	Ray Fuford
	Ursin Seafoods	KTMD	John Wilcomb
	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	KTM	Frank Kelty
	Aleutian Processors	KTMD	Pat Ziegler
	Arctic Star	KTM	Jay Hendrickson
	East Point Seafoods	KTD	Chuck Corbit
	Sans Souci	KTDM	Nikata
	Unisea Seafoods	KTDM	Steve Stubbe

FLOATER/PROCESSORS

Alaska Packer	K
Aleutian Queen	KTM
Akutan	KT
Clipperton	KTM
Galaxy	KT
Mr. B	KT
Northern Alaskan	KT
Omni Sea	KT
Polar Command	KTM
Sea Alaska	KTM
Tempest	KTM

CATCHER/PROCESSORS

Alaskan Enterprise	KT	Ron Miller
Arctic Discovery	K	Alan Rorvik
Arctic Orion	KT	Gary Maongini/ Jack Johnson
Baranof	KT	Chuck Hosner
Bountiful	KT	Victor Scheibert
Courageous	KTM	Pat Cummings
Deep Sea Harvester	K	Odd Johnson
Isafjord	KTM	Don Hughes
Jacquelyn R	K	Dennis Rydman

Table 1. (continued) Shellfish processors operating in the Westward Region during the 1988/89 Fishing season.

Location	Company	*Products	Superintendent
	Northern Enterprise	K	Richard Miller
	Optimus Prime	K	Thorn Tasker
	Patricia Lee	KTM	Richard Powell
	Pavlof	KTM	Ted Blenkers
	Pengwin	KTM	Lloyd Olsen
	Perserverence	KT	Jeff Harris
	Rondys	KT	Dave Capri
	Seawind	K	Russ Moore/ Coleman Adnerson
	Shishaldin	KTM	Phil Harris
	Skipbladnir	KTM	Pat Berg/
	Western Enterprise	KT	Dennis Thompson
	Westward Wind	KTM	Craig Sandness
	Windance	KT	Ed French/Steve Hall

* 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/pound and value to the fishermen 1950 to 1988.

Year	SHRIMP			KING CRAB		TANNER CRAB ¹		DUNGNESS CRAB			TOTAL			
	Lbs. ²	Price ³	Value ⁴	Lbs. ²	Price - Value	Lbs. ²	Price	Value	Lbs. ²	Price	Value	Lbs. ²	Value	
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	14.9			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	.94	6.8	.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

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Table 2. (continued) Westward Region king crab, shrimp, Tanner crab and Dungeness crab pounds, price/pound and value to the fishermen 1950 to 1988.

Year	SHRIMP			KING CRAB			TANNER CRAB ¹		DUNGENESS CRAB			TOTAL		
	Lbs. ²	Price ³	Value ⁴	Lbs. ²	Price	Value	Lbs. ²	Price	Value	Lbs. ²	Price	Value	Lbs. ²	Value
1976	119.3	.10	11.93	101.4	1.37	138.91	64.8	.20	12.96	.08	.15	.01	285.6	168.81
1977	110.6	.13	14.38	94.6	1.34	126.76	86.4	.33	28.51	.1	.30	.03	291.7	169.68
1978	64.2	.165	10.59	119.9	1.60	191.80	114.3	.43	49.15	1.3	.75	.98	301.4	253.16
1979	44.6	.225	10.03	151.6	.95	144.02	1.7	.38	.64	1.4	.75	1.05	314.0	211.06
							84.2	.55	46.30					
1980	43.1	.29	12.49	189.6	1.05	199.08	32.2	.30	9.66	2.0	.45	.90	338.20	255.97
							4.0	.55	35.20					
1981	21.5	.27	5.81	85.3	2.0	170.60	39.5	.21	8.30	5.6	.70	3.92	214.40	226.08
							49.3	.65	32.05					
1982	11.2	.27	3.02	38.5	3.75	144.48	52.7	.26	13.70	5.3	.75	3.98	118.5	229.19
							34.2	1.65	56.43					
1983	2.8	.35	.98	25.0	3.00	75.00	29.3	.73	21.38	5.90	1.05	6.20	91.3	130.60
							31.4	1.25	39.25					
1984	2.9	.33	.95	17.1	2.75	47.02	26.2	.35	9.17	6.0	1.40	8.40	70.8	86.22
							18.8	1.10	20.68					
1985	1.2	.20	.24	20.4	2.50	51.00	26.0	.30	7.80	4.6	1.20	5.52	109.1	103.71
							18.4	1.50	27.60					
1986	.5	.25	.13	17.3	3.50	60.50	64.5	.30	19.35	1.2	1.15	1.38	128.7	144.99
							13.2	1.90	25.08					
1987	0	0	0	27.3	3.50	95.46	96.5	.60	57.90	1.7	1.25	2.07	138.5	189.98
							7.6	2.11	16.02					
1988	Harvest confidential			20.0	3.98	79.37	101.9	.75	76.43	2.3	1.06	2.44		209.86
							9.9	2.36	23.40					
							135.4	.77	104.25					

¹ *C. bairdi*

C. opilio

² Millions of pounds

³ Dollars

⁴ Millions of dollars

Table 3. Historic domestic trawl shrimp catch, Alaska Westward Region, 1960-88.

Calendar Year	Kodiak	Chignik	South Peninsula	Aleutian	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					
Harvest confidential					
TOTAL		197,800,807	198,074,938		
AVERAGE (Years Fished)	26,720,606	14,128,629	15,236,533	2,377,888	41,963,058

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

¹Season Open - No Catch Reported

Table 4. Historic king crab catch by registration area for Alaska's Westward Region (in thousands of pounds), 1950 to 1988.

Year	K Kodiak	M Chignik South Pen.	O Unalaska	R Adak W.Aleutian	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	NF	NF	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

Table 4. (continued) Historic king crab catch by registration area for Alaska's Westward Region (in thousands of pounds), 1950 to 1988.

Year	K Kodiak	M Chignik South Pen.	O Dutch Harbor	R Adak W.Aleutian	Q Bering Sea	T Bristol Bay	U.S. ²	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 ⁴	2,200.9	12,289.1	19,130.4	NF	19,130.4
1988-89	2.8	CLOSED	1,545.1	9,571.1 ³	1,488.3	7,387.8	19,955.1	NF	19,955.1
Subtotal	53,829.6	9,855.8	35,998.7	67,850.1	63,077.9	205,969.2	432,835.7	NF	432,835.7
Average	5,981.1	3,285.3	3,999.9	7,538.9	7,008.7	22,885.5	48,092.9		48,092.9

¹ Fishing Year - July 1 through June 30

² Brown crab

³ Calendar Year

⁴ Through January 31

NF = No fishing

Table 5. Historic Tanner crab *C.bairdi* and *C.opilio* catch (in pounds) for Alaska, Westward Region, 1965-1988.

Year ¹	Kodiak	Chignik ²	South Peninsula	Eastern Aleutians	Western Aleutians	Bering Sea		Total U.S. Harvest	Total Foreign Harvest
						<i>C.Opilio</i>	<i>C.bairdi</i>		
1965	0	0	0	0	0	0	0	0	3,936,000
1966	0	0	0	0	0	0	0	0	7,290,000
1967	110,961	0	5,000	0	0	0	0	115,961	24,000,000
1968	2,560,687	0	131,700	0	0	0	17,900	2,710,287	30,940,000
1969	6,796,477	0	644,400	0	0	0	1,008,900	8,449,777	47,668,000
1970	7,749,859	0	2,022,427	0	0	0	1,014,700	11,259,447	47,828,000
1971	7,436,414	152,256	2,140,755	0	0	0	166,100	9,875,888	39,886,000
1972	11,898,054	23,343	3,618,883	0	0	0	107,761	15,662,354	31,186,000
1973	31,113,459	747,788	5,615,563	62,128	168,354	0	231,668	38,008,640	27,886,000
1974	25,479,717	4,202,671	9,503,366	498,836	71,887	0	5,044,197	43,409,968	27,912,000
1975	17,535,844	3,649,444	5,195,800	77,164	3,350	0	7,284,378	33,225,873	18,456,000
1976	23,446,245	6,926,161	11,201,941	534,295	62,180	0	22,341,475	64,818,920	19,286,000
1977	20,720,079	5,672,919	6,773,838	1,301,654	0	0	51,455,221	86,405,326	21,520,173
1978	33,271,472	4,693,830	7,446,270	2,624,016	237,512	1,716,124	66,648,954	116,014,238	33,057,796
1979	29,173,807	2,536,105	8,684,408	1,092,311	197,244	31,102,832	42,547,174	116,411,771	32,914,536
1980	18,623,875	3,517,920	3,961,251	879,807	337,297	39,344,323	36,614,315	103,507,133	15,636,125
1981	11,748,629	3,653,723	3,294,106	654,514	220,716	50,483,055	29,732,086	102,056,808	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	135,354,637	2,210,394	145,445,064	NF
TOTAL	324,860,154	44,122,015	91,532,653	10,054,653	3,128,560	606,831,593	287,067,604	1,366,408,440	429,402,630
AVERAGE	14,766,371	2,451,223	4,160,575	628,395	208,571	55,166,500	15,108,821	62,109,475	26,837,664

SOURCE: Westward Regional Shellfish Management Office (3/1/88)

¹ Calendar Year

² Chignik and South Peninsula catches combined 1967 through 1970

NF = No fishing

Table 6. Historic Dungeness crab catch (in pounds), Alaska Westward Region, by District 1962-88.

Calendar Year	Kodiak	Alaska Peninsula	Aleutian	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
TOTAL	786,731,681	6,374,544	2297,713	87,730,626
AVERAGE (Years Fished)	2,915,988	424,969	29,771	3,249,284

NF = No fishing



KODIAK AREA
SHELLFISH MANAGEMENT REPORT
TO
ALASKA BOARD OF FISHERIES

MARCH 1989

BY

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Table 1. Ex-vessel* value of fish and shellfish landed at the port of Kodiak.

KODIAK 1988

<u>SPECIES</u>	<u>POUNDS</u>	<u>EX-VESSEL VALUE</u>
Halibut	18,000,000	21,600,000
Red King Crab	949,526	5,269,869
<u>C. bairdi</u> :	4,449,086	13,525,996
Dungeness	2,125,032	2,252,533
Octopus	1,949	2,104
Sea Urchins	190,509	152,407
Salmon	86,028,000	94,075,000
Herring		
Sac Roe	4,700,000	2,822,000
Bait	434,000	86,800
Groundfish (1)	180,590,000	25,400,000
Miscellaneous (2)	<u>1,059,367</u>	<u>1,964,323</u>
	298,547,469	164,242,842

(1) Includes: All groundfish except halibut

(2) Includes: C. opilio, brown king crab, shrimp and scallops

* Value to fisherman in season and does not reflect post-season settlements.

Table 2. Keel length frequencies of Kodiak District shellfish vessels which made landings during the 1987-88 fishing seasons for Tanner crab, and the 1988 calendar year and Dungeness crab.

Vessel Keel Length	1987/88 Tanner Crab	1988 Dungeness Crab
20	-	1
20-29.	9	14
30-39.	63	14
40-49.	58	12
50-59.	9	1
60-69.	11	7
70-79.	6	-
80-89.	11	1
90-99.	5	-
100-109.	1	-
110-119.	1	-
120-129.	2	-
130-139.	-	-
140-149.	-	-
≥150	-	-
VESSELS	176	50

Table 3. Shellfish emergency orders issued during 1988 for the Kodiak Management District.

Emergency Order	Effective Date	Explanation
TANNER CRAB		
4-S-01-88	January 26, 1988	Closed the Northeast section to Tanner crab fishing at 12:00 noon January 26, 1988.
4-S-03-88	February 1, 1988	Closed Southeast and Eastside to Tanner crab fishing at 12:00 noon on February 1, 1988.
4-S-04-88	February 9, 1988	Closed the Westside to Tanner Crab fishing at 12:00 noon on February 9, 1988. Also closed the North Mainland to Tanner crab fishing at 12:00 noon on February 14, 1988.
4-S-05-88	February 16, 1988	Closed the Southwest section to Tanner crab fishing at 12:00 noon on February 16, 1988.
4-S-08-88	March 10, 1988	Closes the South Mainland and Semidi Islands to Tanner crab fishing at 12:00 noon on March 10, 1988.
KING CRAB		
4-S-15-88	September 25, 1988	Closed Kodiak Registered Area to red and blue king crab fishing at 12:00 noon on September 25, 1988.
MARICULTURE		
4-S-06-88	March 1, 1988	Permits collection of bivalve spat in the Kodiak area under the authority of a permit.

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

	1979/80	1980/81	1981/81	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	
KING CRAB 7"										
Avg. Number ¹ Pots/Vessel	86	103	113	114	NF	NF	NF	NF	NF	
Total Number Vessels	242	161	239	297	-	-	-	-	-	
Total Pots on Grounds	20,812	16,583	27,007	33,858	-	-	-	-	-	
KING CRAB 7-1/2"										
Avg. Number ¹ Pots/Vessel	85	98	104	98	NF	NF	NF	NF	NF	
Total Number Vessels	116	76	188	203	-	-	-	-	-	
Total Pots on Grounds	9,860	6,080	19,552	19,894	-	-	-	-	-	
TANNER CRAB										
Avg. Number ¹ Pots/Vessel	128	121	127	120	127	127	119	109	91	
Total Number Vessels	211	188	221	348	302	214	233	189	176	
Total Pots on Grounds	27,008	22,748	28,067	41,760	38,354	27,178	27,370	20,601	16,016	
DUNGENESS										
Avg. Number ¹ Pots/Vessel	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	441	432	399	508	507	491	437	417	383	424
Total Number Vessels	28	21	50	111	103	106	125	81	45	50
Total Pots on Grounds	12,348	9,072	19,950	56,388	52,221	52,067	58,375	33,785	17,220	21,200

¹ From interviews at tank inspections.

KODIAK ISLAND

ALASKA DEPARTMENT OF FISH AND GAME
STATISTICAL AREA CHART
DECEMBER 1964

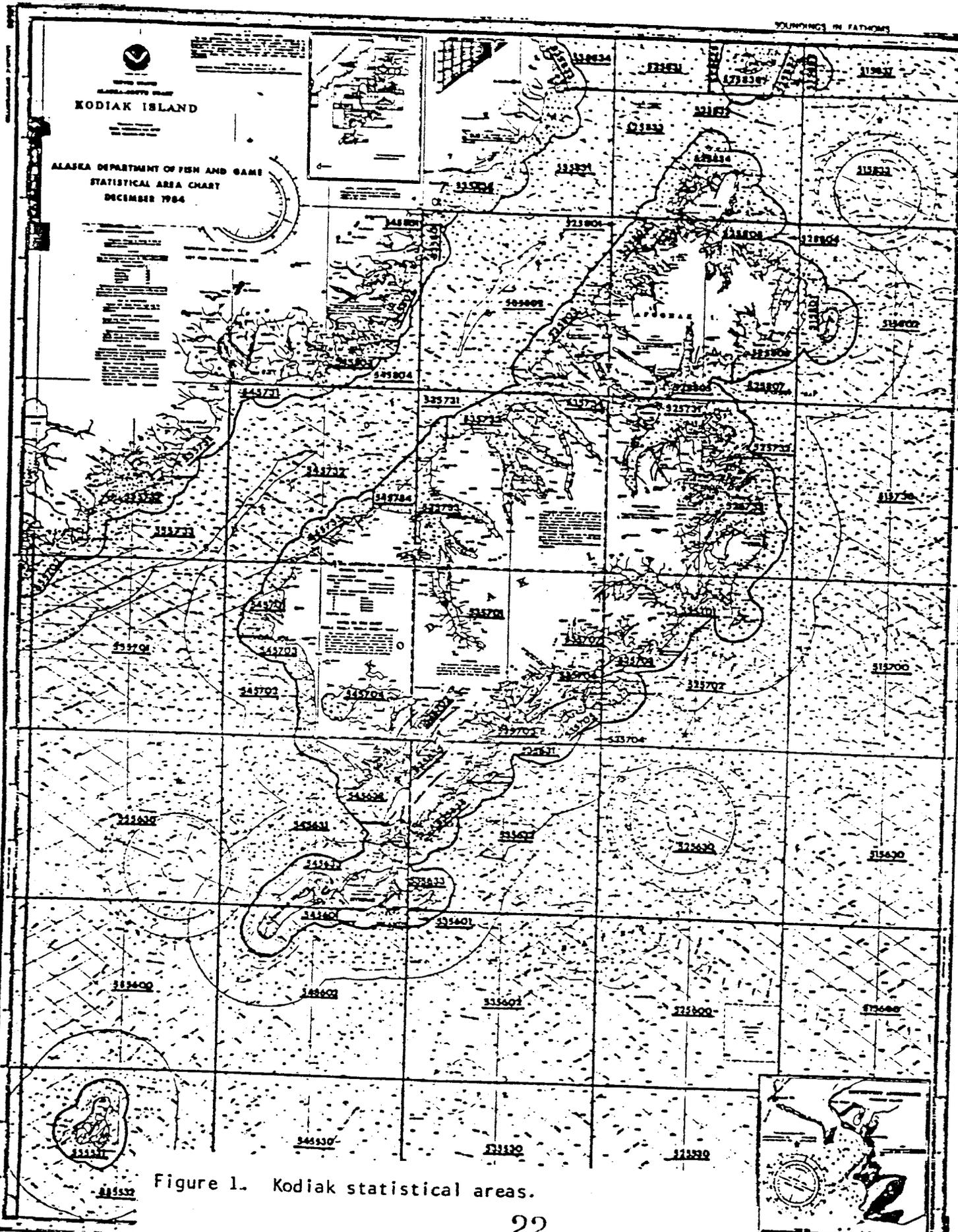


Figure 1. Kodiak statistical areas.

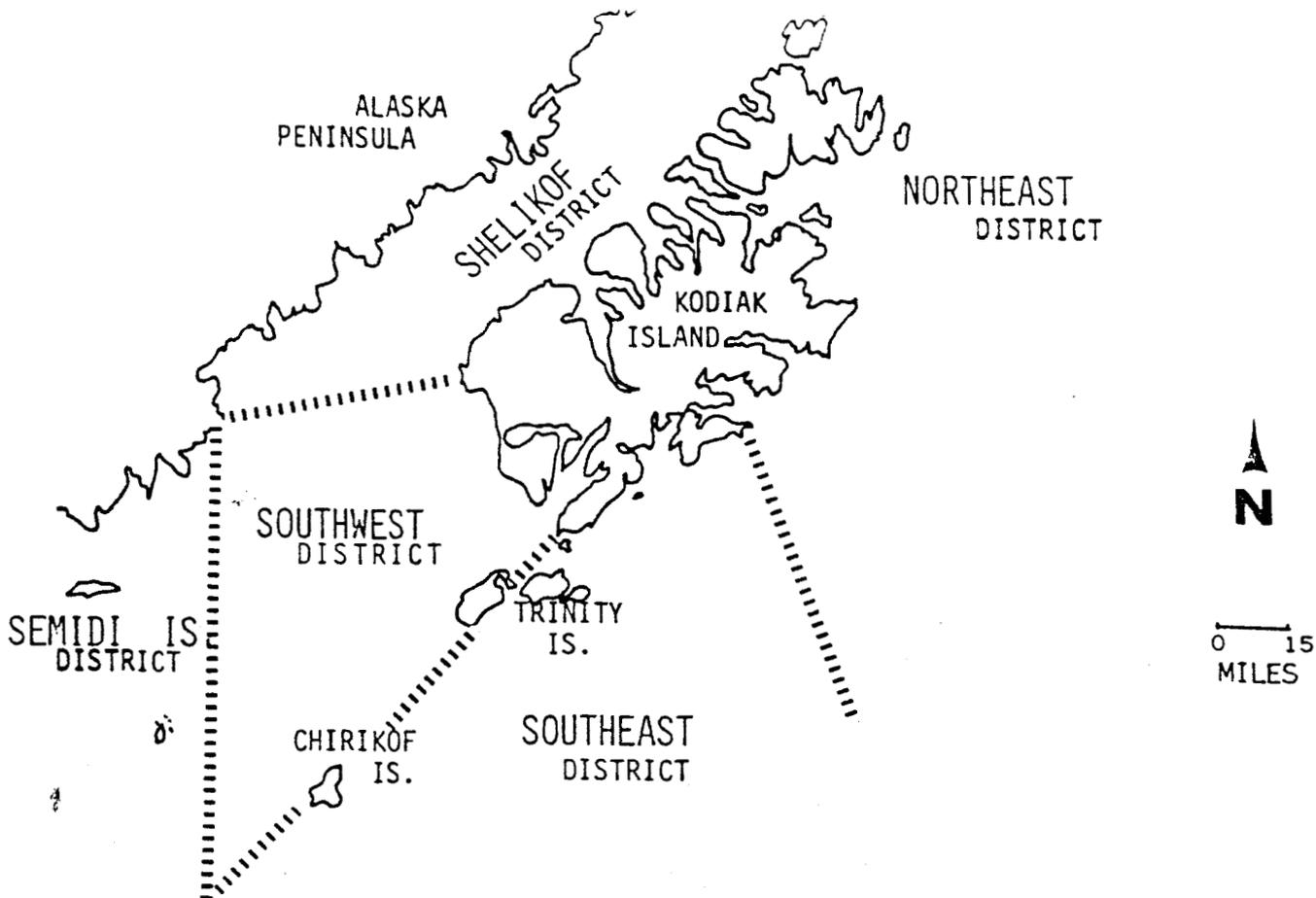


Figure 2. Kodiak (Area K) king crab districts.

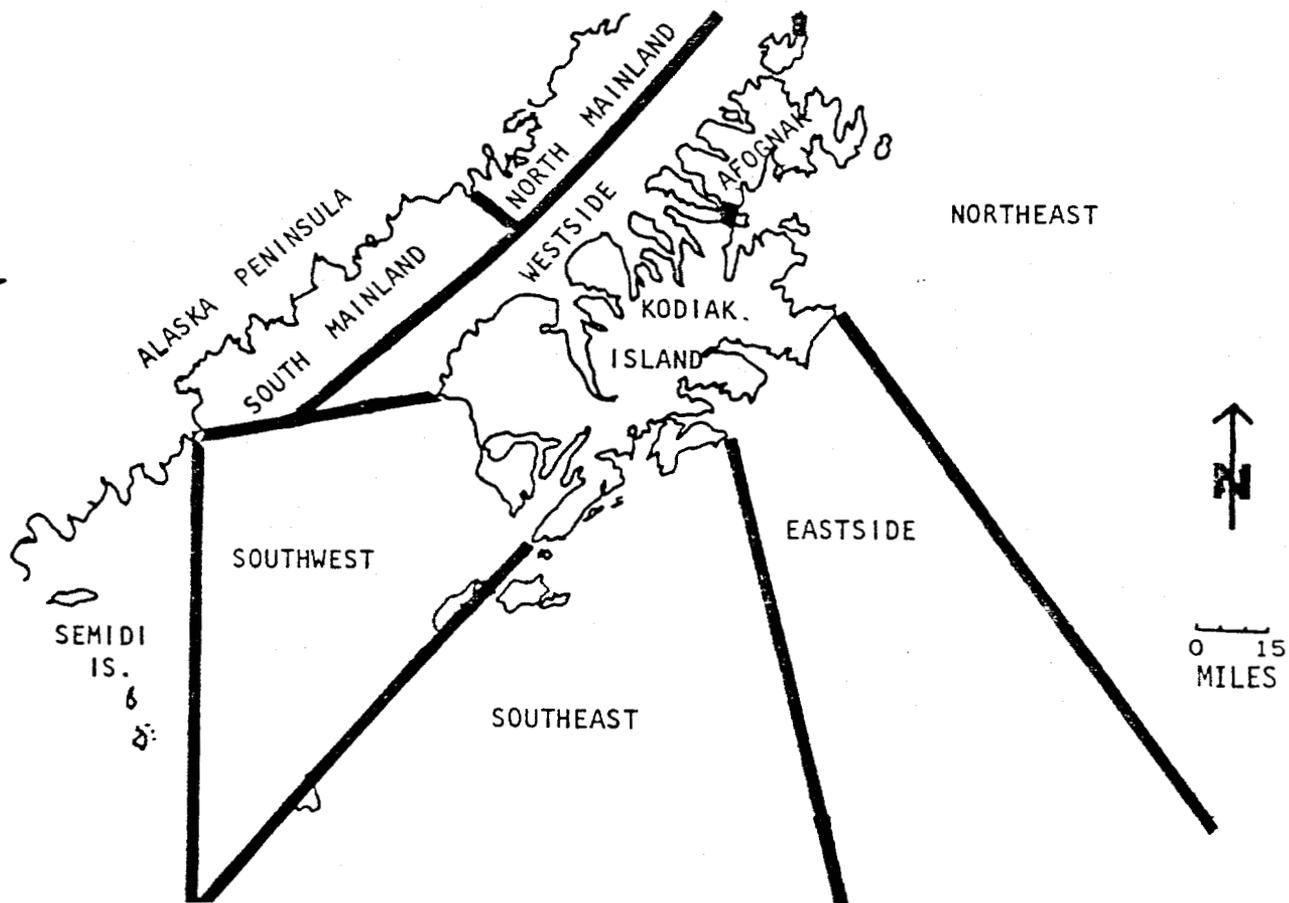


Figure 3. Kodiak District Dungeness crab fishing sections.

