

4K94-29

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES
OF THE WESTWARD REGION, 1993

By
Westward Region Shellfish Management Staff

Regional Information Report¹ No. 4K94-29

Alaska Department of Fish and Game
Commercial Fisheries Management and Development Division
211 Mission Road
Kodiak, Alaska 99615

July 1994

¹The Regional Information Report Series was established in 1987 to provide and information access system for all unpublished division reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

SHELLFISH MANAGEMENT STAFF

Larry D. Nicholson	Regional Supervisor, Kodiak
William E. Nippes	Westward Region Shellfish/Groundfish Management Biologist, Kodiak
James A. Spalinger	Kodiak/Alaska Peninsula Area Shellfish Management Biologist, Kodiak
David R. Jackson	Kodiak/Alaska Peninsula Assistant Area Shellfish Management Biologist, Kodiak
Rance Morrison	Bering Sea/Aleutian Islands Area Shellfish Management Biologist, Dutch Harbor
Robert K. Gish	Bering Sea/Aleutian Islands Assistant
Michael L. Ward	Shellfish Observer Program Coordinator, Dutch Harbor
Larry Boyle	Shellfish Observer Program Staff Biologist, Dutch Harbor
Ben Kirkpatrick	Shellfish Observer Program Staff Biologist, Dutch Harbor
Bonnie Jones	Regional Shellfish Management Secretary, Kodiak
Marilynn E. Barr	Field Office Assistant, Dutch Harbor
Gail Smith	Data Processing Clerk, Kodiak

TABLE OF CONTENTS

	<u>Page</u>
I. OVERVIEW	1
II. KODIAK AREA	13
A. Introduction	15
B. Tanner Crab	20
C. Dungeness Crab	31
D. King Crab	38
E. Shrimp	49
F. Weathervane Scallops	56
G. Sea Cucumber	60
G. Sea Urchins	64
H. Octopus	66
I. Razor Clams	68
III. ALASKA PENINSULA AREA	71
A. Introduction	73
B. King Crab	73
C. Chignik Tanner Crab	79
D. South Peninsula Tanner Crab	83
E. Shrimp	88
F. Dungeness Crab	90
G. Weathervane Scallop	94
H. Miscellaneous Species	96
IV. EASTERN ALEUTIANS AREA	99
A. Dutch Harbor Red King Crab	101
B. Dutch Harbor Brown King Crab	106
C. Eastern Aleutian Tanner Crab	112
D. Aleutian Islands Dungeness Crab	116
E. Dutch Harbor Scallops	118
F. Aleutian District Trawl Shrimp	122
G. Aleutian Islands Miscellaneous Shellfish	124
V. WESTERN ALEUTIAN AREA	127
A. Adak Brown King Crab	129
B. Adak Red King Crab	138
C. Western Aleutians Tanner Crab	148

TABLE OF CONTENTS (continued)

	<u>Page</u>
VI. BERING SEA AREA	151
A. Tanner Crab	153
B. King Crab Registration Area T Bristol Bay	178
C. King Crab Statistical Area Q Bering Sea	188
D. Brown King Crab	204
E. Korean Hair Crab	207
F. Bering Sea/Aleutian Island Scallops	214
G. Miscellaneous Shellfish	219
H. Bering Sea King and Tanner Crab Buoy Identification Program	221
VII. MANDATORY SHELLFISH OBSERVER PROGRAM	235
A. Introduction	237
B. Fisheries Review	239
C. Observer Program Activity	247
D. Problems with the Observer Program	248
E. Summary	250

OVERVIEW

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

The regional ADF&G office is in Kodiak with a field office in Dutch Harbor. This report documents shellfish activities in the Region which are in progress year around. ADF&G fishery biologists are charged with state management and research programs associated with all commercially utilized stocks of shellfish. The full-time management staff consists of eight biologists, one secretary and one field office assistant. Approximately 12 seasonal personnel are hired for shellfish assessment cruises, logbook programs, shipboard observations, interviews, dockside sampling, data entry, secretarial assistance and overseeing the floating processor observer program.

In 1993, approximately 500 catcher vessels, 34 catcher processors, 22 shorebased processors and 19 floating processors engaged in harvesting and processing shellfish resources (Table 1). The 1993 Westward Region crab landings of 284 million pounds were worth \$310 million, exvessel value (Table 2). This represents the highest value on record for the region. The leading fishery was Tanner crab with landings of 256 million pounds worth \$216 million. King crab was the second most valuable fishery worth \$92 million. The scallop resource yielded approximately \$5 million to the fleet.

There was just a small regional shrimp harvest in 1993 (Table 3). Poor production in recent years discouraged fishermen and processors from fishing in 1993. The results of a 1992 shrimp survey, which was conducted in historically important areas indicated that shrimp stocks were extremely depressed. A slight improvement over recent years was noted on deep grounds over 90 fathoms but overall levels are still far below those experienced a decade or two ago.