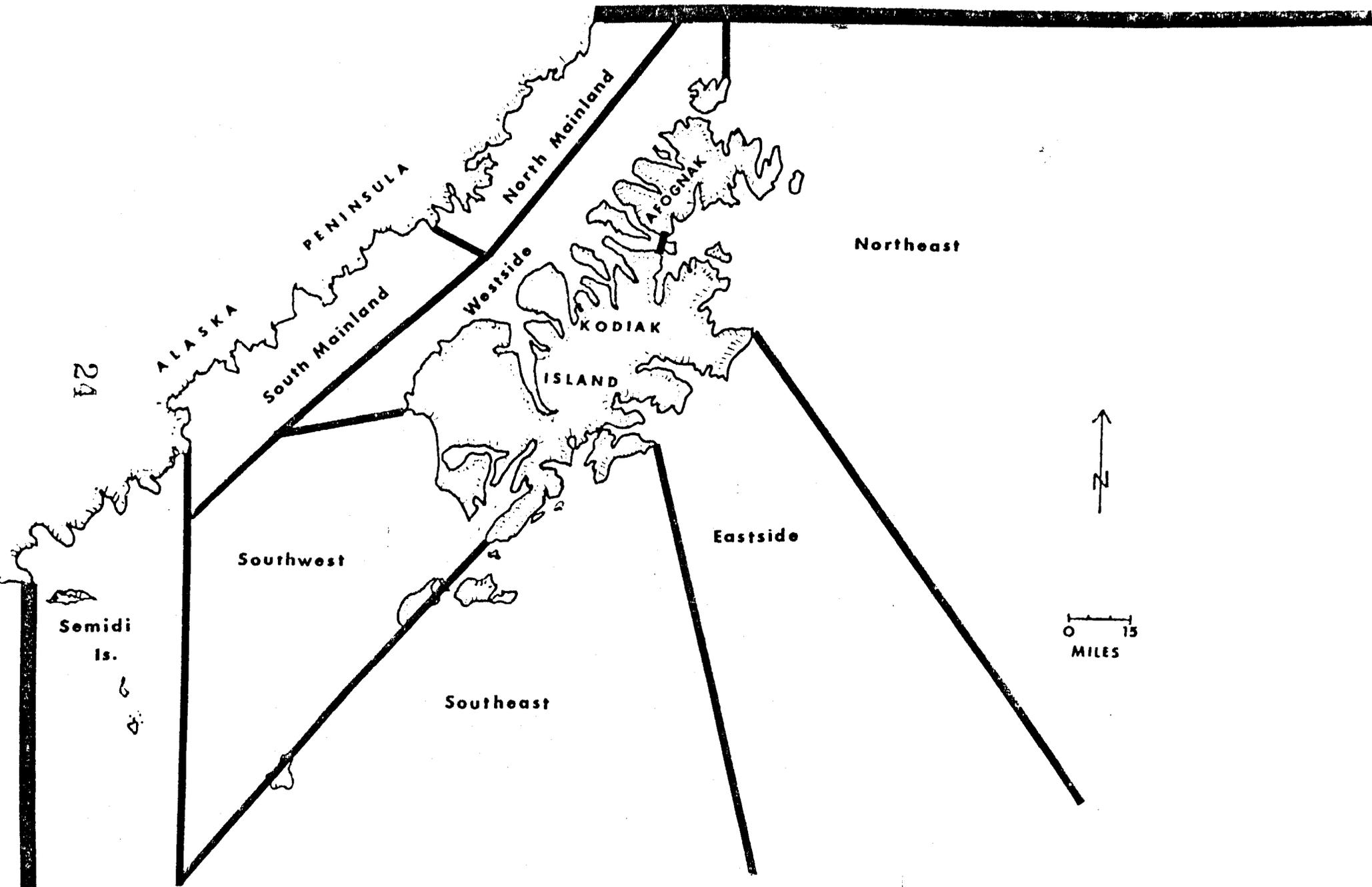


Figure 4. Kodiak District Tanner crab fishing sections.

TANNER CRAB

Historic Background

The Kodiak Tanner crab (Chionoecetes bairdi) fishery has been in existence since 1967. Through the 1971/72 fishing season, the harvest was less than 10 million pounds (Table 1). As king crab abundance declined in the late 1960's and early 70's, markets opened up, prices increased and more vessels participated in the fishery.

By the 1972/73 season, Tanner crab had established itself as the dominate winter and spring shellfishery. During the 1973/74 and 1974/75 seasons, the first harvest level of 30 million pounds was set by the Alaska Board of Fish and Game as a conservation measure. The low catch of 13.6 million pounds in the 1974-75 season was the result of a prolonged strike. The Board of Fisheries adopted an April 30th closure in 1975 to protect crab at the onset of mating. In 1976 the Board established a 5 1/2 inch minimum size.

In 1978 the Federal government entered into joint management responsibilities with the State of Alaska on the domestic Tanner crab fishery. Federal regulations became effective on December 1, 1978.

The commercial harvest peaked in the 1977/78 season at 33.3 million pounds and declined through the 1980/81 season to 11.7 million pounds. The harvest for 1981/82 was 13.8 million pounds and increased to 18.9 million pounds in the 1982/83 season, but has since declined to current low levels.

1987/88 Fishery

The 1987/88 Tanner crab fishery opened at 12:00 noon on January 15, 1988. A total of 176 vessels harvested 3,888,906 pounds of Tanner crab (Table 1).

Fishermen settled on a price of \$2.25 per pound, however, by the end of the season were paid retroactive at \$2.40 per pound. All product was processed by onshore processing facilities or was air freighted to Japan

alive.

Tank inspections began 12:00 noon on January 14th and were given in Kodiak, Port Lions, and Larsen Bay. Due to poor weather conditions the department was not able to fly to Old Harbor to conduct tank inspections. A resident of Old Harbor was appointed to conduct inspections later that day. Vessel operators were interviewed at the time of tank inspections as to the area they were intending to fish as well as size and quantity of their gear. The department estimated 16,000 pots on the fishing grounds after the season opening. This was down from the 20,000 pots fished last season.

The department made a preseason harvest projection for the Kodiak District based on a trawl survey, of 5.8 million pounds. The results of this survey were published in "The Alaska Department of Fish and Game Westward Region Crab Survey Results of 1987."

The Northeast section was assigned a harvest project of 500,000 pounds. Based on survey results, the harvest range for the Northeast Section was 280,000 to 632,000 pounds.

Catch per unit effort (CPUE) started at 22 crab per pot and increased to 24 crab per pot on the second day of fishing. Catch rates then declined to 11 crab per pot on the third day and fell below 10 crab per pot on the fourth day of fishing. At this point in the fishery most of the effort was in Chiniak Bay. Due to the declining catch rates, the fleet, which consisted of 74 vessels, began to fish a larger portion of the Northeast Section.

On January 22 a closure was announced for the Northeast Section to close at 12:00 noon on January 26. Due to declining catch rates and overall fishery performance it was decided that the harvest should not exceed the 500,000 pound preseason projection.

Catch rates for the period of January 20 through January 25 in the Northeast Section increased to 16 crab per pot.

A total of 74 vessels landed 566,129 pounds from the Northeast Section

with an overall CPUE of 14 crab per pot.

The Southeast Section was assigned a harvest range of 520,000 to 1,500,000 pounds with a midpoint of 1,000,000 pounds.

CPUE started at 61 crab per pot and by the 25th of January had declined to 13 crab per pot. In last season's fishery, catch rates started at 38 crab per pot and declined to 10 crab per pot by the 29th of January.

Catch rates and harvest trends indicated the midpoint of the harvest projection of 1,000,000 pounds would be attained by 12:00 noon on February 1.

A total of 40 vessels fished the Southeast Section harvesting 1,087,696 pounds. The overall CPUE for the Southeast Section was 22 crab per pot.

The Eastside Section was assigned a preseason harvest range of 325,000 to 675,000 pounds with a midpoint of 500,000 pounds. At the start of the season catch rates were 15 crab per pot with only 24 vessels fishing. This compares to 51 crab per pot last season with 79 vessels fishing. With these reduced catch rates a number of vessels moved from the Eastside to more productive fishing grounds in the Southeast and Southwest Sections. CPUE declined to 10 crab per pot and most of the vessels had moved out of the area. It was evident that the midpoint of the harvest range would not be achieved and possibly not even the low end. On January 28th the Department announced the closure of the Eastside Section at 12:00 noon on February 1, 1988.

The Eastside Section was fished by 24 vessels landing 273,821 pounds with an overall CPUE of 13 crab per pot.

Based on survey results the Westside Section had a preseason harvest range of 800,000 to 2,000,000 pounds with a midpoint of 1.4 million pounds. Catch rates started at 23 crab per pot on the first pick through the gear and declined to 11 crab per pot by January 22.

This compares to the previous season's catch rates of 33 crab per pot at

the start of the season declining to 10 crab per pot by January 25th. Due to the rapidly declining catch rates it appeared that the low end of the guideline harvest range would not be attained. On February 4, the department announced the closure of the Westside Section to Tanner crab fishing at 12:00 noon on February 9th.

The Westside Section had a total of 46 vessels landing 411,135 pounds with an overall CPUE of 8 crab per pot.

The North Mainland Section was assigned a preseason harvest range of 330,000 to 1,150,000 pounds with a midpoint of 700,000 pounds. CPUE at the start of the season was 22 crab per pot and declined to 11 crab per pot by January 23. Nearshore areas of the North Mainland had catch rates below 10 crab per pot while areas midstream in the Shelikof had catch rates of 15 crab per pot. The previous season's catch rates started at 28 crab per pot and declined to 10 crab per pot by February 7th.

The department's analysis of this data indicated the low end of the harvest range was warranted. On February 4th the department announced the closure of the North Mainland Section at 12:00 noon on February 14th.

A total of 22 vessels harvested 388,751 pounds of Tanner crab with an overall CPUE of 12 crab per pot.

The harvest range for the Southwest Section of Kodiak was 853,000 to 2,567,000 pounds with a midpoint of 1.7 million pounds. Catch rates started at 51 crab per pot and remained as high as 40 crab per pot through the 24th of January. By January 27, and 28 catch rates were down to 19 crab per pot and catch rates continued to decline to 10 crab per pot on February 2. Comparable catch rates for the previous year started at 20 crab per pot and declined to less than 5 crab per pot on February 6th.

Reports from fishermen at the time of landing indicated that significant numbers of king crab and sublegal Tanner crab were being sorted through during this fishery. Due to rapidly declining catch rates and increased handling of non-target animals the department announced on February

10th the closure of the Southwest Section at 12:00 noon on February 16.

The Southwest Section had 28 vessels landing 1,143,306 pounds with an overall CPUE of 22 crab per pot.

The South Mainland and Semidi Islands sections were not surveyed during the summer trawl survey. These sections are low production areas and produced only 5,778 pounds and 12,290 pounds respectively during the 1987/88 fishery.

On March 10th at 12:00 noon the Kodiak District was closed to Tanner crab fishing along with the Chignik District.

The historic catch by section is depicted in Table 2 for the seasons 1978/79 through 1987/88.

Kodiak District Tanner crab catches are reported by statistical subarea and month. This data is listed in Table 4.

Stock Status

The department conducted a trawl survey to assess the Kodiak King and Tanner crab stocks. This survey was conducted aboard the R/V Resolution between July and October.

Two hundred seventeen successful tows were completed capturing 21,913 Tanner crab. A total of 13,789 male Tanner crab were caught, of which 3,253 were legal size.

A total of 3,284 prerecruit one male Tanner crabs were caught on the survey. This would indicate that there should be no dramatic increase in legal crab abundance for the 1989/90 season.

Based on the 1988 survey results the following harvest projections were made for the 1988/89 season.

<u>Section</u>	<u>Projected Harvest</u>
Northeast	400,000
Eastside	400,000
Southeast	900,000
Southwest	1,400,000
Westside	300,000
North Mainland	1,000,000
South Mainland	No Projection
<u>Semidi Islands</u>	<u>No Projection</u>
Total	4,400,000

Table 1. Commercial catch and effort for the Tanner Crab (*Chionoecetes bairdi*), Kodiak Management District, 1967-1988.¹

Year	Vssls.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	CPUE	Avg. Wt.	Price Per Lb.
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	13,609,668	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
TOTAL			124,145,059	326,095,589	3,567,101	-	-	-
AVERAGE	162	924	6,533,950	14,822,526	178,355	35	2.6	-

- 1 Data Source: Alaska Department of Fish & Game Annual Board of Fish & 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

Table 2. Tanner crab, *Chionoecetes bairdi*, catch in pounds by fishing seasons for the Kodiak Management District 1977/78 through 1987/88 fishing season.

Section	1978/79 ²	1979/80 ²	1980/81 ²	1981/82 ³	1982/83 ⁴	1983/84 ⁴	1984/85 ⁵	1985/86 ⁵	1986/87 ⁵	1987/88 ⁵
Northeast	6,359,777	4,986,120	2,389,483	1,160,945	2,832,979	1,845,103	1,063,906	646,120	613,791	566,129
Eastside	3,032,083	2,119,244	1,310,020	1,362,308	3,124,031	4,460,775	5,070,112	4,137,703	1,814,094	273,821
Southeast	2,529,316	974,921	496,275	549,504	2,371,870	2,290,951	1,977,377	1,660,327	513,058	1,087,096
Southwest	5,185,730	2,647,294	2,544,477	5,188,309	5,587,149	2,240,332	889,176	721,443	475,122	1,143,306
Semidi Is. ¹	722,600	1,292,275	1,075,482	1,210,671	907,952	288,998	30,176	40,457	16,336	12,290
N.Mainland	7,111,498	4,677,742	2,088,933	2,205,260	2,042,885	1,449,068	1,717,556	1,445,135	710,730	388,751
S.Mainland	277,921	500,247	396,155	260,645	149,419	549,712	123,978	85,163	26,434	5,778
Westside	3,954,882	1,426,032	1,447,804	1,818,517	1,910,776	1,353,127	1,151,883	259,803	663,908	411,135
TOTAL	29,173,807	18,623,875	11,748,629	13,756,159	18,927,061	14,478,066	12,024,553	8,996,151	4,833,473	3,888,906

¹ Table revised 1/79 to reflect creation of Semidi, Southeast and Southwest section from old "Southern" section and minor modification of Eastside section description. Semidi Island section added beginning 1978/79 fishing season.

² Fishing season January 5 - May 15.

³ Fishing season January 22 - May 15, shortened due to price negotiations.

⁴ Fishing season February 10 - May 15.

⁵ Fishing season January 15 - May 15.

PERCENT OF TOTAL CRAB MEASURED

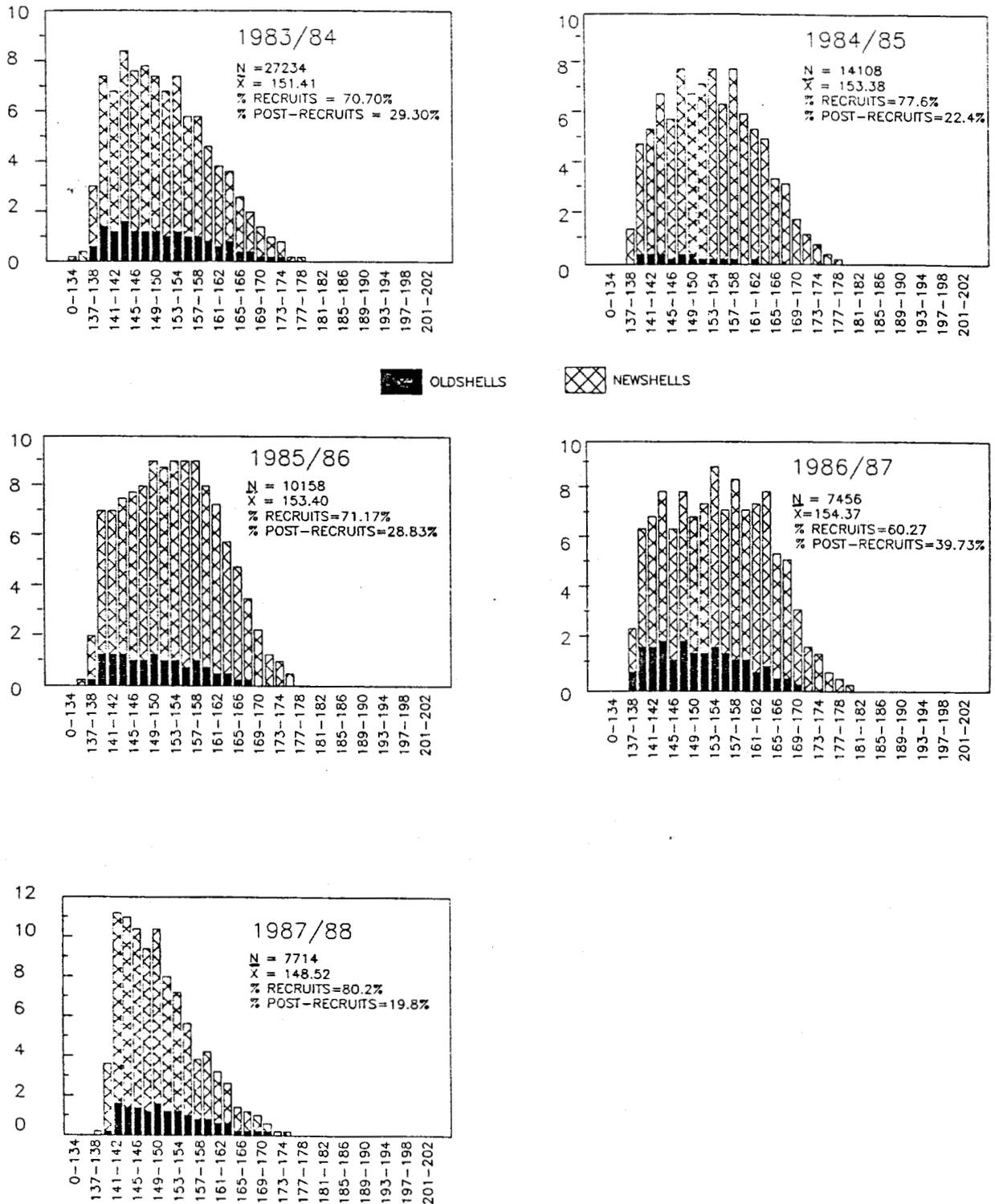


Figure 1. Tanner crab width frequencies from commercial fishery, Kodiak District, 1983/84, through 1987/88 fishing seasons.

DUNGENESS CRAB

Historic Background

The first commercial Dungeness crab 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 have 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 post-recruit 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.

1988 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, 1988. A total of 50 vessels made 363 landings harvesting 2,125,032 pounds of Dungeness crab. The 1988 season catch was valued at 2.3 million dollars with an average ex-vessel price of \$1.06 per pound (Table 1).

All sections except the Mainland, produced more legal crab this past season than 1987 with the largest harvest coming from the Southeast Section (Table 2). This area accounted for more than half of the island wide catch with July being the most productive month (Table 3).

The Department of Fish and Game operated a dockside interview and sampling program during the season. Approximately 55 interviews were obtained from fishermen landing Dungeness crab throughout the course of the fishery. Two thousand five hundred and ninety-eight (2,598) crab were sampled for size and shell condition (Figure 1 and Table 4) with 1,526 of those also measured for shell hardness (Table 5). The durometer used in measuring shell hardness is being evaluated as a tool to determine molt timing of the Dungeness crab. Seventy-nine percent (79%) of the sampled catch was recruit sized animals with a mean width of 174 mm (Figure 2). This recruit percentage is slightly lower than the previous season with the mean width equalling the smallest since catch sampling began in 1968.

Soft and molting crab were reported during the fishery from different

areas around the island. As in the past, the molting activity was sporadic and timing variable from bay to bay. June through August had the highest incidence of soft crab observed. The department did observe some unmarketable crab discarded at the docks, but the occurrence was low.

Stock Status

No assessment of Kodiak Dungeness stocks is conducted independent of the commercial fishery. The 1988 fishery was heavily dependent on recruit size crab and in the absence of a preseason index survey, a realistic estimate of harvestable stock size cannot be determined. It is expected that the 1989 harvest, again dependent on recruit size animals, will be similar to the 1988 harvest.

Table 1. Dungeness crab commercial catch and effort by fishing year for the Kodiak Management District, Statistical Area (J), 1962 through 1988.

Year	Lndgs.	Vessels	Commercial Catch		Pots Lifted	Avg. Catch		Avg. Price Per Pound	Ex-Vessel (\$)	
			No. Crab	No. Pounds		Per Lndg. (Pounds)	CPUE			
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			Harvest 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	2,125,032	203,217	5,854	5	1.06	2,253,000	
Total										
Average	419	43	972,195	2,929,492	220,481	7,042	5	.52	1,510,778	

- 1 Season open year around 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, 1977 - 1988.

Fishing Section	1981/82 ¹	1982/83 ²	1983/84 ²	1984/85 ²	1985 ³	1986 ³	1987 ³	1988 ³
Northeast	131,152	363,450	206,386	330,977	346,252	93,428	102,997	149,992
Eastside	510,826	484,139	437,477	1,332,175	1,564,019	364,635	173,438	177,523
Southeast	1,194,316	818,825	1,995,363	2,137,968	1,156,447	253,179	751,793	1,126,298
Southwest	280,747	590,498	575,937	204,714	392,233	57,231	84,352	190,280
N. Mainland	1,087,959	855,013	516,289	430,536	342,001	90,783	106,449	-
S. Mainland	811,223	577,474	454,646	259,649	37,377	6,222	9,990	97,924 ⁵
Westside	1,550,240	856,912	564,610	607,033	320,691	101,945	221,964	383,097
Semidi Is. ⁴	0	0	1,440	0	1,415	0		
Total	5,566,463	4,546,311	4,752,148	5,303,052	4,160,435	967,423	1,450,983	2,125,032

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, 1985

⁴ Area added to Kodiak District by Board of Fisheries, 1983

⁵ 1988 North Mainland and South Mainland catches combined to protect vessel confidentiality

Table 3.

Dungeness crab catch, landings, vessel effort, catch per pot (CPUE), and catch per month by statistical subarea, Kodiak District, 1988. Average catch per pot unstandardized for soak period and gear type.

STAT AREA	BOATS	LNDGS.	POUNDS AVG.		-----CATCH IN POUNDS BY MONTH-----								
			HARVESTED	WT. CPUE	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	DEC.	
525701													
525703													
525731													
525732													
525733													
525802													
535631													
535634													
535635													
535701													
535702													
535703													
535705													
535706													
535732													
535733													
535734													
535801													
545601													
545602													
545632													
545704													
545731													
545801													
545802													
545803													
Harvest confidential													
GRAND TOTAL	50	364	2,125,114	2.0	5	43,907	107,853	640,732	463,230	371,527	318,914	160,908	18,043

Table 4. Dungeness crab commercial width frequency sampling by fishing section, Kodiak Management District, 1988 fishing season.

Fishing Section	Total Crab Sampled	Recruits		Post-Recruits		Mean Carapace Width (mm)
		Number	Percent	Number	Percent	
Northeast	50	43	86	7	14	175
Eastside	49	47	96	2	4	175
Southeast	939	810	86	129	14	171
Southwest	200	134	67	66	33	174
Westside	298	263	88	35	12	176
N. Mainland	247	176	71	71	29	175
S. Mainland	0	-	-	-	-	-
Mixed Sects.	777	537	66	278	32	175
TOTAL	2,560	2,010	79	550	21	174

Table 5. Commercial Dungeness crab hardness sampling by month, Kodiak Management District, 1988 fishing season.

	Total Crab Sampled	Number Hardness Tested	Average Durometer Reading
July	978	384	86
Aug.	955	705	86
Sept.	600	437	88
Dec.	65	0	-
TOTAL	2,598	1,526	86

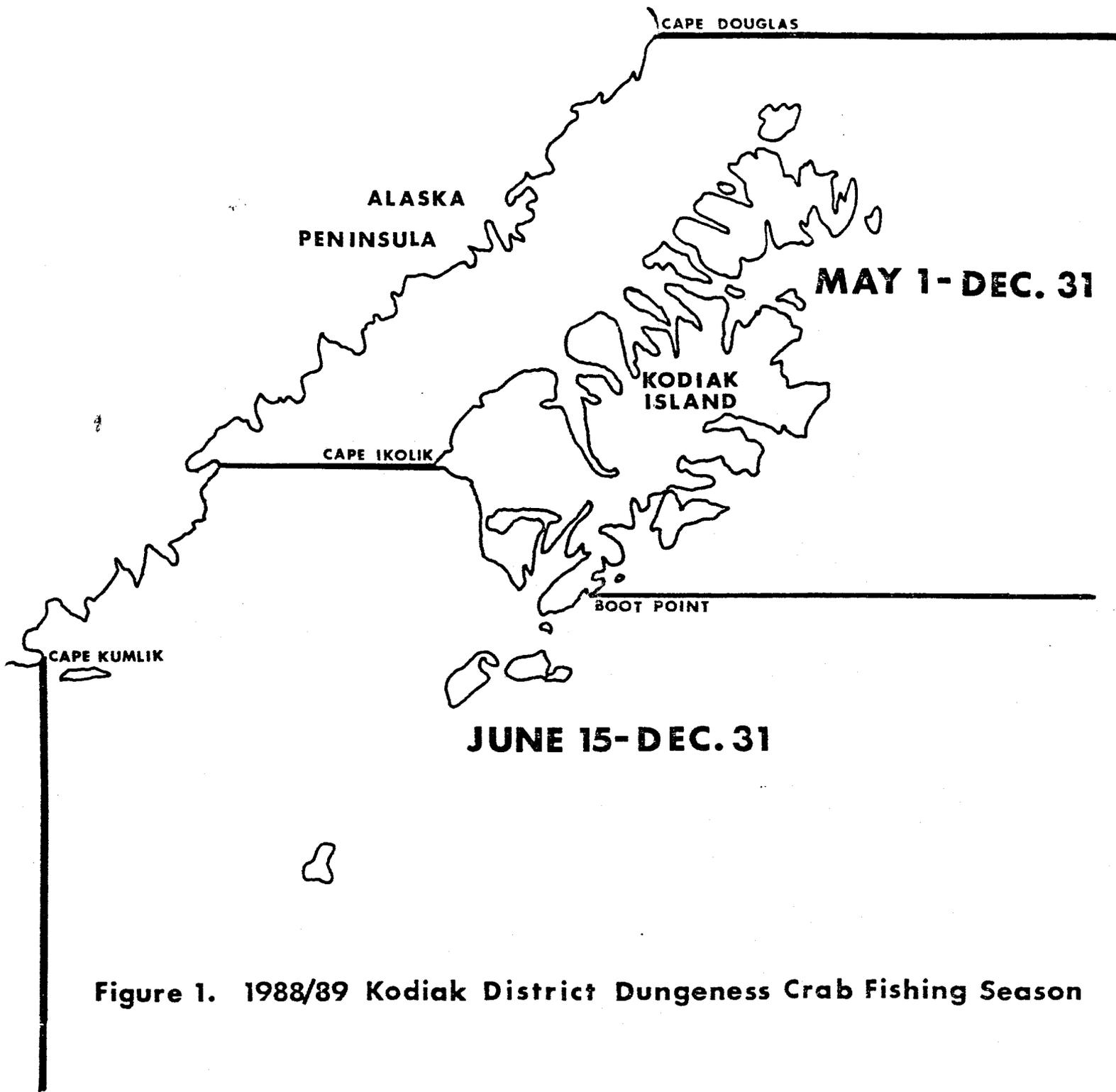


Figure 1. 1988/89 Kodiak District Dungeness Crab Fishing Season

PERCENT OF TOTAL CRAB CAPTURED

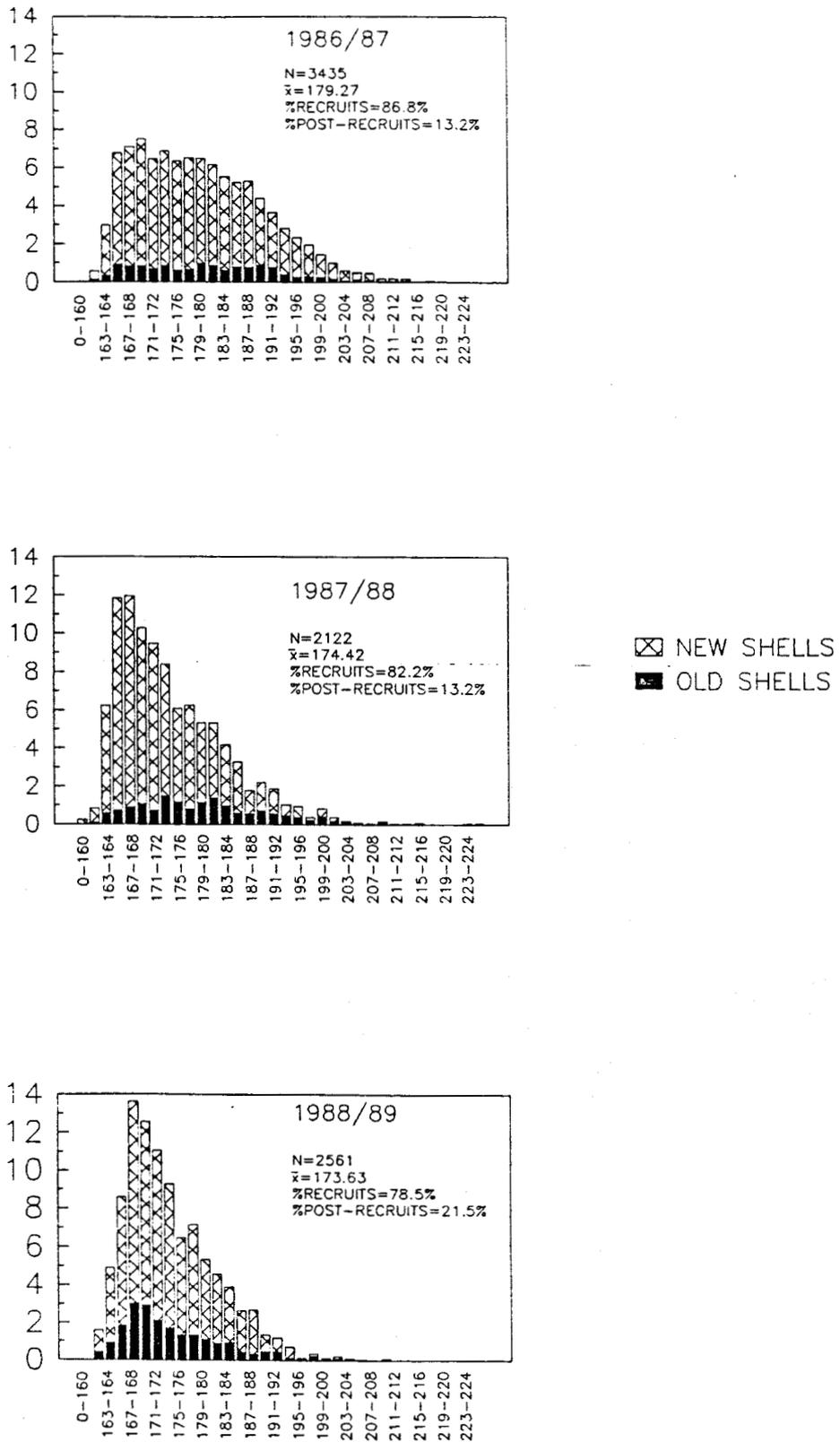


Figure 2. Dungeness crab width frequencies from commercial fishery, Kodiak District, 1986/87 through 1988/89 fishing seasons.

KING CRAB

Historic Background

The Kodiak king crab fishery was pioneered by salmon fishermen. Beginning in 1936 small amounts of king crab were landed. 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, then markets had to be developed to sell the product.

During the exploratory period the Bureau of Commercial Fisheries (now NMFS) was the management agency. Regulations in effect during this period provided for retaining only males with a minimum width of 5 1/2 inches. In 1949 the size limit was increased to 6 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 pots were classified as the only legal gear and area registration was instituted. Also in 1959 the Bureau of Commercial Fisheries transferred management authority to the Alaska Department of Fish and Game.

In 1960 the king crab season opened January 1 and closed December 31. Eight processors bought 21 million pounds of king crab at eight cents per pound from 106 vessels. The Department of Fish and Game recorded the catch in weight and number of crab by geographical area. 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, and age and size of maturity before any more regulations were instituted. In 1963 the size limit was increased to seven 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 harvest equalled the 37 million pounds harvested in 1963 (Table 1).

In 1965 a newshell crab closure went into effect from April 1 to June 15. There were 19 shellfish processors in Kodiak paying ten cents per pound. The department had completed king crab tagging studies and had defined four major, separate stocks of crab. Fishermen were required to record their catch by statistical area. 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 7.3 percent, vessel length had increased from 48' to 55', 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 newshell 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. After 1966's 90 million pound harvest, the department estimated sustained production for the area at 40 to 70 million pounds, with an average harvest of 50 million pounds.

From 1967 to 1970 the king crab fishery expanded to offshore areas, trying to maintain the catch levels of 1965-66. In 1967 the department began a test fishing program to locate concentrations of pre-recruit crab and to estimate future years' production. The first catch projections predicted a continuing decline in future catches. The 1967/1968 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 15.7 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 incident of barren females. No problem was exhibited on Portlock Bank, but on the Chiniak Flats 25 percent of females were barren and large females were affected more than small females. The fishery was still dependent on a weak recruit class.

On July 21, 1970, the Alaska Board of Fish and Game established a catch quota system and directed the department to institute surveys for abundance estimates. The goals of the policy were twofold:

- 1) Develop and establish a stable fishery, in so far as possible eliminating extreme fluctuation 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. Market conditions and the goal of maintaining sufficient densities of crab to provide a reasonable catch per pot were some of the factors taken into consideration. Sometimes these quotas resulted in very low fishing mortalities of 20 to 30 percent and carried over large numbers of crab to following years. This stock pile effect caused extremely short, fast-paced seasons. Many areas historically fished later in the year were left unharvested. By 1972 the decline had been reversed and harvests started increasing. The 1973 fishery lasted ten days under a fixed quota system. The Southern District was reopened for additional harvest on October 17 and closed October 25.

In 1974 the Board adopted an eight-inch size limit for a second season, as proposed by the Kodiak Advisory Committee. The purpose of the eight-inch season was to provide a harvest opportunity later in the season for areas

that had produced larger crab but that had not been fished in recent years. Also, the harvests during the seven-inch season were composed of a larger percentage of post-recruit crab because of the restrictive quotas. Many of these crab that escaped the seven-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 post-recruit 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 eight-inch season. The December 1 opening date provided an opportunity for all size of 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 economy.

In 1978 the Board lowered the size limit of the second season from eight inches to 7 1/2 inches. The department proposed the change because of the large amount of post-recruit crab available between 7 1/2 and eight 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 1977/78. The lowered size limit increased recruit harvest during the second season from .7 percent under an eight-inch size limit to 15 percent the first year that it was in effect (Table 2). In 1981 the Board adopted a management plan for Kodiak. The plans direction was threefold; first - individual stocks of crab are to be managed as a single unit, small closures that leave a portion of a stock

open should be avoided, second - utilization of stocks based on overall stock size while considering recruitment and postrecruit population levels, third - a second season for 7 1/2 crab will be provided for with an opening between November 15 and December 15. This plan is delineated in detail in 5 AAC 34.460.

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 1982/83 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 1982 the fleet directed some effort toward brown king crab. There had been incidental catches in the past, but this was the first directed fishery and produced 25,000 pounds. This interest was encouraged by reduced populations of red king and the high price paid for crab.

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 pounds 1983 estimate.

In 1984 the fishery remained closed. The estimate of legal males increased to 8.3 million pounds. Several districts were at or slightly above the Department's threshold level. Those districts were not opened due to prospects for continued growth in the near future being dismal and continued weak recruitment was expected to just barely keep up with natural mortality.

In 1985 the red king crab fishery remained closed. The 1985 crab population assessment survey indicated continued improvement in legal king

populations in the Southeast and Southwest Districts, while other districts showed little if any improvement. The 1985 survey produced a 9.4 million pound population estimate for the entire Kodiak registration area.

The 1986 survey results indicated a decline in red king crab abundance. The Kodiak area populations of all crab size groups were at record low levels. Although the Southwest District had the highest population of female and legal male crabs, it showed a considerable decline from the 1985 survey. The catch per pot data of the Northeast, Southeast and Shelikof districts also confirmed this continuation of declining stocks.

Kodiak Island wide numbers and weights of legal male crabs were calculated using a new method which used commercial catch data from 1973 to 1982 as a basis for the estimates to be compared with the historic survey size and relative abundance data. An estimate of 330,000 legal male crab was derived for the Kodiak area (Table 5) in 1986.

The fishery remained closed for the 4th consecutive season.

In 1987 a trawl survey was conducted island wide for the first time for both king and Tanner crab. Previous trawl surveys have been restricted to the Shelikof, Northeast and Eastside areas of Kodiak Island. The survey was conducted aboard the chartered vessel F/V Royal Baron and consisted of 188 successful trawl tows. Effort in terms of fishing days was distributed based on the area's historic commercial production of red king and Tanner crab.

Catch data by tow has been presented in a regional report titled "Alaska Department of Fish and Game Westward Region Crab Survey Results for 1987".

A total of 334 red king crab, 163 males and 171 females were captured in 25 tows. Fifty-nine percent of all males captured were legal size and 99 percent of all females were adults. Reproductive output of the small adult population remains low as 80 out of 169 adult females were barren.

In November 1988, modified population estimation techniques produced an

island wide population estimate of 548,655 animals. The 1987 survey results indicated a continuation of the decline in red king crab abundance that had been noted during the past 5 years in all stocks.

1988 Red King Crab Stock Status

This trend continued in 1988 as demonstrated by a Kodiak trawl survey. Two-hundred and seventeen tows were made island wide between July 18, and October 23.

A total of 684 red king crab, 145 males and 539 females were captured in 29 tows. The Southwest District produced the highest survey catches with 89 per cent of all captured red king crab coming from that district. One tow in the Alitak Flats area yielded 364 crab or 53% of the total. Complete catch by tow information will be available in 1989 in an Alaskan Department of Fish and Game Westward Regional crab survey report.

The estimated legal-sized male population of 110,382 crab is the lowest level recorded in the history of ADF&G surveys in the Kodiak area, (Table 3).

While increasing in proportion of the survey catch, the estimated number of adult females remained below threshold levels as established in the "Kodiak Red King Crab Management Plan", (Table 4).

The size structure of the population shows little recruitment of juvenile crab, (Figure 1). Until this condition is reversed the prognosis for a Kodiak red king crab fishery is poor.

The 1988/89 fishing season was closed by emergency prior to its scheduled opening.

The Brown (Golden) King Crab Fishery

Brown (Golden) king crab in the Kodiak area is a permit fishery. This permit, 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 where it was 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 seven inches to six and one-half 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 six years commercial effort indicates the resource is not large.

A small amount of brown king crab was harvested in 1988 by less than 4 vessels.

Table 1. Historic commercial king crab catch and effort for the Kodiak registration Area (K), 1960/61 through 1988/89 fishing seasons (fish ticket data).

Fishing ¹ Year	No. of Lndqs.	No. of ⁴ Vessels	No. Crab	No. Pounds	Pots Lifted	Avg. Crab Per Pot	Avg. Wt. Per Crab	Avg. Price Per Pound	Ex-Vessel Value (Mil. \$)
1960/61	-	143	2,116,375	21,064,871	-	-	-	.085	1.8
1961/62	-	148	3,181,554	28,962,900	-	-	-	.95	2.7
1962/63	-	195	4,146,143	37,626,703	-	-	-	.10	3.8
1963/64	-	181	4,158,988	37,716,223	-	-	-	.10	3.8
1964/65	-	189	4,923,309	41,596,518	95,951	51	-	.10	4.1
1965/66	-	175	11,061,709	94,431,026	173,083	64	-	.128	12.1
1966/67 ²	-	213	8,476,299	73,817,779	223,174	38	-	.11	8.1
1967/68	3,847	227	5,147,321	43,448,492	207,392	25	-	.26	11.2
1968/69	1,839	178	2,348,950	18,211,485	119,146	20	-	.26	4.7
1969/70 ³	978	136	1,606,181	12,200,571	96,841	17	-	.28	3.4
1970/71	830	100	1,561,318	11,719,970	119,192	13	-	.30	3.5
1971/72	507	89	1,539,157	10,884,152	66,166	23	-	.39	4.2
1972/73	683	88	2,029,670	15,479,916	70,806	29	-	.55	8.5
1973/74	837	129	1,847,679	14,397,287	77,826	24	-	.45	6.5
1974/75	1,195	158	2,910,201	23,582,720	110,297	26	-	.45	10.6
1975/76	1,569	169	2,976,909	24,061,651	113,795	26	8.1	.66	15.9
1976/77	1,165	195	2,177,956	17,966,846	130,777	17	8.2	1.37	24.6
1977/78	1,186	179	1,590,477	13,503,666	145,867	11	8.5	1.34	18.1
1978/79	1,077	194	1,464,021	12,021,850	177,261	8	8.2	1.60	19.2
1979/80	1,346	247	1,979,394	14,608,900	207,991	9	7.3	.95	13.9
1980/81	1,175	164	2,787,199	20,448,654	201,531	14	7.3	1.05	21.5
1981/82	2,214	246	3,035,674	24,237,601	388,751	8	8.0	2.00	48.5
1982/83	1,373	309	1,011,109	8,729,761	283,795	4	8.6	3.75	32.7
1983/84 ⁵	36	12	16,349	111,398	8,490	2	6.8	3.00	.3
1984/85 ⁵	8	6	3,513	22,066	1,950	2	6.3	2.50	.1
1985/86 ⁵	19	4	10,005	63,641	2,693	4	6.4	1.95	.1
1986/87 ⁵	31	4	21,862	146,478	5,463	4	6.7	3.00	.4
1987/88 ⁵	38	5	9,484	67,191	3,187	3	7.1	3.44	.2
1988/89	5	2	450	2,836	450	2	6.3	3.13	.009
AVERAGE ⁶	1,359	174	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

⁴ Number of vessels shown are those actually registered through 1979/80 season. Number of vessels fishing and average number vessels is shown from 1970/71 season

⁵ All brown king crab calendar year 1983 (1983/84) and 1984 (1984/85), 1985 (1985/86), 1986 (1986/87), 1987 (1987/88), 1988 (1988/89)

⁶ Average for years 1960/61 through 1982/83

Table 2. Kodiak red king crab harvest composition and seasons; 1960/61 through 1987/88 seasons.

Season	Open	Closed	(mil.)	Percent Recruits ^{1/}	% Post Recruits	Size Limit
			Lbs. Catch			
1960/61	July 1	June 30	18.9	8	92	6-1/2"
1961/62	July 1	June 30	29.0	36	64	6-1/2"
1962/63	July 1	June 30	37.6	26	74	6-1/2"
1963/64	July 1	June 30	35.0	33	67	7"
1964/65	July 1	June 30	41.6	48	52	7"
1965/66	July 1	April 30	94.4	35	65	7"
1966/67	July 1	April 30	73.8	28	72	7"
1967/68	July 1	April 30	43.4	27	73	7"
1968/69	June 15	March 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	Sept. 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	Sept. 1	Oct. 16	14.6	33	67	7"
	Dec. 1	Jan. 15	3.1	.5	99.5	8"
1977/78	Sept. 15	Nov. 30	11.7	37	63	7"
	Dec. 1	Jan. 15	1.8	.7	99.3	8"
1978/79	Sept. 10	Nov. 30	10.3	44	56	7"
	Dec. 1	Jan. 15	1.7	15	85	7-1/2"
1979/80	Sept. 10	Nov. 30	13.4	70	30	7"
	Dec. 1	Jan. 15	1.2	30	70	7-1/2"
1980/81	Sept. 15	Nov. 30	18.4	69	31	7"
	Dec. 1	Jan. 15	2.1	22	78	7-1/2" ^{3/}
1981/82	Sept. 15	Dec. 15	20.3	61	39	7"
	Dec. 15	Jan. 15	3.9	7	93	7-1/2"
1982/83	Sept. 1	Dec. 10	7.5	46	54	7"
	Dec. 10	Dec. 19	1.2	19	81	7-1/2"
1983/84				F I S H E R Y	C L O S E D	
1984/85 ⁴				F I S H E R Y	C L O S E D	
1985/86				F I S H E R Y	C L O S E D	
1986/87 ⁵				F I S H E R Y	C L O S E D	
1987/88				F I S H E R Y	C L O S E D	
1988/89				F I S H E R Y	C L O S E D	

¹ Recruitment after 1963 based on 7" size limit.

² Marmot Bay, Chiniak Bay and Kupreanof Straits did not open for 8" crab.

³ Uganik Bay, Kupreanof Straits, Marmot Bay, Chiniak Bay, Ugak Bay, South Sitkalidak Straits, Kiliuda Bay and Alitak Bay did not open for 7-1/2" 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

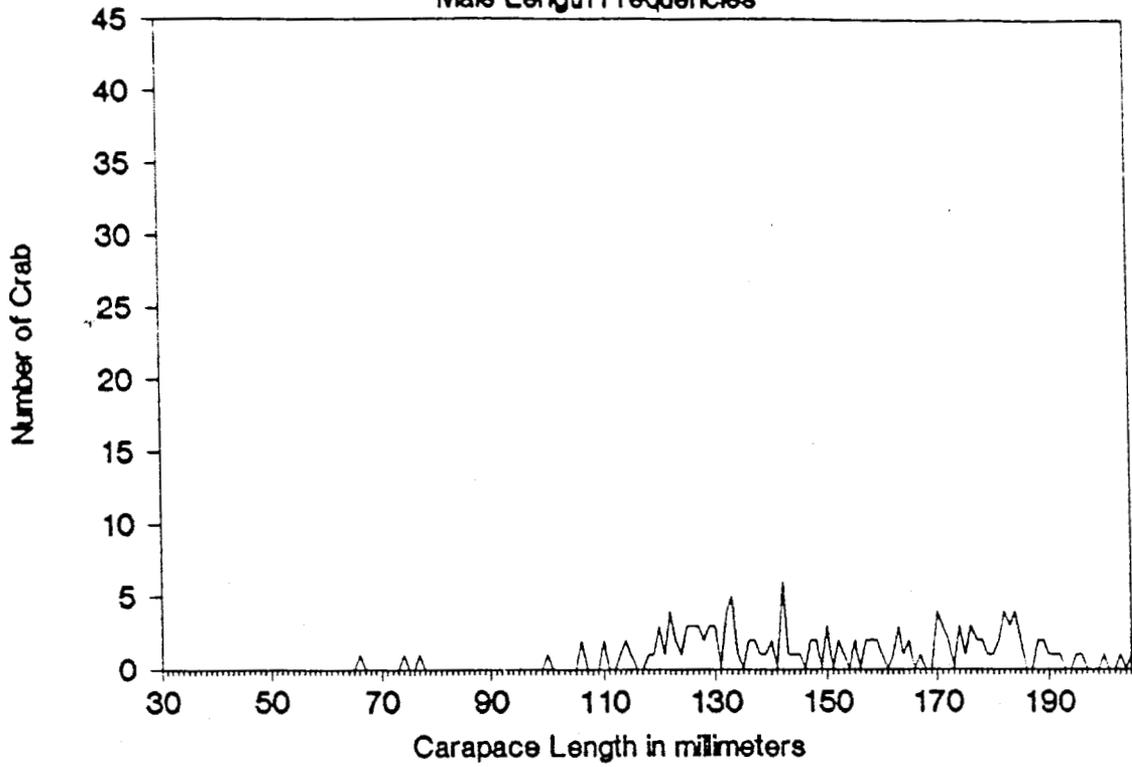
* Trawl Survey

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

	Threshold	1988 Trawl Estimate
District 1 (Northeast)	1.93	.03
District 2 (Southeast)	0.72	.003
District 3 (Southwest)	2.28	.50
District 4 (Shelikof)	0.19	.02
TOTAL	5.12	.55

1988 Kodiak Red King Crab Trawl Survey

Male Length Frequencies



Female Length Frequencies

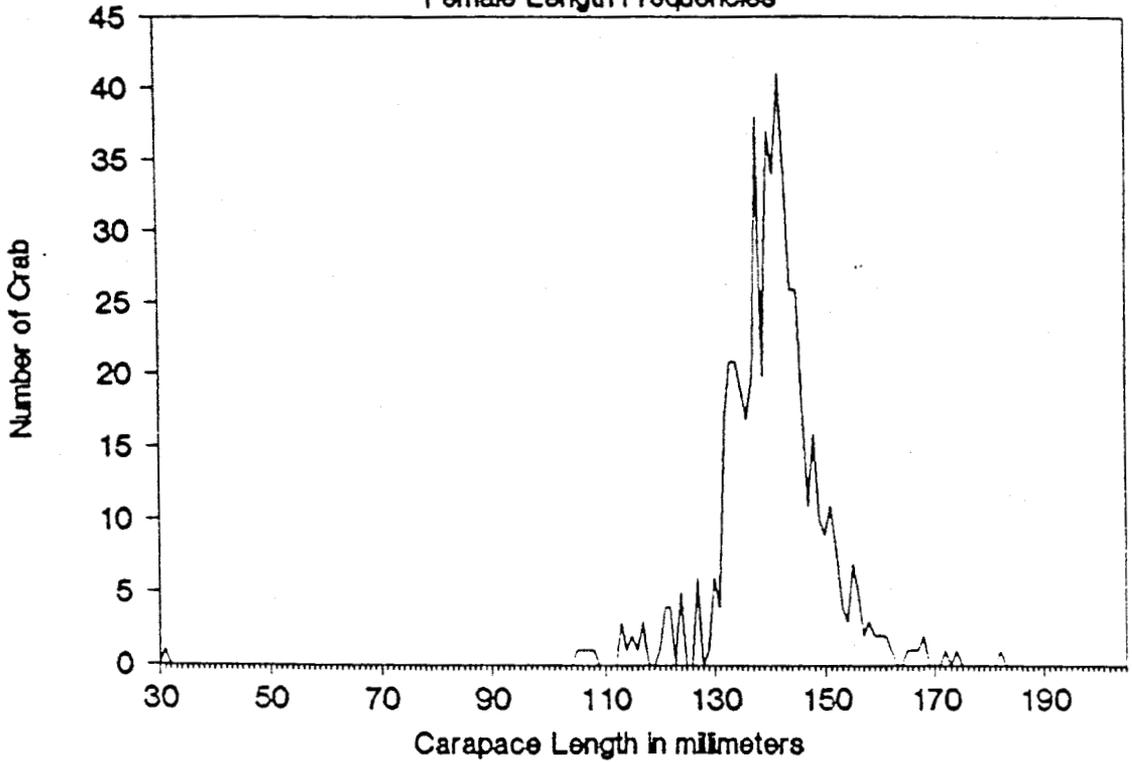


Figure 1. Size frequency of king crab captured during 1988 trawl survey.