The 1993 king crab harvest was approximately 26 million pounds (Table 4). The red king crab seasons were closed once again in Kodiak, Alaska Peninsula and Dutch Harbor. These areas have been closed continuously since 1983. The Department has surveyed these areas to assess the populations which continue to show little or no recruitment. The largest red king crab fishery in the state was in Bristol Bay (Figure 2). Although the fishermen harvested 14.6 million pounds worth \$55 million the prognosis is not bright. The outlook for that population is low and declining. There has been no significant recruitment of juveniles in recent years. The harvest projection for the Bristol Bay red king crab fishery will be announced after the 1994 summer trawl survey.

The 1993 Tanner crab season produced 256 million pounds, (Table 5) which was 27% reduction from the previous season. The value however, remained nearly equal at \$216 million. The catch

was comprised of 90% *Chionoecetes opilio* Tanner crab. The outlook for *C. opilio* stocks indicates a high population, but declining due to the passage of a strong year class. Expect future near term decline followed by another increase in several years as another strong cohort matures. *C. bairdi* stocks, while small in a historic sense are healthy, and the harvestable stock is expected to remain stable in most areas.

The 1993 Dungeness crab harvest was 1.7 million pounds. (Table 6) This was similar to the previous season catch. The Kodiak district produced the majority of the harvest in 1993.

In September 1988 the Alaska Board of Fisheries adopted the mandatory observer requirement for vessels processing king and *C. bairdi* crabs. The Board adopted the same requirements for *C. opilio* processing vessels in September 1990. The regulations required industry to fund the observers which are provided by a third party contractor and certified by the Department of Fish and Game. The observer program has been active for over four years with observers participating in nine fisheries annually. Data indicate that observer presence onboard has deterred the taking of undersized crab on catcher processors. Details of the program are discussed later in this report.

Table 1. Shellfish processors operating in the Westward Region during the 1993/94 fishing seasons.

Location	Company	*Products	Superintendent	
Kodiak	Alaska Fresh Seafoods	KTMD	Dave Woodruff	
	All Alaskan Seafoods	KTMD	Gary Taylor	
	Alaska Pacific Seafoods	TMD	John Sevier	
	Cook Inlet Processing	KTMD	Tim Blott	
	East Point Seafoods	KTMDS	Jim Major	
	Emerald Island Seafoods	KMTD	Chris Schopen	
	Evergreen Int'l Foodstuffs	M	John Lo	
	Great Northern Sea Prod. Inc	M	Larry Nelson	
	King Crab Inc	KTMD	Mike Robinson	
	Kodiak Seaside Seafoods	TMD	Wayne Selby	
	Western Alaska Fisheries	KTMD	Ken Allread	
	Sand Point	Trident Seafoods	TD	Paul Pagette
	King Cove	Peter Pan Seafoods	KT	Mark Hanson
	Akutan	Trident	KTM	Brett Joines
Dutch Harbor	Alyeska Seafoods	KTM	Frank Kelty	
	Westward	KT	Rick Petre	
	Royal Aleutian Processors	KTMD	Mike Newkirk	
	East Point Seafoods	KT	Lewis Seutz	
	San Souci Seafoods	KTMD	Nakata San	
	Unisea, Incorporated	KTM	Steve Stubbe	
St. Paul	Unipac	KTM	Julie Shane	
	Arctic Star (Icicle)	KTM	Mike Clutter	

FLOATER PROCESSORS

Alaskan I	T
All Alaskan	KT
Alaska Packer	T
Aleutian Falcon	T
Bering Star	T
Blue Wave	KT
Coastal Star	KT
Galaxy	KT
Independence	T
Midas	T
Mr. B	T
Northland	T
Ocean Pride	T
Omni Sea	T
Sea Alaska	KT
Snopac	T
Steller Sea	KT
Tempest	KT
Yard Arm Knot	KT

-Continued-

Table 1. (page 2 of 2)

Location	Company	*Products	Superintendent
<u>CATCHER PROCESSORS</u>			
	Alaskan Enterprise	T	
	Atka Enterprise	KT	
	Baranof	KT	
	Bountiful	T	
	Carolina Boy	M	
	Carolina Girl II	M	
	Courageous	KT	
	Deep Sea Harvester	KT	
	Evening Star	T	
	Fortune Hunter	M	
	Glacier Enterprise	KT	
	Golden Pisces	T	
	Gulf Wind	KT	
	Jacquelyn R	K	
	Karla Faye	KT	
	Kiska Enterprise	KT	
	Lorraine Carol	M	
	Mr. Big	M	
	Northern Enterprise	T	
	Olympic	KT	
	Pacific Wind	KT	
	Patricia Lee	K	
	Pavlof	KT	
	Pro Surveyor	T	
	Provider	M	
	Pursuit	M	
	Royal Enterprise	KT	
	Seawind	KT	
	Sjovind	KT	
	Southern Wind	KT	
	Tradewind	M	
	Western Enterprise	T	
	Westward Wind	KT	
	Yukon Queen	M	

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

Table 2. Westward Region king crab, shrimp, Tanner crab and Dungeness crab pounds, price per pound and value to the fishermen since, 1950-1993.