SHRIMP

Historic Background Trawl Fishery

The Kodiak shrimp fishery began in 1958 with a harvest of 31,886 pounds. The fishery grew rapidly from 10 to 12 million pounds annually 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 data base plus trawl surveys conducted by the Department since the early 1970's provided means for establishing harvest by the late 1970's. This data base and harvest adjusting system was quite flexible during its developing stage. By 1981 the 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 "economical 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 five years. The Mainland fishery, while open, has steadily declined in both production and area fished.

1988/89 Trawl Fishery

The trawl fishery opened in the Kodiak District on June 15, 1988. There has been no commercial harvest of shrimp by a trawl during the 1988/89 season.

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

The department did not conduct a shrimp survey during 1988 due to budget cuts and vessel availability. A shrimp trawl survey is planned for the fall of 1989. Closures for the 1988 season were based on the results of the 1987 fall survey.

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 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 1988. Less than 4 vessels landed shrimp from the Kodiak area.

Table 1. Historic commercial shrimp catch and effort for the Kodiak District of Westward Statistical Area (J), 1958 through 1988/89 season.

Calendar Year	Fishing Year	No. Vessels	No. 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				.25
	1987/88			Harvest confidential	.23
	1988/89	0	0	0	-
AVERAGE (fishing year)					.12

Table 2. Kodiak District shrimp seasons, harvest and effort by section, 1988/89 season.

Section	Regulatory Season	Actual Harvest Period	Harvest ¹ Goal (mil. lbs.)	Pounds Hvstd.	1987 Survey Index	Vesls.	Landgs.
Inner	Opened & Closed by EO	CLOSED	--	--	.368	--	--
Ugak Bay	Opened & Closed by EO	CLOSED	--	--	----	--	--
Kiliuda Bay	Opened & Closed by EO	CLOSED	--	--	----	--	--
Two Headed	Opened & Closed by EO	CLOSED	--	--	----	--	--
Alitak Bay	Opened & Closed by EO	CLOSED	--	--	.132	--	--
Olga Bay	Opened & Closed by EO	CLOSED	--	--	----	--	--
Uyak Bay	Opened & Closed by EO	CLOSED	--	--	----	--	--
Uganik Bay	Opened & Closed by EO	CLOSED	--	--	.204	--	--
W. Afognak	Closed to Bottom Trawls	CLOSED	--	--	----	--	--
N. Afognak	June 15 - Feb. 28	June 15 - Feb. 28	<u>1</u> /	0	----	0	0
Marmot Is.	Opened & Closed by EO	CLOSED	--	--	.408	--	--
Chiniak Bay	Opened & Closed by EO	CLOSED	--	--	.152	--	--
Alitak Flts	Opened & Closed by EO	CLOSED	--	--	----	--	--
Mainland	June 15 - Feb. 28	June 15 - Feb. 28	<u>1</u> /	0	----	0	0
Undefined	June 15 - Feb. 28	June 15 - Feb. 28	<u>1</u> /	0	----	0	0

¹ No harvest guideline based on survey indexes

Table 3. Comparison of Kodiak District trawl shrimp harvest by fishing section for the 1977/78 through the 1988/89 fishing seasons. Sections with no catch are indicated by zero. Where dashes appear, no section existed that year.

Fishing Section	1978/79 ⁴	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
Inner Marmot	473,700	0	0	1,958,074	0	0	0	0	0	0	0
Marmot Island	0	0	0	87,408	0	0	0	0	0	0	0
Chiniak Bay	1,163,818	925,388	135,804	2,598,072	0	0	0	0	0	0	0
Kiliuda Bay	0	0	0	0	0	0	0	0	0	0	0
Two Headed Is.	1,600	0	2,141,048	3,043,926	0	0	0	0	0	0	0
Southern	3,485,531	-	-	-	-	-	-	-	-	-	-
Alitak Bay	-	3,537,017	4,716,875	4,136,381	3,627,209	510,086	1,474,255	0	0	0	0
Alitak Flats	-	-	-	1,728,553	0	0	0	0	0	0	0
Olga Bay	1,794,091	2,259,906	1,164,641	760,179	944,067	820,675	399,882	1,397 ³	0	0	0
Ugak Bay	0	533,598	1,052,092	104,161	0	0	0	0	0	0	0
Uyak Bay	1,003,946	0	426,800	0	0	0	0	0	0	0	0
Uganik Bay	367,838	0	0	0	0	0	0	0	0	0	0
West Afognak	879,082	478,327	1,177,302	230,582	1,000	20,704	5,209	0	0	0	0
North Afognak	1,149,071	1,430,362	2,204,871	748,639	1,206,275	6,617	0	0	2,000	0	0
South Mainland	-	-	-	-	-	-	-	-	-	-	-
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	466,694	918,277	447,675	10,841	0
Portlock	-	-	-	-	-	-	-	-	-	-	-
Non-Section	9,600,848	141,592	11,272,344	643,066	0	0	596,882	226,306	5,793	-	0
TOTAL	20,506,021	12,863,536	27,101,218	19,112,367	10,391,206	2,779,030	2,942,922	1,145,980	455,468	10,841	0

1 Prior to 1979/80 season part of the South Mainland

2 Mainland

3 Test fishing survey

4 Chiniak & Kalsin Bay combined

Table 4. Pot shrimp catch statistics, Kodiak District of Statistical Area "J", 1969 - 1988.

Year	No. Vessels	No. Landings	No. Pounds
1969		Harvest confidential	
1970	-	20	12,302
1971*	-	-	-
1972		Harvest confidential	
1973			
1974	6	73	10,336
1975	7	77	12,782
1976			
1977		Harvest confidential	
1978			
1979			
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		Harvest confidential	
1986			
1987*	-	-	-
1988		Harvest confidential	

* No commercial landings recorded for 1971 or 1987

WEATHERVANE SCALLOPS

Historic Background

The weathervane scallop fishery began in the Kodiak Management District in 1967 (Table 1). By 1969 the fishery had developed to a million pound fishery and had its first restrictions. The Eastside Kodiak bays and South end of the Island were closed to scallop fishing due to king crab conflicts. Seasons were also instituted to keep scallop gear off molting king crab (Figure 1).

After reaching a peak of 1.4 million pounds in the early 1970's, the fishery declined due to static price conditions, a difficulty in gathering experienced crews and the pursuit of more lucrative fisheries by potential scallop vessels. Consequently, the remaining scallop vessels either entered more profitable crab fisheries here in Alaska or returned to the east coast.

Effort was minimal from 1977 through 1979, however, improved market conditions and poor stocks on the east coast promoted renewed interest in Alaskan scallops in the early 1980's. Even with the largest fleet to ever fish (15 vessels) in 1981, the harvest of 424,000 pounds was only 30 percent of the historic high. The effort soon dwindled in 1982 and 1983. With the king crab closures in 1982-1984 and high ex-vessel price for scallops, there was a new interest but this time mostly by smaller vessels and not the traditional 80 foot plus vessels. Sporadic scallop populations, marginal catch per effort and alternative fisheries, diminished much of this renewed interest with vessel effort in Kodiak returning to the low level of the early 70's.

Stock Status

No stock assessment program exists outside of dockside interviews and samples. Based on this and the historic catch, it appears the stocks will not withstand large amounts of pressure. There was little growth or increase in stocks during the late 1970's, even though there was little or no effort.

Table 1. Historic commercial catch, effort, and value of weathervane scallops Kodiak Management District, 1967 - 1987; excluding 1977 and 1978 when no effort occurred.

Year	No of Vssls.	Landgs.	Commercial Catch (pounds)	Avg. Catch Per Landing (pounds)	Average Price/Lbs.	Est. Value Ex-Vessel (dollars)
1967			Harvest confidential		.07	
1968	8	89	872,803 ³	8,983	.85	618,000
1969	11	86	1,012,860	11,777	.85	861,000
1970	7	102	1,417,612	13,898	1.00	1,500,000
1971	5	48	841,211	17,525	1.05	883,000
1972	5	68	1,038,793	15,276	1.15	1,200,000
1973	4	42	935,705	22,279	1.20	1,123,000
1974					1.30	
1975			Harvest confidential		1.40	
1976					1.59	
1979					2.78	
1980	7	33 ⁴	371,018 ⁵	11,045	3.60	1,275,000
1981	15	60	424,394	7,073	4.00	1,698,000
1982	8	62	435,645	7,026	3.25	1,416,000
1983	4	24	147,747	6,424	5.00	739,000
1984	7	37	309,502	8,365	4.00	1,238,000
1985			Harvest confidential		4.00	188,000
1986	5	21	180,600	8,600	4.25	767,550
1987					3.45	
1988			Harvest confidential		3.68	
<hr/>						
TOTAL ⁶						
<hr/>						
AVERAGE ⁶						
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¹ Unshucked scallops only

² Shucked scallops - 80 landings, nine landings unshucked. Average pounds/landing based on shucked weight and landings

³ Shucked scallops - 718,671 pounds; unshucked - 154,132

⁴ Shucked scallops - 32 landings, unshucked - one landing. Average pounds/landing based on shucked weight and landings

⁵ Shucked scallops - 353,443 pounds; unshucked scallops - 17,575 pounds

⁶ Total and average, shucked scallops only, 1968 through 1985

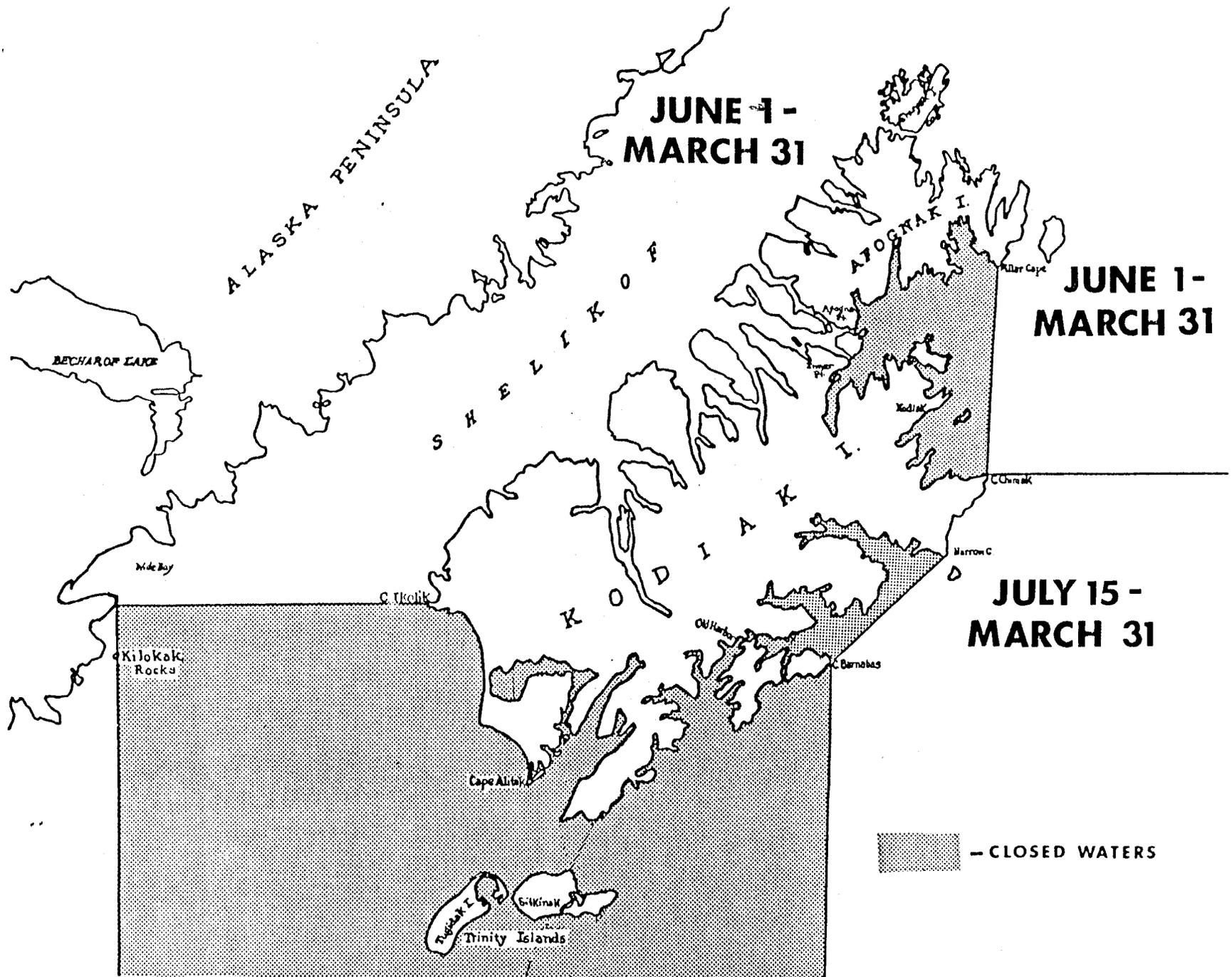


FIGURE 1. KODIAK AREA SCALLOP SEASONS

Sea Urchins

Historic Background

The green urchin (Strongylocentrotus droebachiensis) was not harvested commercially in the Kodiak Area until 1980 when 923 pounds were landed. There was little further interest in urchins until 1985 when a small harvest occurred. In 1986 the harvest increased with more divers participating.

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.

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.

1988 Fishery

A total of 48 divers registered to harvest urchins in the Kodiak area, however, landings were made by 28 divers. The urchin harvest for 1988 was 190,509 pounds with an average price of .80 cents per pound.

During 1988, 38,381 pounds of urchins were landed during January, February, and March. The remaining 152,128 pounds were landed during September, October, November, and December.

Product quality appeared good during January and February as reflected in the price of over \$1.00 per pound. In late February and early March, the quality of the urchin roe was such that divers discontinued harvest of urchins.

Interest in urchins was rekindled in late August when divers began to register. Divers collected samples through September, however, the roe percentage was below the level acceptable to the Japanese market. In late

September the roe recovery had increased and the commercial harvest of green urchins was again underway.

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. Some divers were told by their buyers to move to new areas because the urchins they were harvesting were of poor quality.

Additionally, 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. In mid-October one buyer had refused product from a group of divers due to the small size of the urchins. After these divers became more experienced with the fishery their product quality increased. The urchins that were rejected were returned to the sea at the processor. All other urchins not accepted by local buyers were returned to the fishing grounds from which they were originally harvested.

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				.25
1985			Harvest confidential	.55
1986				.55
1987	12	78	104,139	.69
1988	28	260	190,509	.80

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 (Table 1). The harvest had increased through the years to a peak of over 19,000 pounds in 1980. Reduced catches after 1980 may have been the result of shortened Tanner crab seasons. Interest in the fishery has been increasing due to the demand by longline fishermen for bait octopus.

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 - 1988.

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
1989	4	4	1,949	1.08	2,105

RAZOR CLAMS

Historic Background

Razor clams have been harvested in the Kodiak Management area since the early 1920's. 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. In 1985, 1986, and 1987, there were no clam beaches in the Kodiak area certified by the Alaska Department of Environmental Conservation as safe for human consumption. The certification program ended in July of 1980.

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.

1988 Fishery

During 1988 no landings of clams were made from the Kodiak area.

Table 1. Historic commercial razor clam catch, effort, and value for Kodiak Management District, 1960 - 1988.

Year	Number ¹ Registered Diggers	Number of Landings	Commercial Catch (pounds)	Avg. Catch Per Landing (pounds)	Avg. Price Per Pound	Est. Price Ex-Vessel (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			0		-	-
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	-	-
1977					1.00	
1978	-	Harvest confidential			.73	
1979	-	0	0	0	-	-
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 ⁴	-	11	16,945	1,540	1.00	16,945
1986	-	4	3,993	998	1.00	3,993
1987	-	-	-	-	-	-
1988	-	-	-	-	-	-

¹ Represents registered diggers, not actual diggers; no data unavailable 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

MARCH 1989

BY
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ALASKA PENINSULA KING CRAB

INTRODUCTION

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

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), with Pavlof Bay being the big 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 400,000 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.

1988/89 Season Summary

As has been the case since 1983/84, the 1988/89 commercial fishery in Area "M" was not opened. The department anticipated a low population estimate in 1988 but was unable to complete the analysis before the scheduled

September 25 opening date. In order to give industry sufficient notice, 1987 survey data was used to justify the closure. The closure was announced by Emergency Order 4-S-16-88 issued in Kodiak on August 4, 1988.

Stock Status

To improve its projections and management, the department used a trawl survey method for the 1988 South Peninsula crab assessment work. Some experimental work was done in Pavlof Bay in 1983 and 1984, but this is the first time a trawl survey has been used in the entire South Peninsula district. The same methods, equipment, and analysis are used in Kodiak and the South Peninsula except the South Peninsula "bay stations" have an area of approximately 6.25 square miles instead of 10 square miles.

The 1988 survey was conducted aboard the R/V Resolution from August 5 to August 18. One hundred six (106) tows were made to simultaneously assess king and Tanner crab populations in the area. The area surveyed was generally the same as that covered by the pot surveys in 1984 through 1987; including Ikatan, Morzhovoi, Cold, Belkofski, Volcano, Pavlof, Beaver and Balboa Bays. No survey was done in Stepovak Bay, the Chignik district or the Unimak Bight district. The survey area included the grounds most commonly fished during recent commercial seasons.

Only 19 tows captured king crab; and 12 of those were made in the Pavlof / Volcano Bay school. A total of 122 crab, 72 males and 50 females, were captured. Forty five males (62.5 %) were of legal size with 12 (26.7%) of those being recruits. The nine adult females and 41 juvenile females

caught in 1988 represent an increase from the catches of the previous four pot surveys. The difference is mainly a result of the change in gear type.

Using the "area swept" method, the total population was estimated to be 88,842 king crab; 63,844 males and 24,998 females. It was estimated that 50,929 legal males populate the area. Clearly, the South Peninsula red king crab stocks remain extremely depressed and insufficient to support a commercial harvest. In addition, the extremely low numbers of juvenile females and sublegal males suggest that no improvement is likely for several years.

Along with the assessment work, king crab tissue samples were collected as part of a statewide electrophoretic study. This study seeks to identify different stocks of king crab based on genetics. Initially it was hoped that enough crab would be caught to supply two samples from two different South Peninsula bays. Instead, one sample of 63 crab was accumulated from the three major South Peninsula bays. A report will be available when the study is completed.

Complete survey results will be available in 1989 from the Department of Fish and Game in Kodiak.

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.

1988 Season

No vessels were registered to fish for brown king crab in Area "M" during 1988.

Stock Status

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

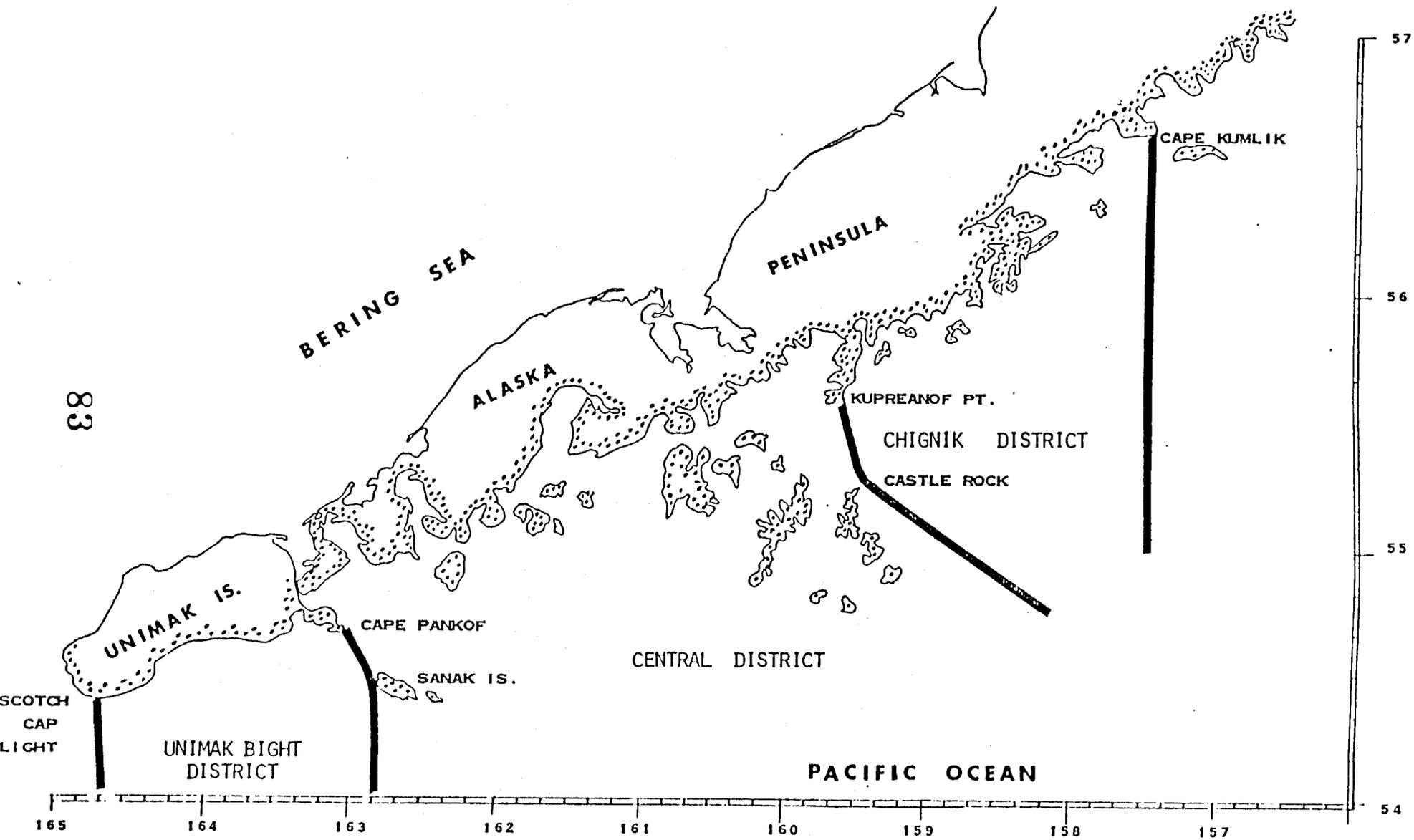


Figure 1. Alaska Peninsula Area "M".