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

-Continued-

Table 2. (page 2 of 2)

Year	-----SHRIMP-----			-----KING CRAB-----			---TANNER CRAB ^a ---			--DUNGENESS CRAB--			-----TOTAL----	
	# ^b	Price ^c	Value ^d	# ^b	Price	Value ^d	# ^b	Price	Value ^d	# ^b	Price	Value ^d	# ^b	Value ^d
1979	44.6	.225	10.03	151.6	.95	144.02	84.2	.55	46.30	1.4	.75	1.05	314.0	211.06
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
1981	21.5	.27	5.81	85.3	2.0	170.60	4.0	.55	35.20	5.6	.70	3.92	214.40	226.08
1982	11.2	.27	3.02	38.5	3.75	144.48	39.5	.21	8.30	5.3	.75	3.98	118.5	229.19
1983	2.8	.35	.98	25.0	3.00	75.00	49.3	.65	32.05	5.90	1.05	6.20	91.3	130.60
1984	2.9	.33	.95	17.1	2.75	47.02	52.7	.26	13.70	6.0	1.40	8.40	70.8	86.22
1985	1.2	.20	.24	20.4	2.50	51.00	34.2	1.65	56.43	4.6	1.20	5.52	109.1	103.71
1986	.5	.25	.13	17.3	3.50	60.50	29.3	.73	21.38	1.2	1.15	1.38	128.7	144.99
1987	0.0	0.00	0.00	27.3	3.50	95.46	31.4	1.25	39.25	1.7	1.25	2.07	138.5	189.98
1988	Confidential			20.0	3.98	79.37	26.2	.35	9.17	2.3	1.06	2.44	167.6	209.86
1989	0.0	0.00	0.00	22.7	4.02	91.07	18.8	1.10	20.68	3.1	1.10	3.40	189.3	247.74
1990	0.0	0.00	0.00	34.7	4.21	145.93	26.0	.30	7.80	3.0	1.51	4.55	227.6	307.74
1991	0.0	0.00	0.00	28.3	2.94	83.25	18.4	1.50	27.60	1.5	1.50	2.04	400.4	297.64
1992	Confidential			19.1	3.79	72.56	64.5	.30	19.35	1.7	.86	1.43	370.4	284.85
1993	Confidential			26.6	3.47	92.30	13.2	1.90	25.08	1.7	.92	1.56	284.4	309.71
							96.5	.60	57.90					
							7.6	2.11	16.02					
							101.9	.75	76.43					
							9.9	2.36	23.40					
							135.4	.77	104.25					
							14.0	2.94	41.17					
							149.5	.75	112.10					
							28.2	1.91	53.86					
							161.7	.64	103.40					
							42.0	1.14	48.02					
							328.6	.50	164.30					
							34.3	1.55	53.21					
							315.3	.50	157.65					
							25.3	1.69	42.76					
							230.8	.75	173.10					

^a *C. bairdi* and *C. opilio*^b Millions of pounds^c Dollars^d Millions of dollars

Table 3. Historic domestic trawl shrimp catch, Alaska Westward Region, 1960-1993.

Calendar Year	Kodiak	Chignik	South Peninsula	Aleutians	Total
1960	3,379,000				3,379,000
1961	11,083,500				11,083,500
1962	12,654,300				12,654,300
1963	10,118,500				10,118,500
1964	3,946,900				3,946,900
1965	13,810,500				13,810,500
1966	24,097,100				24,097,100
1967	38,722,100	879,900			39,602,000
1968	34,468,700	1,153,700	4,137,400		39,759,800
1969	41,243,600	419,900	3,365,600		45,029,100
1970	62,369,300	1,226,800	4,634,700		68,230,800
1971	82,153,724	987,900	5,532,400		88,674,024
1972	58,352,319	4,829,800	14,740,800	94,627	78,017,546
1973	70,511,477	26,884,200	20,022,000	456,179	117,873,858
1974	48,771,375	23,392,400	26,145,900	5,749,407	104,059,082
1975	46,806,799	24,435,400	20,044,400	893,567	92,180,166
1976	51,400,472	27,059,700	37,170,300	3,670,609	119,301,081
1977	31,801,573	27,797,739	46,454,376	4,599,858	110,653,546
1978	22,820,135	22,976,720	11,812,795	6,618,263	64,227,913
1979	14,540,901	23,722,330	3,134,367	3,236,721	44,634,319
1980	27,783,437	12,843,270	C L O S E D	2,479,350	43,106,057
1981	19,030,341	70,948	C L O S E D	2,398,458	21,499,747
1982	10,884,059	0 ^a	0 ^a	341,551	11,225,610
1983	2,779,030	0 ^a	0 ^a	5,600	2,784,630
1984	3,023,438	0 ^a	0 ^a	0 ^a	3,023,438
1985	1,159,912	0 ^a	0 ^a	0 ^a	1,159,912
1986	453,468	0 ^a	0 ^a	0 ^a	453,468
1987	0 ^a	0 ^a	0 ^a	0 ^a	0 ^a
1988	Confidential ^b	0 ^a	0 ^a	0 ^a	Confidential ^b
1989	0 ^a	0 ^a	0 ^a	0 ^a	0 ^a
1990	0 ^a	0 ^a	0 ^a	0 ^a	0 ^a
1991	0 ^a	0 ^a	0 ^a	0 ^a	0 ^a
1992	0 ^a	0 ^a	0 ^a	Confidential ^b	Confidential ^b
1993	1,704	0 ^a	0 ^a	Confidential ^b	Confidential ^b
AVERAGE (Years Fished)	26,720,606	14,128,629	15,236,533	2,377,888	41,963,058

^a Season Open - No Catch Reported

^b Catches by less than three vessels remain confidential.