Table 1. Catch and effort statistics for king crab in Area "M".

Year	VsIs.	No. of Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	CPUE	Avg. Wt.	Price Per Lb.
1947			18,800	141,000			7.5	
1948			518,500	3,363,000			6.5	
1949			205,500	3,476,000			12.0	
1950			270,000	2,124,000			7.9	
1951			86,500	599,000			6.9	
1952			32,400	298,000			7.6	
1953			38,400	380,000			10.0	
1954			31,666	316,660			10.0	
1955			164,069	1,640,688			10.0	
1956			421,651	4,221,496			10.0	
1957			668,709	6,687,092			10.0	
1958			724,595	7,245,947			10.0	
1959			568,303	6,166,974			10.9	
1960		1,496	677,100	6,700,000			9.9	
1961		959	419,354	3,900,000			9.3	
1962		657	287,624	2,273,013			7.9	
1963	27	1,037	970,739	6,539,129			6.7	.09
1964	40	1,297	1,906,018	14,354,060			7.5	.10
1965	36	1,081	1,813,728	14,713,501			8.1	.10
1966	37	1,255	2,494,949	22,577,587			9.0	.10
1967	39	1,062	1,943,463	17,252,307			8.9	.19
1968/69	34	885	1,273,567	10,944,472			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			NO	F I S H E R Y				
1984/85			NO	F I S H E R Y				
1985/86			NO	F I S H E R Y				
1986/87			NO	F I S H E R Y				
1987/88			NO	F I S H E R Y				
1988/89			NO	F I S H E R Y				

* Combined 6-1/2 inch and 7-1/2 inch seasons.

Table 2. Seventeen year comparison of 6-1/2 inch season king crab data in the Unimak Bight District.

Year	Lndgs.	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Avg. Percent Recruits	Length (mm)	
1971/72	54	175,154	1,310,886	9,226	7.5	19	16	163.2	
1872/73	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	55,286	700	7.7	10	11	167.1	
1977/78		Harvest confidential						NO	DATA
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	NO	DATA	
1983/84			NO	FISHERY					
1984/85			NO	FISHERY					
1985/86			NO	FISHERY					
1986/87			NO	FISHERY					
1987/88			NO	FISHERY					
1988/89			NO	FISHERY					

Table 3. Seventeen year comparison of 6-1/2 inch season king crab data in the Central District.

Year	Lndgs.	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Avg. Percent 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			NO	FISHERY				
1984/85			NO	FISHERY				
1985/86			NO	FISHERY				
1986/87			NO	FISHERY				
1987/88			NO	FISHERY				
1988/89			NO	FISHERY				

Table 4. Sixteen year comparison of 6-1/2 inch season king crab data in the Chignik District.

Year	Lndgs.	No. Crab	No. Pounds	Pots Lifted	Avg. Wt.	CPUE	Percent Recruits	Avg. 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		Harvest confidential						NO	DATA	
1982/83	11	7,083	55,580	2,580	7.9	3	32	156.1		
1983/84			NO	F	I	S	H	E	R	Y
1984/85			NO	F	I	S	H	E	R	Y
1985/86			NO	F	I	S	H	E	R	Y
1986/87			NO	F	I	S	H	E	R	Y
1987/88			NO	F	I	S	H	E	R	Y
1988/89			NO	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		Sublegals	
			Number	CPUE	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	106 ¹		45		27	

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

CHIGNIK TANNER CRAB
FINAL 1988 FISHERY REPORT

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). Tanner crab were first harvested from the area in 1968 (Table 1). The fishery remained at a relatively low level until 1974 when 25 vessels produced 4.1 million pounds (Table 1). The 1975/76 season produced a peak catch of 11.2 million pounds, though catches generally ranged between 2.5 and 5.6 million pounds from 1974 to 1983 (Table 1). Reports for the last several years were recently found to incorrectly report the 1975/76 peak catch at only 6.9 million pounds. Apparently the catch figures from the South Peninsula District were inadvertently switched with those of the Chignik District. More recently, catches have been extremely low compared to the period between 1974 and 1983 (Table 1).

Prior to 1981, the Chignik fishery generally became most active in late March as fishermen moved into the area following closures in the Kodiak district. Since 1981, the fleet has commenced fishing on the opening date of the season and has continued until the district was closed. In recent seasons the fleet has consisted of a few locally owned vessels and a small number of boats from Kodiak, Sand Point and other ports.

During the early years of the fishery, a guideline harvest level of 5 to 10 million pounds was based on historic catch and effort. From 1981 to 1984 a trawl survey was used in the district to give the department the first direct information on the size of the population. From 1981 through 1985 all harvest forecasts were based on the survey's population estimate. The first trawl survey indicated poor recruitment could be expected after the 1983 fishing season. The prediction was confirmed by the 1983 and 1984 surveys and harvest projections were drastically reduced for the 1984 and 1985 fisheries. As predicted, the commercial harvests dropped sharply beginning in 1984, reaching the lowest level in 15 years in 1986 when only 188,000 pounds were caught despite a four month season (Table 1). The catches have continued to be very low ever since. Lack of funds have eliminated the Chignik District

surveys since 1984 and harvest projections have again been based on the performance of the previous year's fishery.

1988 FISHERY

No survey was conducted in the Chignik District in 1987 and the preseason harvest projection of 200,000 pounds was based on the increase observed between the 1986 and 1987 fisheries. The higher projection was further justified by improved recruitment found in the 1987 South Peninsula and Kodiak surveys.

Registrations and tank inspections for the 1988 Chignik Tanner crab fishery began at noon January 14, 1988. Only two locally owned "limit seiner" type vessels were initially registered for the fishery.

The fishery opened noon January 15, 1988 but no deliveries were made until late in the second week of the season (Table 2). The first delivery indicated poor fishing with a catch rate of 18 crab per pot; barely half of the 32 crab per pot of the 1987 fishery and less than the 21 crab per pot caught during the similar period in 1986. By the fourth week of the season only two more deliveries had been made. The weather was quite poor during much of this time.

The three deliveries during the fifth week of the fishery were from the four vessels that joined the fishery after the January 26 closure of the South Peninsula district (Table 2). The transferred vessels fought poor weather and very poor fishing in the western portion of the district. One fisherman quit after making one delivery and another caught so few crab that he quit without selling any crab. The catch rate was a very poor seven crab per pot (Table 2).

For the remainder of the season only four vessels worked the Chignik district. Fishing continued to be slow. The western portion of the district was virtually abandoned. Fishermen reported a general decline in catch rates; in some cases as low as 1 or 2 crab per pot in the more commonly fished eastern sections of the district. Catch rates as high as 23 crab per

The crab in some of the deliveries averaged only 1.9 to 2.1 pounds each, indicating the fleet was mainly harvesting recruit crab. There were a few reports that fishermen were sorting through many female and small male crab to find the few legal males.

On February 26, the department announced its decision to close the Chignik Tanner crab fishery. Emergency Order 4-S-07-88 was issued to take effect March 10, 1988. The department was not certain whether the pre-season harvest projection would be caught. However, more fishing time would have resulted in excessive handling of the female and sublegal sized crab. The closure was further justified by the abandonment of a large portion of the district, the low and declining catch rates, and the generally poor condition of the Chignik district Tanner crab population.

In summary, 6 vessels made 11 deliveries for a total catch of 183,111 pounds; 17,000 pounds below the preseason projection and the lowest harvest since 1972 (Table 1). Most of the crab came from the Chignik Bay and Kujulik Bay areas (Table 3). The catch rate of 13 crab per pot was the same as in 1987 and only slightly better than 1985 and 1986 (Table 1). The crab averaged 144.5 mm in carapace width and 2.1 pounds apiece (Tables 1-3, Figure 2). The fishermen received between \$2.17 and \$2.40 per pound for their crab for an average of \$2.33 per pound (Table 1). Total ex-vessel value of the catch was \$417,903.66.

STOCK STATUS

As mentioned previously, there was no survey of the Chignik District during the summer of 1987. The last survey was done in 1984 and data gathered then is of little predictive value for present or future fisheries. During the time that surveys were conducted, the data gathered was very useful and predictions were quite accurate. It is hoped that the trawl survey program will be reinstated when funds are again available.

Some fishermen report finding numbers of small, prerecruit crab in some of the bays. The reports are encouraging, but they are limited to very few bays. Similar reports have been made for several years but no increase in

the stocks has been observed.

Considering the extremely low harvests of the last four seasons, low catch per unit effort, and low average weights, the department is concerned about the future of this fishery.

Some fishermen advocate a fishery of no more than 100,000 to 150,000 pounds for a few years until it is determined that the Tanner crab stocks are increasing significantly.

NOTES

The Department wishes to thank VPSO Ron Bowers of Chignik for his assistance with tank inspections in the Chignik area. His help has been indispensable; a great service to both the department and to the fishermen. I would also like to thank the fishermen for their help and cooperation during the fishery.

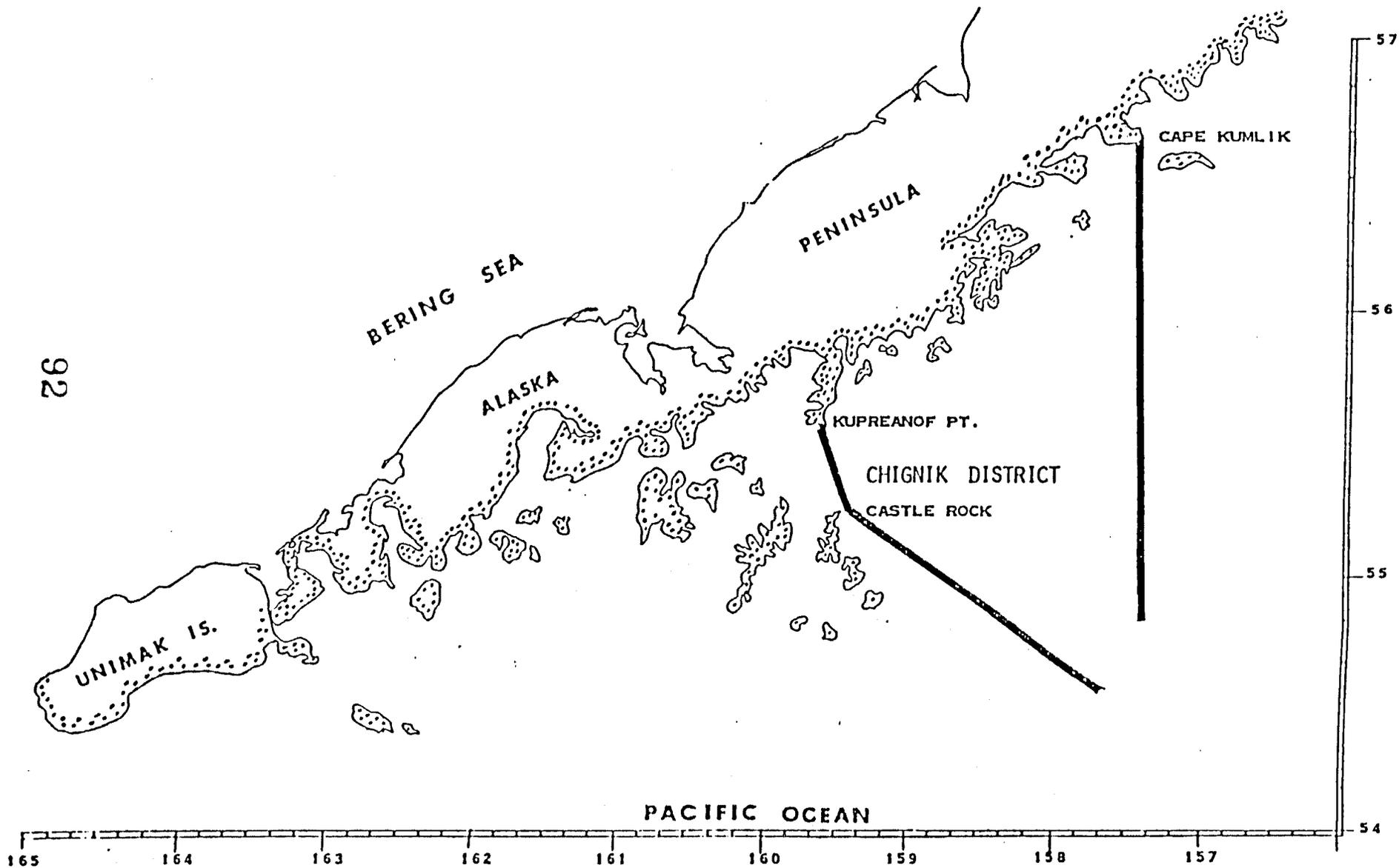


Figure 1. Chignik Tanner crab district.

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

Year	VsIs.	Indgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Price/Pound ²	% 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	217	4,434,381	11,201,941	59,377	2.5	75	.20	-
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	269,742	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

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

Table 2. Weekly crab catch statistics for Chignik District, 1988.

Week	Vssls.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE
1/15 - 1/17							
1/18 - 1/24							
1/25 - 1/31							
2/1 - 2/7							
2/8 - 2/14			Harvest confidential				
2/15 - 2/21							
2/22 - 2/28							
2/29 - 3/6							
3/7 - end							
Total	6	11	87,148	183,111	6,544	2.1	13

¹ Includes deadloss

Table 3. Chignik Tanner crab catch statistics by major fishing area and statistical area, 1988.

Area	Stat. Area	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE
Kujulik							
Mitrofanina							
Chignik							
Ivanof							
Harvest confidential							
Season Total		11	87,148	183,111	6,544	2.1	13

¹ Includes deadloss

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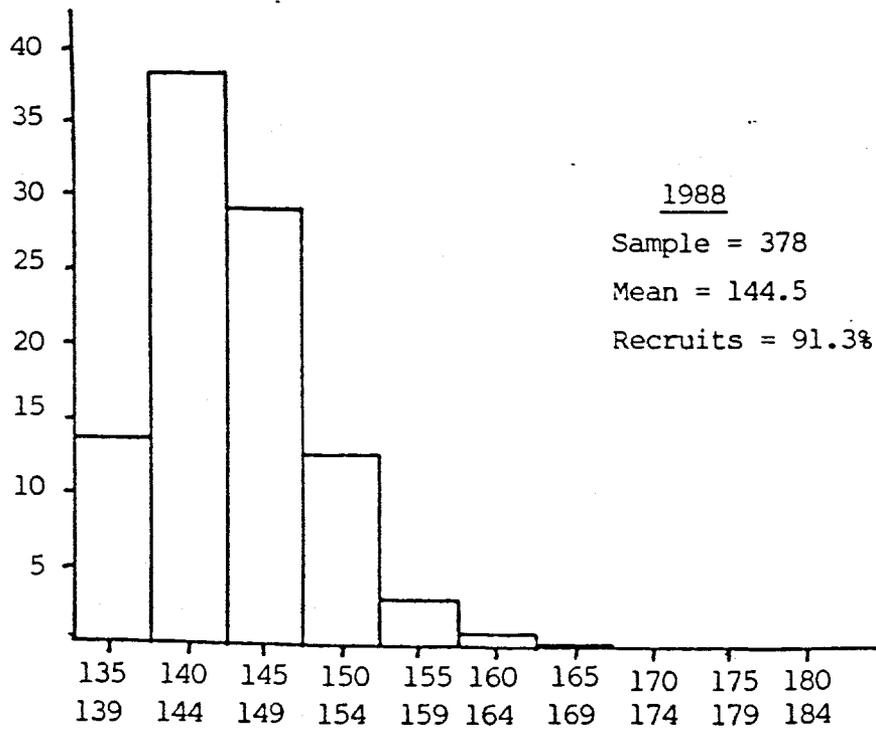
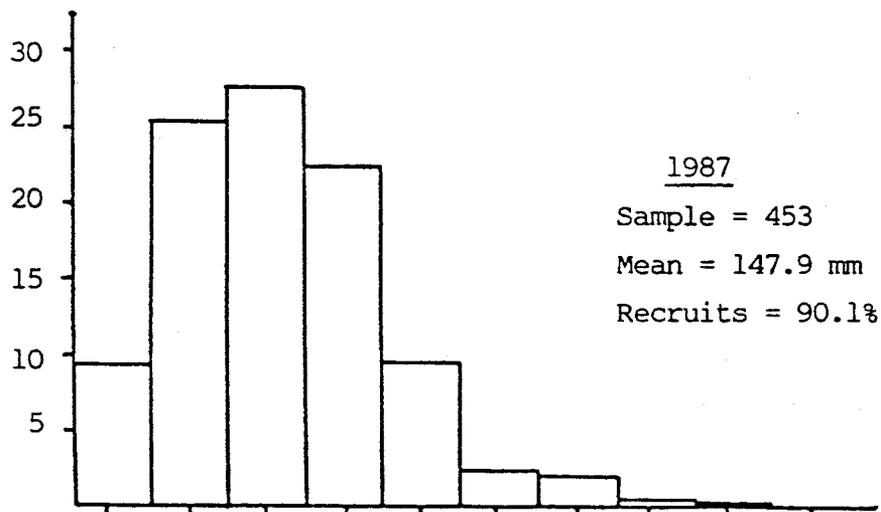
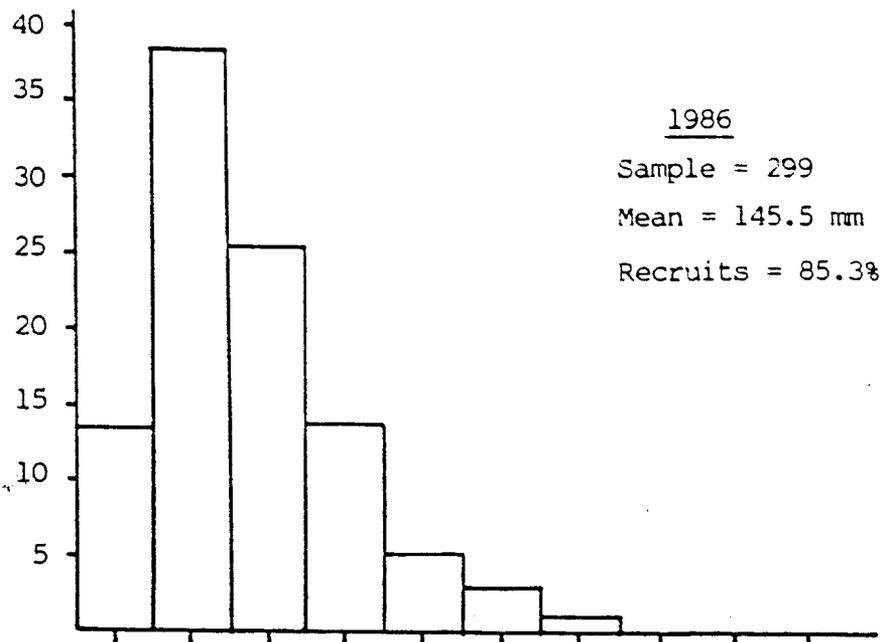


Figure 2. Size frequency distribution of Tanner crab from the Chignik District.
Recruits = new shell males 137 - 163 mm carapace width.

SOUTH PENINSULA TANNER CRAB
FINAL 1988 FISHERY REPORT

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). By 1974 guideline harvest levels were established, and in 1975 seasons were imposed to protect the mating and molting period of the crab. In 1976, the minimum size limit of 5 1/2 inches was established. During the six seasons from 1974 through 1978/79 harvests ranged from five to eight million pounds (Table 1). Previous reports of a peak catch of 11.2 million pounds in 1975/76 were recently found to be confused with the Chignik District catches. The South Peninsula District fishery actually peaked in 1978/79 when 8.6 million pounds of crab were caught (Table 1). Since 1979/80 the harvest and CPUE declined in response to declining 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 of 1985 through 1987 and harvests were allowed to increase.

1988 FISHERY

Compared to the 1986 survey, the 1987 summer survey indicated better recruitment and improved numbers of legal sized crabs in several of the major

schools of the area. The preseason harvest projection was 3.4 million pounds (Table 4). This was a 1 to 1.6 million pound increase from the 1.8 to 2 million pound guideline set for the 1987 season and a 500,000 pound decrease from the projection of 3.9 million pounds for the 1986 fishery.

Three seasonal dockside samplers were hired to assist with the registrations, inspections, and monitoring of the fishery. Larry Boyle, a fisheries biologist I was placed in King Cove, Tricia Crandall, a fisheries technician III, was aboard the floating processor Alaska Packer, and Anne Wakeford, also a fisheries technician III, was stationed in Sand Point. All worked very hard to gather information crucial to the management of the fishery.

Registrations and tank inspections for the 1988 South Peninsula Tanner crab fishery began at noon January 14, 1988. By January 18, 73 vessels, including one catcher-processor had been registered; 21 more boats than in 1987 (Table 1). Twenty four of the boats were longer than 64 feet and had a total hold capacity of nearly 2.4 million pounds. The fleet used more pots too, with 11,688 reported in 1988 versus the 8,100 used in 1987. Only one floating processor, the Alaska Packer, operated in the area.

In an effort to gather timely catch data, nine skippers were asked to make daily catch reports. Most of the fishermen asked to participate had large vessels that were capable of fishing the entire season without making a delivery. To achieve a balance, fishermen using smaller boats were also asked to help. Of the nine, four reported daily and one skipper reported nearly every day. The remaining four fishermen reported less frequently.

The information gathered from the vessels was extremely helpful for management of the fishery.

Fishing began at noon January 15. The weather and the fishing were quite good and by the 17th of January eight vessels had delivered over 81,000 pounds with an average catch rate of 53 crab per pot (Table 2). While the average is higher than the 42 crab per pot seen during the first days of the 1987 fishery, most fishermen commented that their highest 1988 catch rates ranged from 40 to 50 crab per pot instead of the 60 to 80 of 1987. The increased concentrations of gear, particularly in Pavlof Bay, may have affected the catch rates.

Fishing continued to be good through January 21, when nearly 1.4 million pounds of crab were delivered or were waiting to be delivered. Another 700,000 pounds were estimated to be aboard the vessels that hadn't made deliveries. Catch rates were declining however and fishermen frequently reported catch rates of 30 crab per pot or less. A few fishermen reported catch rates of less than 20 crab per pot. There were several reports of fishermen moving their gear, especially in Pavlof Bay. Several of the larger boats began moving out of Pavlof Bay to find better, less congested areas to fish.

On January 22, total deliveries mounted quickly and the fleet began to move much of their gear. Some boats were reportedly moving out of Cold Bay where the CPUE was said to be declining rapidly. Fishermen in several areas were reporting that they had to sort through many female and sublegal crab to find a few "keepers".

On January 23 an estimated 2.4 million pounds had been caught. There were widespread reports of catch rates declining to 24, 17,8 and even 3 crab per pot. Several fishermen were moving out of traditional high production areas to look for better fishing. Eight skippers called to report that they were leaving the area for Kodiak or Dutch Harbor even though some had not filled their holds. This information along with the projection that 3.3 to 3.4 million pounds would be caught by January 26 resulted in the decision to close the fishery. Emergency order 4-S-02-88 was issued at 5:00 PM January 23, 1988 closing the South Peninsula District Tanner crab season noon January 26, 1988.

Total catch for the week of January 18 to 24 was 1.7 million pounds delivered by 56 vessels (Table 2). The catch rate for the week was 31 crab per pot (Table 2). After January 24, 68 vessels delivered another 1.4 million pounds and the catch rate had declined to 21 crab per pot (Table 2).

For the entire season, 73 vessels made 148 landings totaling 3,328,809 pounds (Tables 1, 2). The catch rate averaged 26 crab per pot, and the crab averaged 150.8 mm in carapace width (Table 3, Figure 2). Recruits comprised over 78 percent of the catch; much more than the 56 percent of the 1987 fishery. (Table 3). Pavlof Bay and nearby waters produced over 66 percent of the total catch and the Ikatan/Morzhovoi area produced nearly 22 percent (Tables 3, 4). The 1988 harvest was a moderate increase over the previous season but well below the catches made between 1973 and 1979 (Table 1).