Table 4. Historic king crab catch by registration area for Alaska's Westward Region (in thousands of pounds), 1950-1993.

Year	K Kodiak	M Alaska Peninsula	O Dutch Harbor	R Adak	Q Bering Sea	T Bristol Bay	Total Westward Region	Foreign	Total
1950	60.0	2,124.0	0	0	0	0	2,184.0	0	2,184.0
1951	200.0	599.0	0	0	0	0	799.0	0	799.0
1952	400.0	298.0	0	0	0	0	698.0	0	698.0
1953	900.0	380.0	0	0	0	2,000.0	3,280.0	11,356.0	14,636.0
1954	4,000.0	317.0	0	0	0	2,329.0	6,646.0	8,086.0	14,732.0
1955	2,000.0	1,641.0	0	0	0	1,878.0	5,519.0	8,693.0	14,212.0
1956	4,800.0	4,221.0	0	0	0	1,896.0	10,917.0	8,308.0	19,225.0
1957	5,000.0	6,687.0	0	0	0	588.0	12,275.0	8,548.0	20,823.0
1958	5,200.0	7,246.0	0	0	0	7.0	12,453.0	8,136.0	20,589.0
1959	10,200.0	6,167.0	0	0	0	0	16,367.0	11,602.0	27,969.0
1960/61	21,064.0	6,700.0	0	2,093.7	0	598.0	30,456.5	24,611.0	55,067.5
1961/62	28,962.9	3,900.0	533.0	4,776.0	0	459.0	38,630.9	40,404.0	79,034.0
1962/63	37,626.7	2,273.0	1,536.0	8,006.5	0	74.0	49,543.2	49,516.2	102,782.2
1963/64	37,716.2	6,539.0	3,893.0	17,903.7	0	747.0	66,798.9	56,671.0	123,469.9
1964/65	41,596.5	14,354.0	13,761.0	21,193.0	0	910.0	91,815.0	63,076.0	154,891.3
1965/66	94,431.0	14,713.0	19,196.0	8,040.0	0	1,762.0	138,142.4	41,405.0	179,547.4
1966/67	73,817.8	22,577.0	32,852.0	5,883.1	0	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	0	3,102.0	103,460.4	32,528.0	135,988.4
1968/69	18,211.4	10,944.0	11,300.0	19,874.8	0	8,687.0	69,017.2	27,681.0	96,698.2
1969/70	12,200.5	4,137.0	8,950.0	19,055.4	0	10,403.0	54,745.9	14,113.0	68,858.9
1970/71	11,719.9	3,425.7	9,652.0	16,057.0	NF	8,559.2	49,913.6	12,930.0	62,843.6
1971/72	10,884.1	4,123.1	9,391.6	15,475.9	NF	12,995.8	52,869.7	6,188.0	59,057.7
1972/73	15,479.9	4,069.3	10,450.4	18,724.1	NF	21,744.9	70,490.7	4,721.0	75,211.7
1973/74	14,397.3	4,260.6	12,722.7	9,741.5	1,276.6	26,913.6	69,331.8	1,279.0	70,610.8
1974/75	23,582.7	4,572.1	13,991.1	2,775.0	7,107.3	42,266.3	94,274.0	2,618.0	96,892.0
1975/76	24,061.6	2,605.3	15,906.6	437.1	2,433.7	51,326.2	96,747.4	0	96,747.4
1976/77	17,966.8	958.8	10,198.4	2.3	8,356.1	63,919.7	101,399.8	0	101,399.8
1977/78	13,503.6	726.3	3,684.4	953.0	8,201.8 ^a	69,967.8	94,567.9	0	94,567.9
1978/79	12,021.8	3,093.8	6,824.1	807.2	10,387.7 ^a	87,618.3	119,933.7	0	119,933.7
1979/80	14,608.9	4,453.5	15,010.9	490.7	9,230.3 ^a	107,828.0	151,647.4	0	151,647.4
1980/81	20,448.6	5,080.6	19,053.6	1,478.4	11,543.8	129,948.5	89,668.8	0	189,423.3
1981/82	24,237.6	3,147.5	5,231.1	2,843.0	13,772.5	33,591.4	85,291.4	0	85,291.4
1982/83	8,729.2	1,627.7	1,616.2	9,708.1	13,447.3	3,001.2	38,497.8	0	38,497.8
1983/84	111.4 ^b	CLOSED	1,810.0	10,109.6	11,701.9	CLOSED	25,463.1	0	25,463.1
1984/85	22.2 ^b	CLOSED	1,521.1	5,508.7	4,701.3	4,182.4	17,115.2	0	17,115.2
1985/86	63.6 ^b	CLOSED	1,968.2	11,931.0	2,959.8	4,174.9	20,405.4	0	20,405.4
1986/87	146.5 ^b	CLOSED	1,869.2	13,510.2	1,262.1	11,393.9	17,308.5	0	17,308.5
1987/88	67.2 ^b	CLOSED	1,383.2	3,190.0 ^c	2,200.9	12,289.1	19,130.4	0	19,130.4

-Continued-

Table 4 (page 2 of 2)

Year	K Kodiak	M Alaska Peninsula	O Dutch Harbor	R Adak	Q Bering Sea	T Bristol Bay	Total Westward Region	Foreign	Total
1988/89	2.8 ^b	CLOSED	1,545.1	9,571.1 ^d	1,488.3	7,387.8	19,955.1	0	19,955.1
1989/90	*	CLOSED	1,852.2	9,251.9 ^d	1,428.2	10,264.8	22,657.8	0	22,657.8
1990/91	*	CLOSED	1,718.8	9,606.3	1,725.3	20,362.3	33,412.7	0	33,412.7
1991/92	0	CLOSED	1,447.7	6,128.7 ^d	3,372.1	17,177.9	28,126.4	0	28,126.4
1992/93	*	CLOSED	1,357.0	7,248.1 ^d	2,474.0	8,043.0	19,122.1	0	19,122.1
1993/94	*	CLOSED	915.5	5,368.4	5,675.0	14,628.6	26,587.5	0	26,587.5

*Confidential catch

^a Fishing year - July 1 through June 30

^b Brown crab, red king closed since 1982/83

^c Through January 31

^d Calendar year

Table 5. Westward Region historic Tanner crab *C. bairdi* and *C. opilio* catch (in pounds) for Alaska, 1965-1993.

Year ^a	Kodiak	Chignik ^b	South Peninsula	Eastern Aleutians	Western Aleutians	Bering Sea <i>C. opilio</i>	Bering Sea <i>C. bairdi</i>	Total U.S. Harvest	Total Foreign Harvest
1965	0	0	0	0	0	0	0	0	3,936,000
1966	0	0	0	0	0	0	0	0	7,290,000
1967	110,961	0	5,000	0	0	0	0	115,961	24,000,000
1968	2,560,687	0	131,700	0	0	0	17,900	2,710,287	30,940,000
1969	6,796,477	0	644,400	0	0	0	1,008,900	8,449,777	47,668,000
1970	7,749,859	0	2,022,427	0	0	0	1,014,700	11,259,447	47,828,000
1971	7,436,414	152,256	2,140,755	0	0	0	166,100	9,875,888	39,886,000
1972	11,898,054	23,343	3,618,883	0	0	0	107,761	15,662,354	31,186,000
1973	31,113,459	747,788	5,615,563	62,128	168,354	0	231,668	38,008,640	27,886,000
1974	25,479,717	4,202,671	9,503,366	498,836	71,887	0	5,044,197	43,409,968	27,912,000
1975	17,535,844	3,649,444	5,195,800	77,164	3,350	0	7,284,378	33,225,873	18,456,000
1976	23,446,245	6,926,161	11,201,941	534,295	62,180	0	22,341,475	64,818,920	19,286,000
1977	20,720,079	5,672,919	6,773,838	1,301,654	0	0	51,455,221	86,405,326	21,520,173
1978	33,271,472	4,693,830	7,446,270	2,624,016	237,512	1,716,124	66,648,954	116,014,238	33,057,796
1979	29,173,807	2,536,105	8,684,408	1,092,311	197,244	31,102,832	42,547,174	116,411,771	32,914,536
1980	18,623,875	3,517,920	3,961,251	879,807	337,297	39,344,323	36,614,315	103,507,133	15,636,125
1981	11,748,629	3,653,723	3,294,106	654,514	220,716	50,483,055	29,732,086	102,056,808	0
1982	13,756,159	3,240,526	4,589,042	739,694	838,627	29,351,474	11,008,779	63,542,301	0
1983	18,927,061	3,497,370	2,863,798	547,830	448,399	26,128,410	5,273,881	57,686,749	0
1984	14,789,903	659,043	1,789,883	239,395	191,954	26,813,074	1,208,223	45,691,225	0
1985	12,024,553	385,838	2,561,868	165,529	66,549	65,998,875	3,151,498	82,900,497	0
1986	8,974,520	184,907	3,763,761	166,939	72,441	97,984,539	0	109,674,455	0
1987	4,833,473	195,060	2,400,784	160,292	42,761	101,903,388	0	109,535,758	0
1988	3,888,906	183,111	3,328,809	309,918	169,289	134,060,185	2,210,394	144,150,612	0
1989	5,208,999	323,120	1,055,082	328,696	53,181	149,455,340	7,012,965	163,437,891	0
1990	3,456,314	0	0	171,785	48,746	161,742,748	24,549,299	189,968,822	0
1991	1,917,713	0	0	50,038	14,779	328,647,269	40,081,555	370,711,294	0
1992	2,400,213	0	0	98,703	7,825	315,302,034	31,796,381	349,605,156	0
1993	1,318,446	0	0	118,609	2,293	230,787,000	23,908,272	256,134,620	0
TOTAL	339,161,839	44,445,135	92,592,735	10,822,153	3,255,384	1,790,820,670	414,416,076	2,694,971,771	429,402,630
AVERAGE	12,561,549	2,339,218	4,025,771	515,404	162,769	111,926,292	17,267,337	99,813,769	26,837,664

^a Calendar year

^b Chignik and South Peninsula catches combined 1967 through 1970.