At the beginning of the season the fishermen received \$2.15 to \$2.17 per

pound for the crab sold locally and in Dutch Harbor. As the season progressed, the price was raised to \$2.20 per pound where it remained for the rest of the season. It is unclear exactly when the price was raised but some processors may have made the price hike retroactive to the beginning of the season. Fishermen delivering in Kodiak received as much as \$2.40 per pound for their catch. The average ex-vessel price was \$2.20 per pound, for a total value of \$6,876,932.99 to the fishermen (Table 1).

The Fish and Wildlife Protection vessels Trooper and Woldstad provided enforcement coverage before, during, and after the fishery. The Woldstad patrolled the more open waters of the district and the crew of the Trooper patrolled some of the bays as well as checking deliveries to the processors. No problems developed and the fishery was very orderly.

STOCK STATUS

1987 Pot Survey

As mentioned earlier, a stock assessment survey was conducted in the South Peninsula District from July 22 to August 11, 1987. The only change in 1987 was that the experimental stations southwest of Unga were not fished and Beaver and Balboa Bays were surveyed instead. A total of 434 pots were fished at 145 stations; slightly more than had been fished in the two previous years. The catch of male Tanner crab consisted of 5,880 legal sized crab and 1,962 sublegal sized crab. In addition, 48 juvenile females and 1357 adult females were caught on the survey. Recruitment was good with recruits

comprising over 78 percent of the legal sized males caught. Prerecruits made up only 21 percent of the males caught in 1987 versus the 26 to 36 percent found in the 1984 to 1986 surveys. This low abundance of prerecruit crab is cause for concern as it may forecast poor recruitment in 1988 and a lower harvest projection for the 1989 fishery.

The increased catch of 1988 appears to be a direct result of the strong recruitment experienced since the 1987 fishery. Data gathered during the 1988 commercial fishery was very similar to the 1987 survey with over 78 percent of the catch consisting of recruit crab (Tables 1,3). Table 3 shows that recruits made up 80 to 90 percent of the 1988 catch in three of the major schools. Pavlof Bay, the most productive school of all, had a slightly lower, but still good, rate of recruitment at 73 percent (Table 3).

Another indicator, catch per unit effort, was higher in all schools in 1988 than in 1987 (Table 1).

1988 Trawl Survey

To improve its harvest projections and fishery management, the Department switched from a pot survey to a trawl survey method for the 1988 South Peninsula crab assessment work. The pot survey produced an INDEX of relative abundance that was dependent upon commercial catch data and the catches of previous surveys. The trawl method is designed to produce an estimate of the actual crab population that is independent from other surveys or fishery data. The rates of recruitment and exploitation should be more accurately and easily determined from the trawl survey estimate. Another

important advantage of trawls is that they capture crabs in a broader size range than pots. In particular the trawl gear captures many more of the smaller sublegal crabs than pot gear. The broader look gives the Department a more realistic view of the whole crab population as well as a "preview" of potential crab abundance in the future. The estimates of sublegal crab stocks may be considered when harvest projections are made. Finally, trawl surveys are more cost efficient. More ocean bottom can be surveyed for less money, often in less time, than is possible with pots.

Some experimental work was done in Pavlof Bay in 1983 and 1984, but 1988 is the first time a trawl survey has been used in the entire South Peninsula district. The same methods, equipment, and analysis are used in Kodiak and the South Peninsula except the South Peninsula "bay stations" have an area of approximately 6.25 square miles instead of 10 square miles.

The area surveyed was generally the same as that covered by the pot surveys in 1984 through 1987; including Ikatan, Morzhovoi, Cold, Belkofski, Volcano, Pavlof, Beaver and Balboa Bays. No survey was done in Stepovak Bay, the Chignik district or the Unimak Bight district. The survey area included the grounds most commonly fished during recent commercial seasons.

The 1988 survey was conducted aboard the R/V Resolution from August 5 to August 18. One hundred six (106) tows were made to simultaneously assess the king and Tanner crab populations. Eighty nine of the tows produced catches of Tanner crab. A total of 6,095 crab, 3,634 males and 2,461 females were caught. Legal males made up nearly 16 percent of all males caught; and 332 crab or nearly 58 percent of those legal males were recruits.

For the area surveyed, the entire Tanner crab population was estimated to be 7.26 million animals; 4.3 million males, and 3 million females. Catches from the Pavlov/Volcano Bay area account for 45 percent of the overall population estimate with Ikatan/Morzhovoi contributing 27 percent and Cold Bay/Belkofski, 21 percent. The estimated 700,000 legal sized crab made up only 9 percent of the overall population estimate. The prerecruit ones, and prerecruit twos, were estimated at nearly one million animals each.

The 1989 South Peninsula harvest projection of 700,000 pounds was calculated by multiplying 40 per cent of the estimated number of legal size crab by an average weight of 2.5 pounds per crab. Forty percent is the standard exploitation rate used by the department for Tanner crab fisheries. South Peninsula Tanner crab have averaged 2.5 pounds each during the last two commercial seasons.

This is the lowest projection in the history of the fishery. The projection was surprising after the relatively strong fishery in 1988 and the good overall catch rates reported during the last two seasons. The 1987 pot survey results suggested that survival and recruitment might have declined in 1989. Unfortunately meaningful comparisons are difficult to draw between the two survey types and there is no clear answer why the 1989 harvest projection is so low. The condition of the population should become more clear after the 1989 fishery and survey are completed.

ISSUES

The issue between local and non-local vessels and between large and small vessels continued in 1988 but not at the level of previous seasons. The problem is that the majority of local boats are less than 58 feet in length and many of the non-local vessels are larger than 58 feet. The local fishermen do not like to compete with the larger vessels with their greater capacity for gear and their ability to fish in bad weather. This becomes an especially heated issue in seasons when weather is bad and the small boats cannot be fished or are fished at extreme risk to the operators (such as the 1986 season).

The local fishermen generally limit their fishing to the South Peninsula and Chignik districts while the larger vessels can be used in other fisheries such as the Bering Sea opilio fishery. The very short seasons have intensified the competition for the crab and have aggravated the problem between the groups of fishermen.

Since this issue continues, Table 5 was included for historical information.

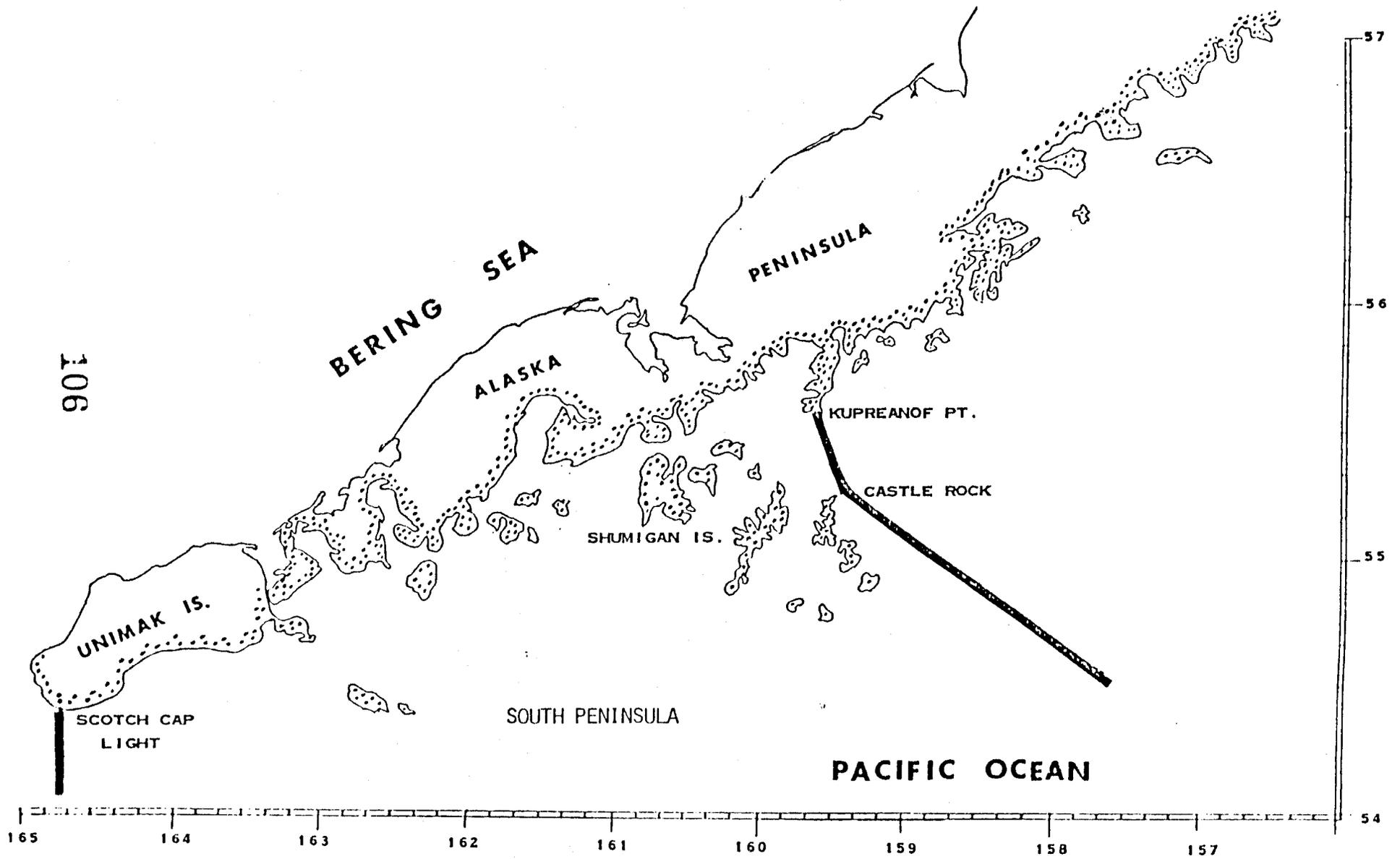


Figure 1. South Peninsula Tanner crab district.

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

Year	Vssls.	No of Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Price/Pound ²	% 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

- Continued -

Table 1. (page 2 of 2)

Year	Vssls.	No of Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Price/Pound ²	% Recruits
1983	82	230	1,144,096	2,863,798	70,524	16	2.5	1.20	55.4
1984	61	207	775,472	1,789,883	50,726	15	2.3	1.04	29.6
1985	52	184	1,097,182	2,549,686	47,465	23	2.3	1.42	73.0
1986	74	187	1,589,759	3,781,950	65,078	24	2.4	1.72	72.9
1987	54	106	950,300	2,400,784	37,511	25	2.5	2.03	56.1
1988	73	148	1,359,371	3,328,809	52,516	26	2.5	2.20	78.6

¹ Includes Deadloss

² Computed for live crab only

Table 2. South Peninsula Tanner crab deliveries by week, 1988.

<u>Week</u>	<u>Vssls.</u>	<u>Lndgs.</u>	<u>No. Crab¹</u>	<u>No. Pounds¹</u>	<u>Lifted</u>	<u>Wt.</u>	<u>CPUE</u>
1/15-1/17	7	8	33,713	81,463	635	2.42	53
1/18-1/24	56	70	731,643	1,785,453	23,745	2.44	31
1/24-end	68	70	594,015	1,461,893	28,136	2.46	21

¹ Includes Deadloss

Table 3. South Peninsula District Tanner crab harvest by statistical area and school, 1988.

<u>School</u>	<u>Stat Area</u>	<u>Lndgs.</u>	<u>No. Crab¹</u>	<u>No. Pounds¹</u>	<u>Pots Lifted</u>	<u>Avg. Wt.</u>	<u>CPUE</u>	<u>% Recruits²</u>
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Beaver/Balboa

Cold Bay/Belkofski

Harvest confidential

Ikatan/Morzhovoi

Table 3. (page 2 of 3)

School	Stat Area	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	% Recruits ²
Pavlof/Volcano								

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Harvest confidential

Sanak Island

Unga

Table 3. (page 3 of 3)

School	Stat Area	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	% Recruits ²
Unga (cont.)								
Harvest confidential								
SEASON TOTAL		148	1,359,371	3,328,809	52,516	2.45	26	79

¹ Includes Deadloss

² Recruits are new shell legal crab less than or equal to 163 mm carapace width.

N/S = No Samples

Table 4. Comparison of preseason harvest projection and actual catch by area for the South Peninsula District, 1988 season.

Area	Preseason Projection (lbs.)	Actual ¹ Harvest (lbs)
Unimak Bight	-	0
Sanak Island	-	653
Ikatan/Morzhovoi	647,000	728,113
Cold Bay/Belkofski	218,000	311,262
Pavlof/Volcano	2,566,000	2,208,541
Beaver/Balboa	-	30,616
Unga	-	49,624
Stepovak	-	0
Total	3,431,000	3,328,809

¹ Includes Deadloss

Table 5. Number of vessels fishing and percent of catch for local versus non-local vessels fishing in the Chignik/South Peninsula areas (combined) 1978/79 through 1988 commercial Tanner crab seasons.

Season	No. Vessels		Percent Vessels		Percent of Catch	
	LOCAL		NON-LOCAL		LOCAL	NON-LOCAL
1978/79	30	38	50	62	45	55
1979/80	41	39	65	61	40	60
1980/81	34	49	35	51	38	62
1981/82	51	46	59	54	47	53
1983	55	48	59	52	33	67
1984	51	71	21	29	69	31
1985	52	85	9	15	84	16
1986	49	63	29	37	62	38
1987	46	85	8	15	74	26
1988	54	72	21	28	63	37

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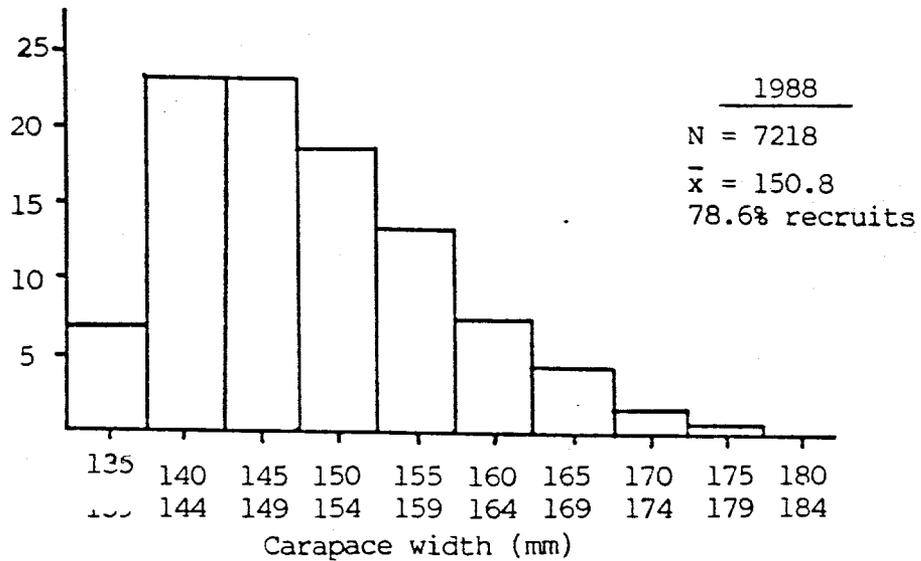
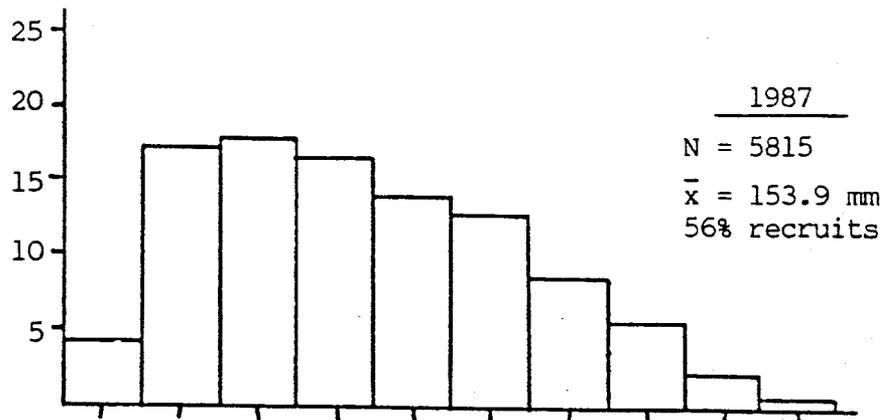
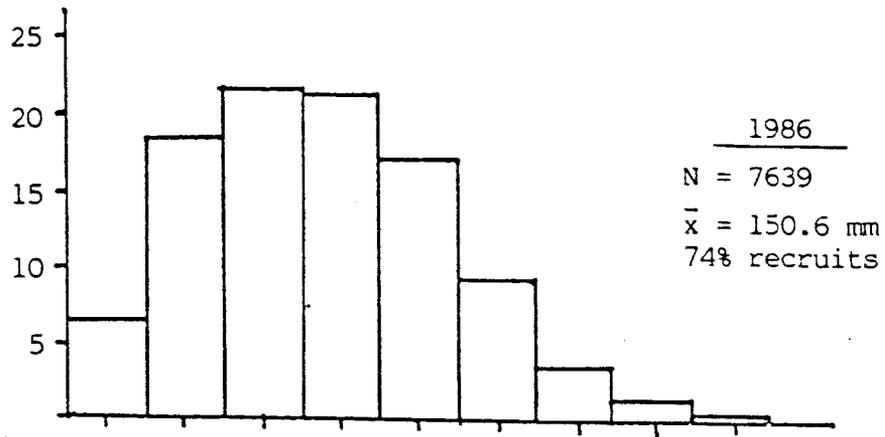


Figure 2. Size frequency distribution of Tanner crab from the South Peninsula District for the last three seasons.

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 ($157^{\circ} 27'$ W. long.) and east of the longitude of Scotch Cap Light ($164^{\circ} 44'$ 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.

1988/89 Fishery

For ease of discussion, the Alaska Peninsula District is divided into two areas, Chignik, and South Peninsula (Figure 1).

Chignik

The 1988 Dungeness fishery opened by regulation on May 1. Some crab were harvested from the Chignik area by less than 4 fishermen.

South Peninsula

As in Chignik, the South Peninsula area opened to Dungeness fishing on May 1. Some crab were harvested from the South Peninsula area by less than 4 fishermen.

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 Dungeness population appeared to be fairly stable (Table 5). 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 (Table 5). 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.

Sea otters are blamed by some for the decline in the catch, particularly in the South Peninsula area. The Department has no data on sea

otter predation on Dungeness crab in the Alaska Peninsula district, but the animals are certainly abundant. There is a report that implicates sea otters with the decline of a Dungeness population in the Prince William sound area (Kimker, 1985).

Since the Department does not survey the Dungeness population there is no way to predict harvests or recruitment for the 1989 fishery. Dramatic cycles of low and high abundance have been observed in other Dungeness fisheries. Continuous effort and "3 S" management appears to be revealing and/or causing a similar phenomenon in the Alaska Peninsula District.

Issues

Critics often point out that "3-S" management typically results in a recruit fishery; one dependent upon the number of available legal-sized animals each year. Such fisheries often result in wide variations in catch from year to year. In king and Tanner crab fisheries, the Department has established multiple age class management systems.

While available data does not make it clear whether a multiple age class management system is appropriate to Dungeness fisheries, it has shown that there are problems with the "season" portion of the "3-S system" as currently implemented. Some data suggest that the present May 1 opening may be detrimental to the stocks by allowing fishing to occur on molting and mating crab. Research in the west coast states, Southeastern Alaska, Prince William Sound, and Kodiak indicates that male crab molt during the spring and summer. Female Dungeness generally molt and mate during the summer or early fall. In Kodiak, recent research found a majority of the males to be soft shelled in July and August (Hicks, personal comm.). While year to year consistency of the timing of molting and mating is unknown, local fishermen have confirmed that soft shelled crab are often seen from May, through July or August. Some fishermen have commented that they have found grasping pair in August and September with an occasional pair found as late as October.

The crab are fragile and more easily killed during their molting period. They may be more susceptible to cannibalism at this time, particularly if

trapped in a pot. Soft crab are more sensitive to sorting and handling by fishermen and have been known to float and die when returned to the water. The handling of grasping pairs may disrupt the breeding success of the crabs. Research in the Kodiak area also indicates that the May Dungeness fishery could cause handling damage to juvenile king and Tanner crabs, and damage to adult female king crabs. The Department will continue to gather data which may help to determine when the fishery should occur.

One future source of data may be the South Peninsula trawl survey. Initiated in 1988 for king and Tanner crab, approximately 900 Dungeness were caught throughout the area. The catches were unexpected and the survey crew took only cursory observations. Future survey crews will be prepared to gather information on any Dungeness caught. If the Chignik trawl survey is ever reinstated, it too may provide useful data. Though unlikely to provide information of a predictive nature, the data may help answer other questions about the species.

SPECIAL NOTES

The Department would like to thank Village Public Safety Officer Ron Bowers of Chignik, for his assistance during the 1988 Alaska Peninsula Dungeness fishery. Mr. Bowers has been very helpful in providing tank inspections and general information to the Chignik fishermen that the Department is otherwise able to serve.

REFERENCES

- HICKS, D. 1987. Kodiak Dungeness and king crab survey. Technical data report (No. 204). Alaska Department of Fish and Game, Kodiak, Alaska.
- KIMKER, A. 1985. A recent history of the Orca Inlet, Prince William Sound Dungeness crab fishery, with specific reference to sea otter predation. pp 231-241. In: Proceedings of the symposium on Dungeness crab biology and management. Alaska Sea Grant Report 85-3, 244 pp.

University of Alaska, 1985. Proceedings of the symposium on Dungeness crab
biology and management. Alaska Sea Grant Report 85-3, 424 pp.



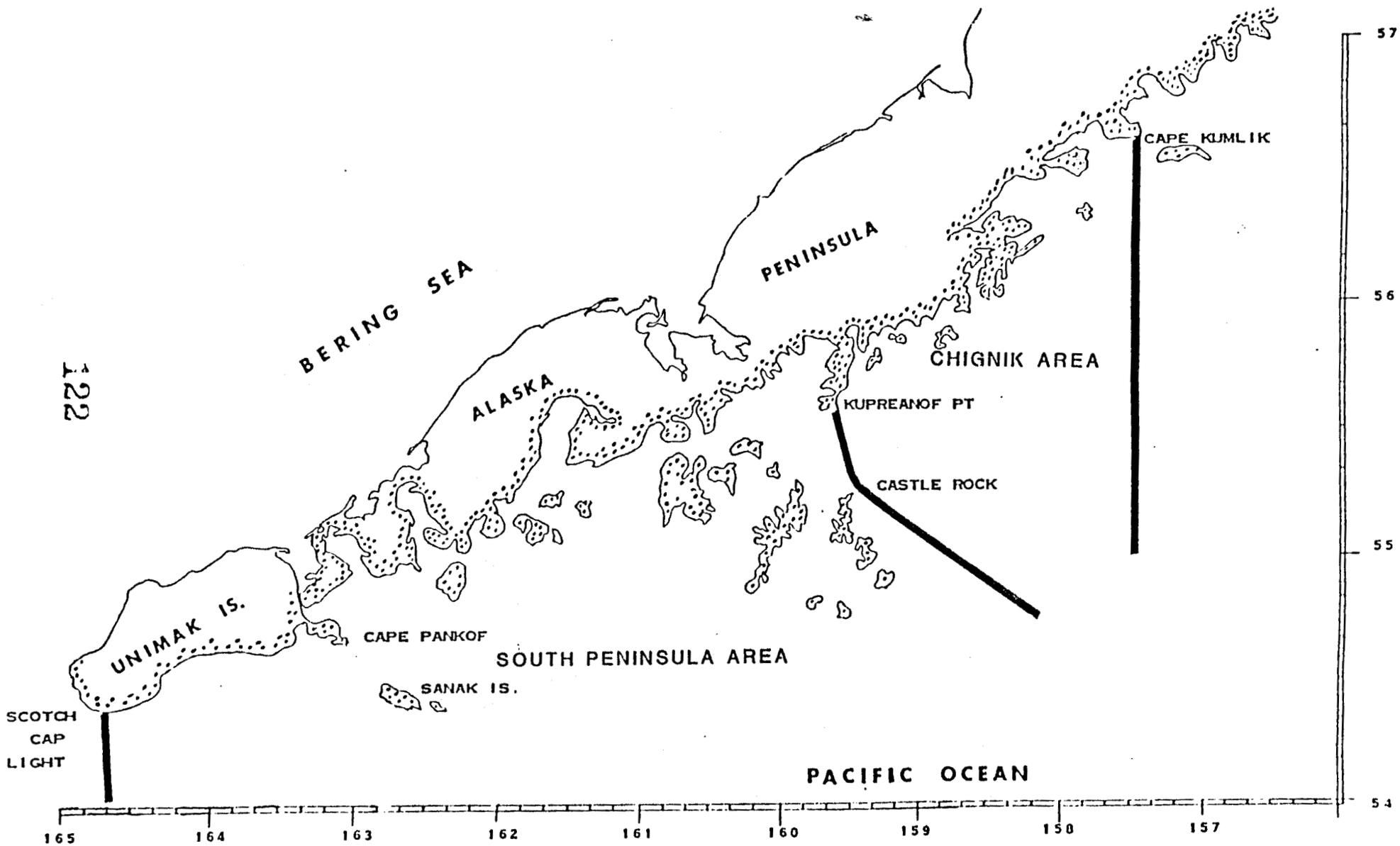


Figure 1. ALASKA PENINSULA DUNGENESS DISTRICT

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

Year	Vssls.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	CPUE	Avg. Price Wt. Per Lb.	
1968			434,142	1,259,013			2.9	
1969			411,000	1,056,000				
1970			4,200	13,000				
1971			3,900	11,000				
1972			29,400	65,000				
1973			Harvest confidential					
1974				NO EFFORT				
1975				NO EFFORT				
1976				NO EFFORT				
1977				NO EFFORT				
1978				NO EFFORT				
1979			Harvest confidential					
1980				NO FISHING				
1981/82			Harvest confidential					
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			Harvest confidential					

¹ Includes deadloss.

Table 2. Dungeness harvest by month, Chignik Area 1988/89 season.

Month	Vs/s.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt. CPUE	Avg. ² Price/Lb.
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Harvest confidential

Table 3. Dungeness harvest by month, South Peninsula Area 1988/89 Season.

Month	Vsals.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt. CPUE	Avg. ² Price/Lb.
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Harvest confidential

Table 4. Recent Dungeness harvest, Chignik area.

Season	Vssls.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE
1981/82	NA	NA	NA	1,062	NA	NA	NA
1982/83	7	26	106,635	243,503	11,740	2.3	9
1983/84	16	91	297,707	665,238	64,550	2.2	5
1984/85	6	48	126,176	264,741	54,399	2.2	2
1985	Harvest confidential						
1986	Harvest confidential						
1987	Harvest confidential						
1988	Harvest confidential						

Table 5. Recent Dungeness harvest, South Peninsula area.

Season	Vssls.	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE
1981/82	NA	NA	NA	1,062	NA	NA	NA
1982/83	13	53	251,320	536,097	47,525	2.1	5
1983/84	8	41	267,723	541,890	48,511	2.0	6
1984/85	13	44	199,790	394,187	56,007	2.0	4
1985	Harvest confidential						
1986	Harvest confidential						
1987	Harvest confidential						
1899	Harvest confidential						

NA = Not Available
¹ Includes Deadloss

Table 6. Dungeness catch by statistical area for the Chignik Area, 1988 season.

School	Stat Area	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt. CPUE
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Harvest confidential

Table 7. Dungeness catch by statistical area for the South Peninsula Area, 1987 Season.

School	Stat Area	Lnds.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt. CPUE
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Harvest confidential

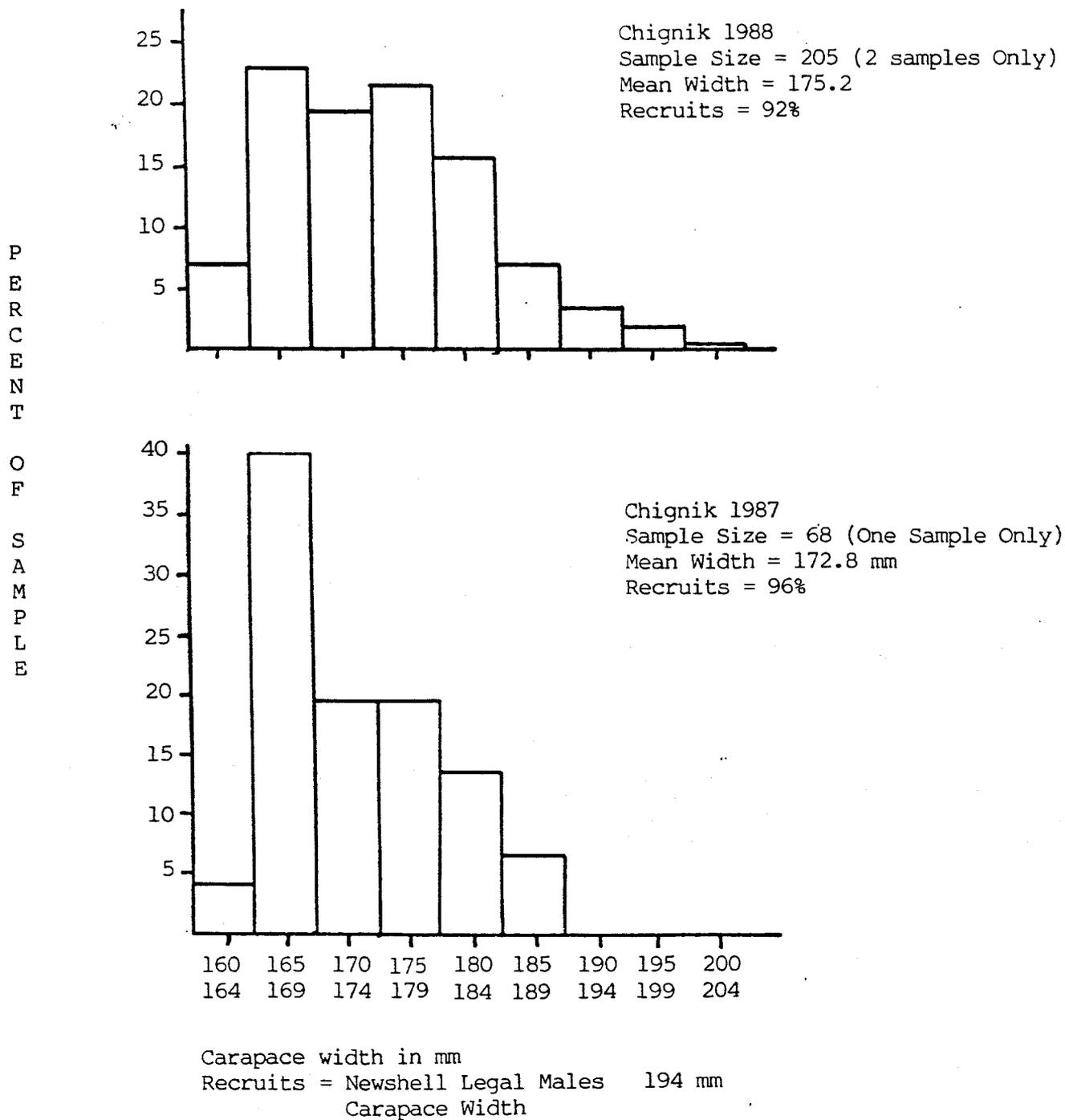


Figure 2. Size frequency of dungeness crab sampled from the Alaska Peninsula commercial harvest.

No samples have been taken from South Peninsula catches for the last two seasons.

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.

1988/89 SEASON SUMMARY

During the 1988/89 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 National Marine Fisheries Service conducted the only Alaska Peninsula shrimp abundance survey during the summer of 1988. Pavlof and Volcano Bays were the only areas surveyed.

From a total of 22 tows made in 1988, the catch averaged 12 pounds per nautical mile while in 1987 almost 38 pounds per Nm were caught. Analysis of the survey found that "mean pandalid shrimp abundance in Pavlof Bay showed a decrease relative to the last annual survey in September 1987." (Cruise Results, Cruise No. AK-88-02). The report also said "the biomass estimate of 0.16 million lbs. for pandalid shrimp this year is approximately 25% of the 1987 estimate and is the second lowest on record." (Cruise Results, Cruise No. AK-88-02).

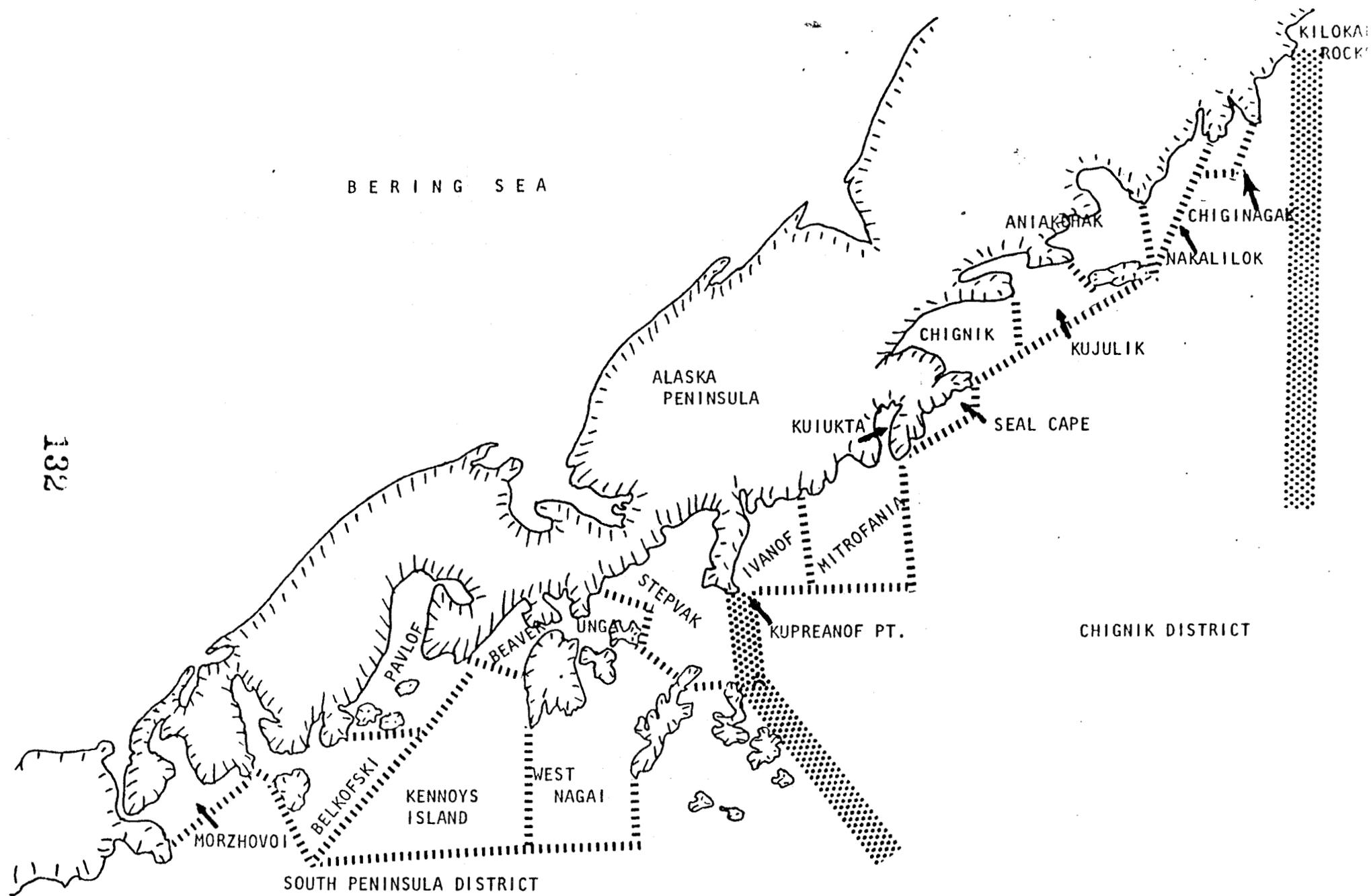
Cruise Results, Cruise No. AK-88-02 continues, saying: The average count per pound of 174 is higher than reported for the 1987 survey (105 count) and reflects the smaller average size of shrimp found this year. the catch of male pink shrimp decreased from 2,373 per nautical mile towed in 1987 to 925 per nautical mile towed this year. The number of males caught is below the 1980-1987 average (3,489 per nautical mile) and indicated poorer than average recruitment in 1988.

References

Paul Anderson, Franklin Hartsock, Frank Morado, Robert Caruso; 1988 Cruise Results, Cruise No. AK-88-02; NOAA, NMFS, Northwest and Alaska Fisheries Center, Kodiak, Alaska.

Table 1. Historic shrimp harvest statistics.

Year	SOUTH PENINSULA				CHIGNIK			
	Vssls.	Lndgs.	No. Pounds	Price/ Pound	Vssls.	Lndgs.	No. Pounds	Price/ Pound
1968			Harvest confidential		-	-	1,153,721	\$.-
1969					-	-	419,830	.-
1970	4	173	4,398,800	.04	-	-	890,705	.04
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	21,673,788	.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	.-



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Figure . South Peninsula and Chignik shrimp sections.

ALASKA PENINSULA SCALLOPS

INTRODUCTION

The Alaska Peninsula scallop fishery has primarily occurred in the Chignik area. Peak effort and harvest in both districts was seen in 1982. That year 205,691 pounds were landed from both districts. Effort has diminished since then with never more than 3 vessels participating.

The offshore areas of Unimak Bight, and all nearshore waters of the South Peninsula District have been closed to scallop fishing for several years in order to protect crab stocks. Generally, the South Peninsula waters open to scallop dredging are not known to contain populations large enough to support a commercial fishery.

The extremely low crab population in the Chignik District prompted the closure in 1984, of the Mitrofanina Island area since it is a crab mating and molting area.

1988 Season Summary

Some scallops were landed from the Chignik district in 1988 by less than 4 vessels.

No vessels were registered to fish in the South Peninsula District during 1988 and no catch was reported from the area. Unlike the 1987 season, there was no evidence of any illegal fishing in the district in 1988.

Table 1. Scallop harvest statistics for South Peninsula and Chignik.

Year	SOUTH PENINSULA				CHIGNIK			
	Vssls.	Lndgs.	No. Pounds*	Price/ Pound	Vssls.	Lndgs.	No. Pounds*	Price/ Pound
1975			Harvest confidential				NO FISHING	
1975			NO FISHING				NO FISHING	
1977			NO FISHING				NO FISHING	
1978			NO FISHING				NO FISHING	
1979			NO FISHING				NO FISHING	
1980			NO FISHING				NO FISHING	
1981			NO FISHING					
1982							Harvest confidential	
1983			Harvest confidential					
1984			NO FISHING				NO FISHING	
1985			Harvest confidential				Harvest confidential	
1986			NO FISHING				NO FISHING	
1987			Harvest confidential				NO FISHING	
1988			NO FISHING				Harvest confidential	

* Meat of scallop only.

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 and squid were the only species fished in 1988; more thorough descriptions of these fisheries are found below. Discussions of other fisheries appear in previous years' issues of the "Westward Region 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. Tables 1 and 2 show the historical delivery records of octopus in the districts of 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 bottom fish. When the trawls opened the octopus market, fishermen using pot and long line gear began to sell their incidental catch as well. One fisherman registered to fish for octopus with pots but he never put his gear in the water.

Total harvest in 1988 was 43,332 pounds; 35,498 pounds were taken in trawl gear; 6,475 pounds in pot gear; and 1,272 pounds were caught on ling lines. A total of 29 vessels made 184 deliveries. Tables 3 and 4 show more detailed information broken down between the South Peninsula and Chignik districts. No information is available on the number of animals caught or their average weight.

Octopus is a popular bait for halibut and commands a good price. Fishermen were initially paid a dollar per pound for their octopus. The price dropped in late fall to 75 cents. For the whole year the price averaged

slightly less than \$0.92 per pound. Total value of the fishery came to \$39,778.10.

The 1988 catch of octopus is much larger than has ever been taken before. However, little population information is available for the Alaska Peninsula octopus. If the harvest continues at present levels or increases, the fishery may deserve more attention and research.

Table 1. Historical deliveries of octopus in the Chignik District.

Year	Vssls.	Lndgs.	Number	Pounds	Pots Lifted	CPUE	Avg. Wt.	Price
1980					-	-	-	\$.70
1981			Harvest confidential		-	-	-	.70
1982				0	-	-	-	.70
1983				NO	FISHING			
1984				NO	FISHING			
1985			Harvest confidential					
1986				NO	FISHING			
1987				NO	FISHING			
1988			Harvest confidential				NA	.75

Table 2. Historical deliveries of octopus in the South Peninsula District.

Year	Vssls.	Lndgs.	Number	Pounds	Pots Lifted	CPUE	Avg. Wt.	Price
1980				NO	FISHING			
1981				NO	FISHING			
1982			Harvest confidential					\$.50
1983								.80
1984				NO	FISHING			
1985			Harvest confidential					.50
1986				NO	FISHING			
1987				NO	FISHING			
1988	29	184	NA	43,282		NA	NA	.92

Table 3. Octopus harvest by gear type in the Chignik district, 1988.

Gear	Vssls	Lndgs	Pounds	Avg Price
Trawl				Harvest confidential

Table 4. Octopus harvest by gear type in the south Peninsula district, 1988.

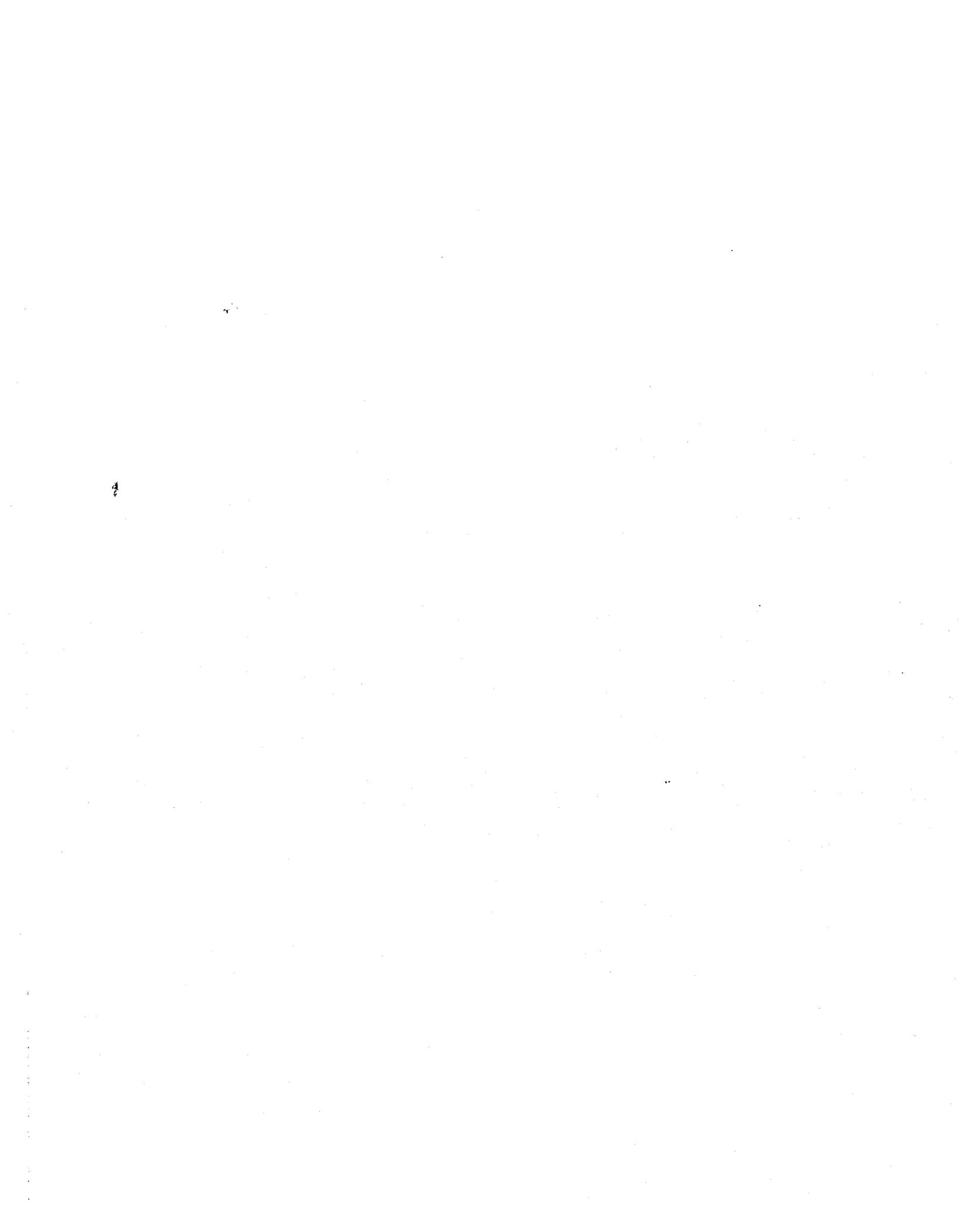
Gear	Vssls	Lndgs	Pounds	Avg price
Trawl	10	126	35,448	\$.91
Pots	8	39	6,475	\$.94
Long line	15	19	1,272	\$.94
Total	28*	184	43,282	\$.92

* Some vessels made deliveries with two different gear types during the year.

Information in tables 1 - 4 are for calendar year 1988, January 1 through December 31.

SQUID

As with octopus, the take of squid is a result of the growth of the groundfish industry. Most squid appear to be taken well off shore by the trawl fleet. Since this is a relatively new fishery, catch reports have been a bit erratic and the information appearing here may be in error. Available reports show 1855 pounds of squid were taken from the waters south of the Alaska Peninsula in 1988. No price information is available for the squid. Efforts will be made to improve the collection of harvest information in 1989.



EASTERN ALEUTIANS MANAGEMENT AREA
SHELLFISH MANAGEMENT REPORT
TO
ALASKA BOARD OF FISHERIES

MARCH 1989

BY

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DUTCH HARBOR RED KING CRAB

Introduction

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

Historic Background

The area "0" red king crab fishery began in 1961 and rapidly became one of the State's major production areas. During the development years of the fishery, the catch peaked at an all-time high of 32.9 million pounds in 1966/67 (Table 1).

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

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

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

1988 Fishery

The Department of Fish and Game was unable to survey the Dutch Harbor king crab stocks during 1988. Vessel commitments due to budget restraints precluded any survey in the area this year.

The 1987 survey and historical trends of Dutch Harbor stocks indicated an extremely low level of king crab abundance in areas of historic importance. Recruitment was extremely weak for both males and females. Any improvement in the condition of stocks would require several years for prerecruit crabs to recruit to legal size.

Based on the poor conditions observed during the 1987 survey of the Dutch Harbor king crab stocks, and no prospects for a short term turnaround in stock condition, the Dutch Harbor 1988-89 red and blue king crab fishery did not open to commercial fishing.

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

Season	Opened	Closed	Vssls.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Min. Size	Avg. Price/Pound
1968/69	1/1 ²	3/15	NA	NA	NA	11,300,000	NA	NA	NA	7"	NA
1969/70	9/15	2/15	41	375	NA	8,950,000	72,683	NA	NA	7"	NA
1970/71	9/15	1/10	32	268	NA	9,652,000	56,198	NA	NA	7"	NA
1971/72	9/15	10/23	32	210	1,447,692	9,391,615	31,531	6.5	46	6.5"	NA
1972/73	10/1	10/24	51	291	1,500,904	10,450,380	34,037	7.0	44	6.5"	NA
1973/74	11/1	11/24	56	290	1,780,673	12,722,696	41,840	7.1	43	6.5"	\$.65
1974/75	11/1	1/14	87	372	1,812,647	13,991,129	71,821	7.7	25	6.5"	\$.37
1975/76	11/1	1/10	79	369	2,147,350	15,906,666	86,874	7.4	25	6.5"	\$.42
1976/77	11/1	12/7	72	226	1,273,298	9,367,965	65,796	7.4	10	6.5"	\$.64
	12/13	1/13	38	61	86,619	830,458	17,298	9.6	5	8"	\$.79
1977/78	9/15	12/8	33	227	539,656	3,658,860	46,617	6.8	12	6.5"	\$.99
	12/8	1/5	6	7	3,096	25,557	812	8.3	4	7.5"	\$1.35
1978/79	9/10	11/20	60	300	1,233,758	6,824,793	51,783	5.5	24	6.5"	\$1.35
1979/80	9/10	1/10	104	542	2,551,116	15,010,874	120,554	5.9	21	6.5"	\$.90
1980/81	11/1	1/12	114	830	2,772,287	17,660,642	231,607	6.4	12	6.5"	\$1.02
	1/15	2/15	54	120	182,349	1,392,923	30,000	7.6	6	7.5"	\$1.03
1981/82	11/1	2/15	92	683	741,966	5,155,345	220,087	6.9	3	6.5"	\$2.30
1982/83	11/1	1/15	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						

¹ Includes deadloss

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

DUTCH HARBOR BROWN KING CRAB

Historic Background

Historically, Dutch Harbor brown king crab have been taken incidental to red king crab. Due to few brown king crab being landed, no landings were recorded prior to the 1981/82 season.