Table 6. Alaska Westward Region historic Dungeness crab catch (in pounds) by district, 1962-1993.

Calendar Year	Kodiak	Alaska Peninsula	Aleutians	Total
1962	1,904,567	0	0	1,904,567
1963	2,487,512	0	0	2,487,512
1964	4,162,182	0	0	4,162,182
1965	3,311,571	0	0	3,311,571
1966	1,148,600	0	0	1,148,600
1967	6,663,668	0	0	6,663,668
1968	6,829,061	1,259,000	0	8,088,061
1969	5,834,628	1,056,000	0	6,890,628
1970	5,741,438	13,000	0	5,754,438
1971	1,445,864	11,000	0	1,456,864
1972	2,059,536	65,000	0	2,124,536
1973	2,000,526	194,500	0	2,195,026
1974	750,057	0	60,517	810,574
1975	639,813	0	4,408	644,221
1976	87,110	0	0	87,110
1977	113,026	0	0	113,026
1978	1,362,306	0	0	1,362,306
1979	1,313,650	102,320	1,101	1,417,071
1980	2,011,736	0	0	2,011,736
1981	5,566,463	42,296	0	5,608,759
1982	4,546,311	779,600	36,034	5,361,945
1983	4,752,148	1,200,978	8,975	5,962,101
1984	5,304,921	647,497	91,736	6,044,154
1985	4,153,877	462,258	16,750	4,632,885
1986	965,095	179,367	10,897	1,155,359
1987	1,450,983	182,706	26,627	1,660,316
1988	2,125,032	179,022	22,634	2,326,688
1989	3,077,937	^a	11,124	3,089,061 ^b
1990	2,879,955	65,806	17,365	2,963,126
1991	1,414,499	80,248	7,412	1,502,159
1992	1,656,793	^a	5,649	1,662,442
1993	1,369,889	273,811	7,531	1,651,231
TOTAL	89,130,754	6,794,589^b	328,760	96,304,103^b
AVERAGE (years fished)	2,785,336	377,477^b	21,917	3,009,503^b

^a Catch confidential

^b Except 1989 and 1992 Alaska Peninsula confidential catch

ANNUAL MANAGEMENT REPORT FOR THE
SHELLFISH FISHERIES OF THE KODIAK AREA, 1993

BY

James A. Spalinger - Area Management Biologist
David R. Jackson - Assistant Area Management Biologist

Kodiak Area Office
211 Mission Road
Kodiak, Alaska 99615
(907) 486-1840

July 1994

KODIAK AREA

Introduction

The Kodiak shellfish management area is located in southcentral Alaska. The area includes Pacific Ocean waters south of the latitude of Cape Douglas (58°52' N. lat.) on the Alaska Peninsula, east of the longitude of Cape Kumlik (157°27' W. long.) and west of 148°50' W. longitude. The Management Unit varies slightly for shrimp, where it extends from the latitude of Cape Douglas to the longitude of Kilokak Rocks on the Alaska Peninsula (156°19'25"W. long.). This report reviews the 1993 seasonal shellfish fisheries within the area and provides a synopsis of all landings within the Kodiak area.

Tanner, Dungeness crabs, and scallops were the principal commercial shellfish species fished. A sea cucumber fishery also developed during 1993 with 50 fishermen participating. A small harvest of octopus, sea urchins, shrimp and brown king crab also occurred. The Kodiak Area has had historically important for the red king crab and trawl pink shrimp fisheries. Current red king crab population levels are depressed to the point which do not allow commercial harvests. Pink shrimp populations are similarly depressed however some areas remain open to exploratory shrimp fishing. Effort has been minimal.

Catches are reported by fishermen from individual statistical areas (Figure 1) and summarized by districts or sections (Figures 2, 3 and 4). At the port of Kodiak, 6.5 million pounds of shellfish were landed during 1993, a reduction from the 7.3 million pounds the previous year. The 1993 exvessel value of shellfish to the port of Kodiak equaled \$11.5 million (Table 1). This included shellfish harvested from other management areas, principally the Bering Sea, and landed in Kodiak. The single most valuable shellfish species delivered was *bairdi* Tanner crab worth \$5.2 million.

A discussion of each shellfishery appears in individual sections of this report. Vessels fishing for shellfish in the Kodiak area during 1993 ranged in size from less than 20 feet to over 120 feet in keel length (Table 2). During 1993 a total of ten emergency orders were issued for the king crab, Tanner crab, scallop and sea cucumber fisheries in the Kodiak management area (Table 3). Over 30,000 pots were utilized last year for Tanner and Dungeness crab fishing (Table 4).

Table 1. Landings and values of fisheries to the port of Kodiak, 1993.