During the 1981/82 season, six vessels landed over 115,000 pounds 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 6 1/2 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 a staff proposal removing the permit fishery designation and set an opening date for September 1.

1988 Fishery

As stated, the fishery opened on September 1 concurrent to the blue king crab fishery at St. Matthew Island. Registrations and tank inspections were given to seventeen vessels, including three catcher/processors.

Most effort occurred on grounds developed during previous seasons. With the opening of the Bristol Bay red king crab season on September 25, all but six vessels left the area to fish for red king crab. A total of nineteen vessels landed 60% of the season's total, 926,804 pounds, during September (Table 3). Some effort re-entered the fishery after the closure of red king crab in October, and fourteen vessels landed over 508,000 pounds during the month, (Table 3).

When the Adak king and Tanner crab season opened in November, all but three vessels left the Dutch Harbor area and entered that fishery. By this time, most of the productive grounds had already been fully exploited by the fleet, and the monthly catch dropped to less than 100,000 pounds landed by only three vessels, one of which was a catcher/processor. With the implementation of the Mandatory Observer program for the Bristol Bay season on September 25, the catcher/processors returning to the Dutch Harbor fishery also had to take an observer.

With less effort, the average CPUE slightly increased in November, from seven to nine, but the average weight decreased, (Table 3). With the average historical catch for the Dutch Harbor brown king crab fishery having been reached, vessel effort switching to other areas and the likelihood that more effort would move back into the area after the Adak red king crab season closed, the Dutch Harbor brown king crab fishery was closed on December 4, (Table 2).

A total of over 1.5 million pounds of brown king crab was harvested from the area by 21 vessels. The average catch per pot increased one from the 1987 season and the average weight, also shown in the increased average length, increased two tenths of a pound, (Table 1). The fishery was valued at over 4.6 million dollars to the fishermen.

Stock Status

The Dutch Harbor brown king crab stocks are not surveyed. The 1988 harvest indicates a healthy fishery, with statistics comparable to that of the 1987 fishery, (Table 1).

Table 1. Historic brown king crab catch in Dutch Harbor statistical Area "0".

Season	Vssls.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	CPUE	Percent Oldshell	Avg. Wt.	Avg. Length	Pounds 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	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	4.7	155.7	38,663
1986	17	71	400,389	1,869,180	37,585	11	-	4.7	-	9,510
1987	22	77	299,734	1,383,198	43,017	7	25	4.6	138.6	24,210
1988 ^{3/}	21	57	323,695	1,,545,113	40,869	8	23	4.8	154.3	22,960

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		No. Pounds ¹	Size Limit	Price/Pound
	Opened	Closed			
1981/82	11/1	1/15	115,715	6-1/2"	\$ 2.05
1982/83	11/1	2/15	1,284,971	6-1/2"	\$ 3.00
1983/84	11/10	2/15	1,810,973	6-1/2"	\$ 3.05
1984 ²	7/01	12/31	1,521,142	6"	\$ 1.35
1985	1/1	2/15	177,995	6"	\$ 1.70
	7/1	10/31	1,799,656	6"	\$ 2.00
1986 ²	7/1	12/31	1,869,180	6"	\$ 2.85
1987	7/1	9/2	1,383,198	6"	\$ 2.85
1988	9/1	12/4	1,545,113	6"	\$ 3.00

¹ Deadloss included

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

Table 3. Dutch Harbor brown king crab catch, by month, for the 1988 six inch permit season.

Month	Vssls.	Ldgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CRF	Pounds Deadloss
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Harvest confidential

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Network Courier

External Postoffice Statistics
Summary of mail sent and costs

04-09-90 14:08

Page 1

External postoffice: 4654150/HEADQTRS

Local postoffice:

Month to date mail = 11
Year to date mail = 11

External mail sent:

Month to date mail = 0
Year to date mail = 0

Month to date registered confirmations = 0
Year to date registered confirmations = 0

Month to date mail cost = 12.68
Year to date mail cost = 12.68

Harvest confidential

Stat.	Area	Lndgs.	No. Crab	No. Pounds	Pots	Lifted	Wt.	CPUE	Pounds	Deadloss
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Table 4. Dutch Harbor brown king crab catch by statistical area for the 1988 permit season.

Project SPARE

A. Line 100P - Balance 0.0

Projected Expenditures

- 1.0 None
- 2.0
- 3.0
- 4.0
- 5.0

Total 0.0

Projected Balance 0.0 - 0.0 = 0.0

B. Line 100S - Balance 16.7

Projected Expenditures

- 1.0 0.0 0.0 MM
- 2.0 0.0 0.0 MM
- 3.0 0.0 0.0 MM
- 4.0 0.0 0.0 MM
- 5.0 0.0 0.0 MM

Total 0.0

Projected Balance 16.7 - 0.0 = 16.7

C. Line 200 - Balance -0.5

Projected Expenditures

- 1.0 None
- 2.0
- 3.0
- 4.0
- 5.0

Total 0.0

Projected Balance -0.5 - 0.0 = -0.5

D. Line 300 - Balance 0.5

Projected Expenditures

- 1.0
- 2.0
- 3.0
- 4.0
- 5.0

Total 0.0

Projected Balance 0.5 - 0.0 = 0.5

E. Line 400 - Balance 0.7

Projected Expenditures

- 1.0
- 2.0
- 3.0
- 4.0
- 5.0

Total 0.0

Projected Balance 0.7 - 0.0 = 0.7

F. Line 500 - Balance 2.4

Projected Expenditures

- 1.0
- 2.0
- 3.0
- 4.0
- 5.0

Total 0.0

Projected Balance 2.4 - 0.0 = 2.4

Figure 1. Dutch Harbor Statistical Area "0" and Districts.

171° 169° 167° 165°

Western District (Westside)

Unalaska District

Akutana District

Egg Island District

Akun District

UMNAK IS.

IS.

UNALASKA ISLANDS

AKUTANA ISLANDS



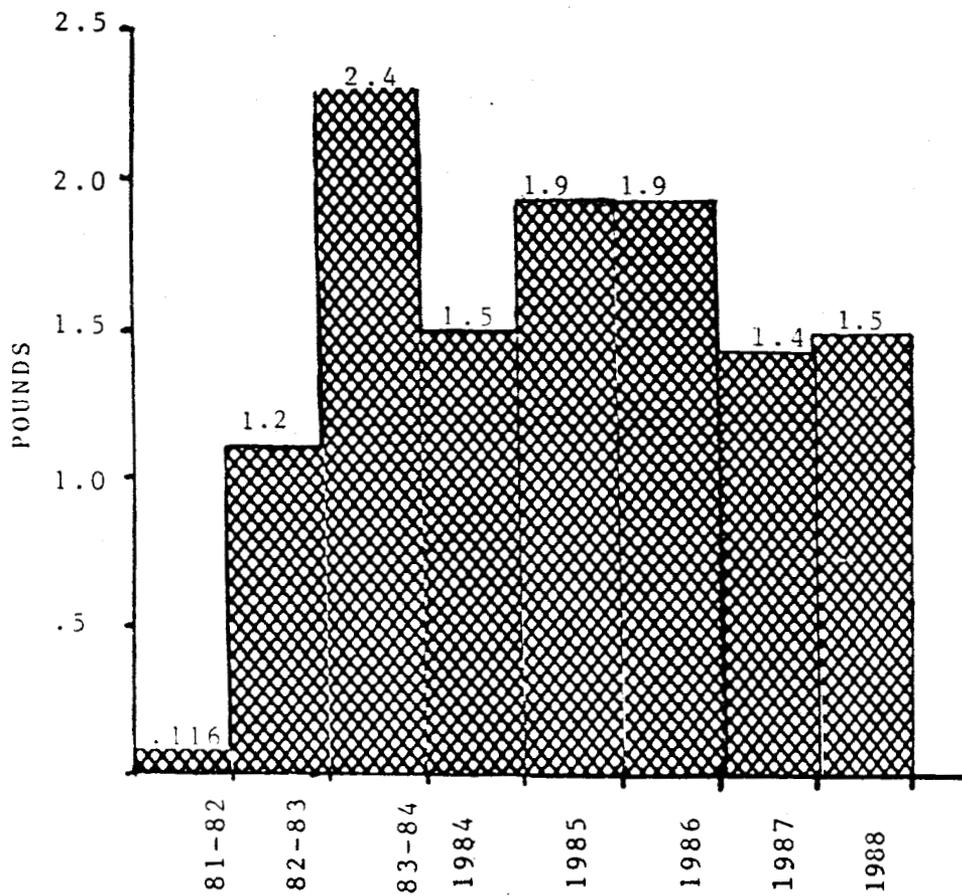


Figure 2. Historic Dutch Harbor brown king crab catch by season.

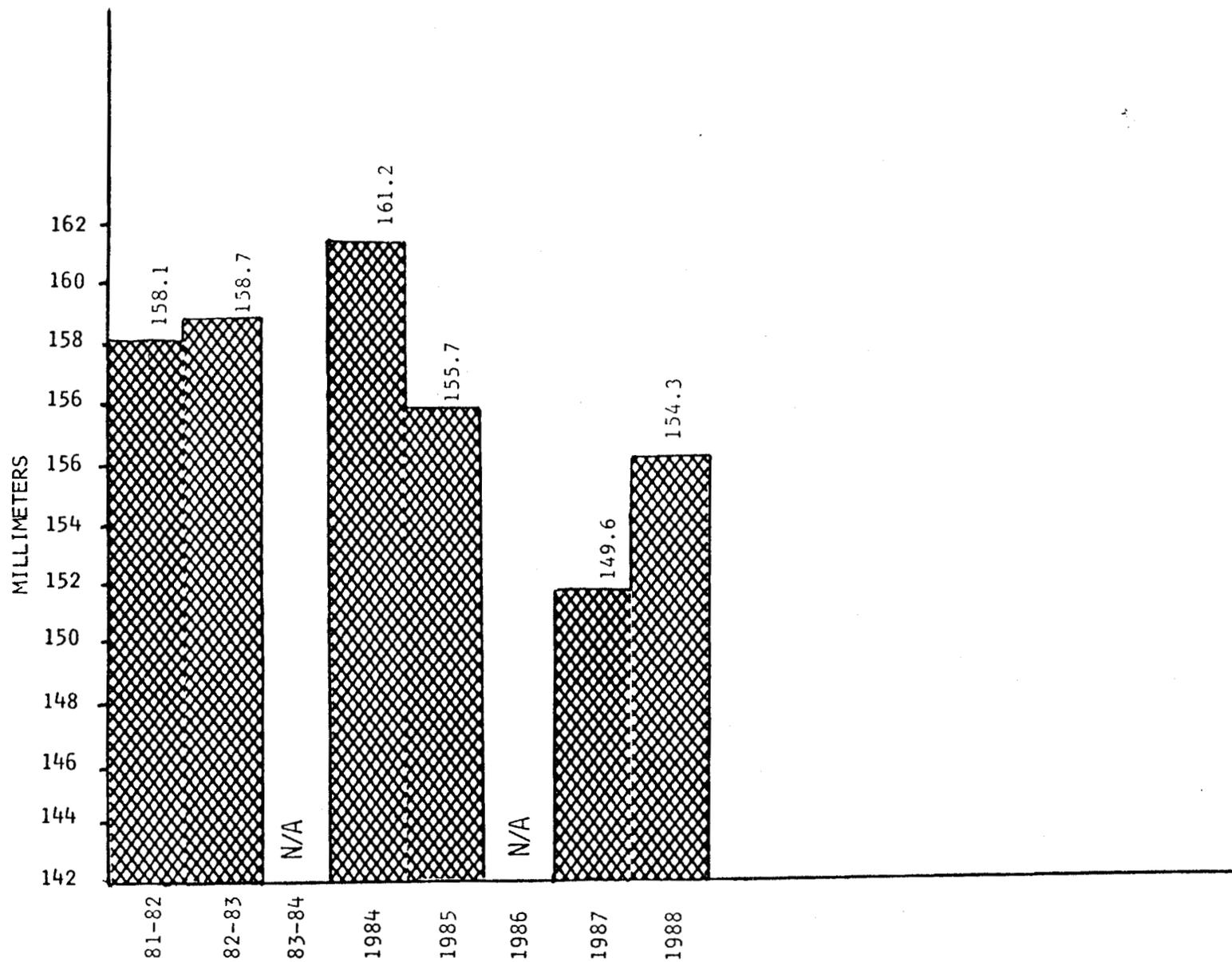


FIGURE 3. HISTORIC DUTCH HARBOR BROWN KING CRAB LENGTH FREQUENCIES.

EASTERN ALEUTIANS TANNER CRAB

Introduction

The Eastern Aleutians District is apparently a marginal habitat for Chionecetes bairdi, as the crab are only found in commercial quantities in a few of the major bays and inlets. The fishery is rather small and although the 1977-78 season produced a record 2.4 million pounds, the seasonal catches have been 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 nearly all areas known to be inhabited by tanner crab.

1988 Fishery

The fishery opened at 12:00 noon, January 15 with only six local small boats receiving initial tank inspections and registrations. By the end of the month, ten vessels had registered and landed over 73,000 pounds in a two week period, (Table 2). During February and March, effort again increased for the more desirable, higher priced C. bairdi and 87,376 and 71,829 pounds, respectively, were landed for the two months, bringing the total to over 232,000 pounds, the best season since 1983, (Table 1).

A total of 19 vessels landed C. bairdi from the Eastern Aleutian district for a total catch of 309,918 pounds, (Tables 1 and 2). The district was closed along with the Bering Sea C. bairdi fishery on April 20. Over 45%, 138,667 pounds came from the Unalaska Bay area with the Makushin Bay and south side of Unalaska Island producing the next best catches, (Table 3).

Stock Status

The status of the Eastern Aleutian Tanner crab stocks are unknown, but appear to remain stable based on commercial catch and survey results. Effort is expected to remain stable with smaller, local vessels producing the most catch out of Unalaska Bay.

Table 1. Historic *Chionoecetes bairdi*, 5 1/2 inches, fishery statistics from the Eastern district.

Season	Opened	Closed	Vssls.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Lnqth.	Price/Pound
1973-74	10/1	7/31	6	14	210,539	498,836	NR ²	2.4	60	NR	\$.NR
1974-75	1/18/75	10/15			Harvest confidential						.102
1975-76	1/20/76	10/15	8	13	219,166	534,295	4,646	2.4	47	156.2	.196
1976-77	11/7	6/15	12	35	544,755	1,239,569	9,640	2.3	57	NR	.30
1977-78	11/1	6/15	15	198	1,104,631	2,494,631	2,494,488	1.3	37	NR	.38
1978-79	11/1	6/15	20	174	542,081	1,280,115	18,618	2.4	20	NR	.52
1979-80	11/1	6/15	18	107	352,819	886,487	18,040	2.4	20	NR	.52
1981	1/15	6/15	29	119	264,238	654,514	21,771	2.4	12	151.8	.58
1982	2/15	6/15	31	138	332,260	739,694	30,109	2.2	11	147.5	1.25
1983	2/15	6/15	23	107	250,774	547,830	22,168	2.1	11	148.2	1.20
1984	2/15	6/15	16	91	104,761	239,585	11,069	2.3	9	147.8	.98
1985	1/15	6/15	6	56	71,918	165,529	5,620	2.3	13	N/A	1.30
1986	1/15	6/15	9	37	73,187	167,339	10,244	2.3	7	N/A	1.50
1987	1/15	6/15	7	63	71,338	160,292	5,294	2.2	13	N/A	2.00
1988	1/15	4/10	19	130	129,468	309,918	11,011	2.4	12	N/A	2.10

¹ Deadloss included beginning 1980

² No record

Table 2. Chionoecetes bairdi catch by month for the Eastern Aleutian District for 1988 season.

Month	Vssls.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Dead-Loss
January	10	23	31,134	73,677	2,330	2.37	13	0
February	13	43	36,799	87,376	2,902	2.37	13	500
March	14	38	30,685	71,829	3,049	2.34	10	0
April	12	26	30,850	77,036	2,730	2.50	11	1,500
May	S E A S O N C L O S E D							
June	S E A S O N C L O S E D							
TOTAL	19	130	129,468	309,918	11,011	2.39	12	2,000

Table 3. Chionoecetes bairdi catch by Statistical area for the Eastern Aleutian District, 1988.

Area	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Dead Loss
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Harvest confidential

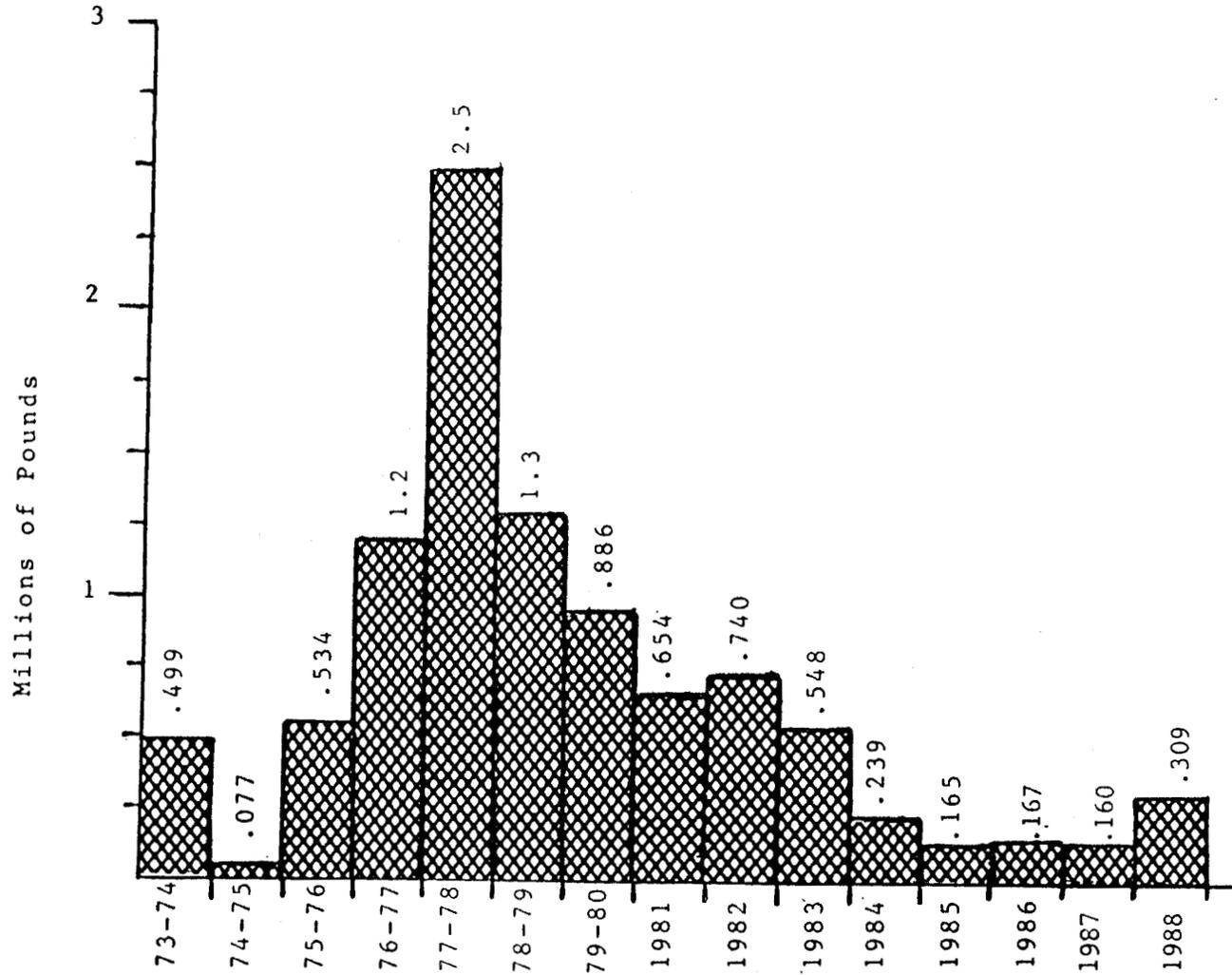


Figure 1. Eastern Aleutian Tanner Crab Historical Catch.

ALEUTIAN DUNGENESS CRAB

Introduction

The Aleutian District includes all water of statistical Area "J" west of the longitude 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, and 1980, 1981 to over 91,000 pounds reported in 1984/85, (Table 1).

1988 Fishery

The Eastern Aleutian district opened by regulation to fishing on May 1, but as in the past, effort in the fishery did not occur until June, (Table 2). A total of six local vessels again participated in the fishery with 17,333 pounds, 76 percent, landed from the Unalaska Bay area, (Table 3). During the summer months, several larger vessels made landings from other

Table 2. 1988 Aleutian District Dungeness catch by month.

Month	VsIs.	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE	Deadloss
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								
Dec.								
TOTAL	6	45	10,814	22,634	2,581	2.1	4	0

¹ Deadloss included

Table 3. 1988 Aleutian District Dungeness catch by statistical area.

Stat. Area	Lndgs.	No. Crab ¹	No. Pounds ¹	Pots Lifted	Avg. Wt.	CPUE
Harvest confidential						
Total	45	10,814	22,634	2,581	2.1	4

EASTERN ALEUTIAN 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, Usuf Bay and Beaver Inlet.

Historic Background

Shrimp has been fished in the Aleutian District since 1972. 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 and 2).

1988 Fishery

There was no active trawl fishery during 1988, although most of the unquoted 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	No. Pounds	Average Price/Lb.
1972	1/72	12/72					NR
				Harvest confidential			
1973	1/73	12/73					NR
1974	1/74	12/74	7	88	721	5,749,407	NR
1975	1/75	12/75					
				Harvest confidential			\$.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					
				Harvest confidential			\$.20
1983				NO FISHING			
1984				NO FISHING			
1985				NO FISHING			
1986				NO FISHING			
1987				NO FISHING			
1988				NO FISHING			

¹ Season years: 1972 to 1976 by calendar year. 1977/78 ran February 77 to March 78. 1978/79 and 1979/80 April to March. 1980/81 hence March to February.

² Catch occurred May and June 1982.

Table 2. Aleutian shrimp catch in pounds by month for the years 1977-1986.

Month	1979	1980	1981	1982	1983 ²	1984 ²	1985 ²	1986 ²
January	193,805	113,758	NF			-	-	
February	141,501	128,845	NF			-	-	
March	150,069	496,689	155,810		Harvest confidential	-	-	
April	186,362	371,080	428,793			-	-	
May	320,488	145,813	849,779			-	-	
June	159,526	NF	495,103			-	-	
July	605,689	NF	NF			-	-	
August	668,297	NF	NF			-	-	
Sept.	298,100	NF	NF			-	-	
October	NF	NF	NF			-	-	
November	358,573	240,986	55,080			-	-	
December	452,411	520,644	200,761			-	-	
Total	3,534,821	2,017,815	2,185,326			-	-	

¹ No fishing

² Quotaed areas closed

EASTERN ALEUTIAN POT SHRIMP

The Eastern Aleutian pot shrimp fishery primarily occurs in the area of Unalaska Bay by local small boats. The shrimp is sold whole across the dock.

Some shrimp were landed in 1988 by less than 4 vessels.

Table 1. 1988 Eastern Aleutian pot shrimp catch statistics by month.

Month	Landings	Pounds	Pot Lifts
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Harvest confidential

EASTERN ALEUTIANS SCALLOPS

Less than 4 vessels fished the Eastern Aleutians district for scallops during 1988. Catches came from areas south of Unalaska and Akutan Islands.

Table 1. Historical scallop fishery statistics for the Eastern Aleutian District.

Season	No. Vssls.	No. Lndgs.	No. Pounds	No. Drags	Avg. Lbs/Drag	Avg. Price/Lb
1985		Harvest confidential				\$ 3.50
1986	5	37	406,642	8,754	46	\$ 3.50
1987		Harvest confidential				\$ 4.00
1988		Harvest confidential				\$ 4.50

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