Species	Pounds ^a	Exvessel Value ^b
Tanner		
<i>C. bairdi</i>	2,880,266	5,182,818
<i>C. opilio</i>	699,548	629,593
Dungeness	1,369,889	1,260,298
Red King Crab	437,672	1,874,351
Scallops	374,908	1,874,540
Sea Cucumbers	564,516	525,000
Miscellaneous Shellfish ^c	167,515	167,515
Groundfish	248,894,115	32,733,706
Halibut	10,099,000	12,825,730
Salmon ^d	134,984,766	32,908,816
Herring ^d	11,536,000	3,030,000
Sac Roe/Food/Bait		
Total	412,008,195	93,012,367

^a Represents pounds of product landed at the port of Kodiak including harvests outside the Kodiak management area.

^b Dollar value to fishermen inseason and does not reflect postseason settlements.

^c Includes octopus, shrimp, sea urchins and brown king crab.

^d Represents pounds of product harvested in the Kodiak management area.

Table 2. Keel length frequencies of Kodiak District shellfish vessels which made landings during the 1993 Tanner and Dungeness crab fishing seasons.

Vessel Keel Length (feet)	1992/93 Tanner Crab	1993 Dungeness Crab
<20	0	1
20-29.	0	5
30-39.	40	11
40-49.	50	10
50-59.	26	5
60-69.	11	7
70-79.	11	2
80-89.	1	1
90-99.	0	0
100-109.	0	0
110-119.	0	0
120-129.	1	0
130-139.	0	0
140-149.	0	0
>150	0	0
VESSELS	140	42

Table 3. Shellfish emergency orders issued for the Kodiak Management Area, 1993.

Emergency Order	Effective Date	Explanation
<u>Tanner Crab</u>		
4-S-1-93	January 15, 1993	Closed the Southeast, Westside, North Mainland, South Mainland, and Semidi Islands Sections at 12:00 noon on January 15, 1993.
4-S-3-93	February 8, 1993	Closed the Northeast, Eastside, and Southwest Sections at 12:00 noon on February 8, 1993.
<u>Scallop</u>		
4-S-4-93	February 26, 1993	Opened two areas South of Kodiak Island on February 26, 1993.
4-S-5-93	March 3, 1993	Closed two areas South of Kodiak Island at 12:00 noon on March 3, 1993.
4-S-8-93	May 24, 1993	Closed Area J at 8:00am on May 24, 1993.
4-S-13-93	August 5, 1993	Closed Shelikof portion at 12:00 noon on August 5, 1993.
4-S-24-93	November 24, 1993	Closed Northeast and Eastside areas of Kodiak at 12:00 noon on November 24, 1993.
<u>Sea Cucumber</u>		
4-S-11-93	July 5, 1993	Closed Eastside and Southeast Sections at 12:00 noon on July 5, 1993 until April 1, 1994.
4-S-12-93	August 15, 1993	Closed Northeast, Southwest and Westside sections at 12:00 noon on August 15, 1993.
<u>King Crab</u>		
4-S-20-93	September 25, 1993	Closed Kodiak Area to retain blue king crab fishing for 1993/94 season.

Table 4. Vessel and gear effort, by fishery and registration year for the Kodiak management area, 1988/89-1992/93.

	1988/89	1989/90	1990/91	1991/92	1992/93
<i>Tanner Crab</i>					
Average pots per vessel	100	113	70	69	69
Total vessels	171	233	137	143	140
Total pots on grounds	17,100	26,229	9,560	9,883	9,660
	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
<i>Dungeness Crab</i>					
Average pots per vessel	437	478	449	439	513
Total vessels	47	62	62	46	42
Total pots on grounds	20,593	29,625	27,825	20,228	21,533

TANNER CRAB

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

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

Historic Background

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

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

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

By the 1972/73 season market conditions had improved and Tanner crab had established itself as a dominant winter and spring fishery. In 1973 the department initiated an experimental survey program which used king crab pots as the means of capture. Although the program was designed to assess red king crab populations, Tanner crab work was included due to the fact that they

would readily enter king crab pots. The primary goals of these surveys were to estimate the annual relative abundance of crab and predict recruitment trends two to four years in advance of crab attaining commercial size. These estimates would allow the department to establish annual harvest levels.

During 1974 and 1975 the Alaska Board of Fisheries (BOF) set the first harvest levels on Tanner crab of 35 to 55 million pounds for Kodiak, Chignik and South Peninsula. Also in 1975, the Board adopted an April 30th closure to protect crab at the onset of mating. In 1976 the Board established a 5½ inch minimum size limit. This would allow males at least one full breeding season before becoming available for commercial harvest. The commercial fishery peaked during the 1977/78 season when over 45 million pounds were harvested. In 1978 the Federal Government entered into joint management responsibilities with the State of Alaska on the domestic Tanner crab fishery.

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

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

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

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

The joint Fishery Management Plan (FMP) was still in effect although there was considerable confusion over the enforcement and effective dates of regulations. The FMP was amended nine

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

In 1990 the BOF adopted a new pot limit for Kodiak. This pot limit was a sliding scale limit that decreased with decreasing harvest projections. The limit ranged from 150 to 15 pots per vessel. As crab stocks decreased these pot limits reduced the amount of gear on the fishing grounds and made inseason management less complicated. By the 1993 season a pot limit of 75 pots per vessel regardless of the survey estimate was established.

ADF&G has continued to conduct surveys in these areas and has most recently relied on trawl surveys to assess both king and Tanner crab populations. Legal crab populations are low or depressed in most areas, and recruitment to legal size animals for the next two years is not expected to increase. The Department has observed and recorded conditions of female egg clutches since the existence of the survey with no abnormalities observed. Successful reproduction is further substantiated by the high incidence of one and two year old crab captured in the trawl survey. The Department suspects that fish predation on small crab may be a major factor limiting Tanner crab from recruitment. The latest published survey information can be found in the ADF&G Technical Fishery Report 93-17.

1992/93 Fishery

The Alaska Department of Fish and Game conducted a summer trawl survey in 1992 to assess the Kodiak area Tanner crab populations. Guidelines for commercial fishery harvests were derived from population estimates as determined by the survey. On October 14, 1992, the department issued a news release detailing the harvest projections for the Kodiak Management District and fishing sections within the district.

A guideline harvest level of 1.1 million pounds of Tanner crab was projected for Kodiak with the possibility of an additional 400,000 pounds. The Northeast and Eastside sections were opened for 300,000 and 800,000 pounds, respectively. The department considered allowing a harvest of 400,000 pounds from the Southwest section with the stipulation that crab would be processed within the area. Restrictions of transporting crab from the Southwest section arose from concerns over the high rates of Bitter Crab Syndrome (BCS) in Alikak Bay. The remaining sections were closed due to the low abundance of legal-size crab and anticipated poor recruitment for the following year.

The 1992/93 Tanner season opened by regulation on January 15, 1993 (Table 1). Most fishermen did not set baited pots until January 29th, due to price negotiations. Tank inspections began on January 14th at 12:00 noon at Kodiak, Port Lions and Old Harbor and Lazy Bay.

One hundred forty (140) vessels fished for Tanner crab during the 10 day season that closed at 12:00 noon February 8, 1993. A total of 9,700 pots were utilized based on buoy sticker sales. This compares to 10,345 pots registered the previous season.

In the Northeast section, with a preseason guideline of 300,000 lbs had 41 vessels make landings from that section. The catch rates started at 23 crab per pot and declined to 16 crabs per pot by February 2nd. A total of 264,913 pounds were harvested from the Northeast section. The Eastside section had a preseason guideline of 800,000 pounds. Based on a 40% exploitation rate. There were 79 vessels that landed 728,191 pounds of Tanner crab from the Eastside section. The catch rates started at 20 crabs per pot and declined to less the 10 crab per pot inside the bay areas.

The Southwest section had a harvest guideline of 400,000 pounds. Special provisions were in place for this fishing due to the incidence of BCS. Twenty-two (22) vessels landed 325,342 pounds of crab from the section. Catch rates started at less than 20 crab per pot and declined to near 10 by February 3rd.

The total harvest for the Kodiak District during the 1992/93 season was 1,318,446 pounds taken by 140 vessels (Table 2). Crabs newly recruited to the fishery accounted for 82% of the catch (Figure 1). At the exvessel value of \$2.10 per pound this fishery was worth approximately \$2.8 million to the fishermen. Landings were recorded from 3 sections and 18 statistical areas within the Kodiak District (Tables 3 and 4).

Bitter Crab Syndrome (BCS)

Blood smears taken from Tanner crab in Alitak Bay during the 1992 summer trawl survey showed an 18.5% infection rate of BCS. This is a fatal blood disease found in Tanner crab that leaves the crab with an unpalatable flavor but is not dangerous to humans.

In the news release of 10/14/92, the department announced the requirement that all crab harvested in the Southwest section be processed in the Alitak Bay area, so as not to risk contaminating Tanner crab stocks in other areas of the District. In early January, crab industry representatives and ADF&G worked out a plan that would allow Southwest section crab to be processed in Kodiak. A news release was issued on January 7, 1993 that detailed preventive measures imposed to reduce the risk of spreading the disease. An emergency regulation was issued that required Tanner crab harvested in the Southwest section to be landed within the section. Permits for tenders were required and issued at the time of tank inspection. Provisions of this fishery contained the following stipulations:

- 1) Each fishing vessel and tender participating in the Southwest section fishery will be required to receive a tank check in Alitak Bay (Lazy Bay) prior to fishing or buying crab.
- 2) All legal Tanner crab harvested in the Southwest section will be transferred to a tender or processing facility in Alitak Bay. No fishing vessels will be allowed to transport or deliver Tanner crab captured in the Southwest section outside of Southwest section.

- 3) ADF&G personnel will be onboard tenders/or catcher vessels in Alitak Bay and dockside in Kodiak to inspect the delivered catch for "Bitter Crab".
- 4) All legal-size "Bitter Crab" specimens shall be delivered to either a tender or processing facility. Tenders shall delivery "Bitter Crab" specimens in totes to a processing plant for proper disposal. Catcher processors shall cook or incinerate all "Bitter Crab" specimens.

During the fishery, department personnel monitored all of the deliveries for bitter crab. Between 500 and 1200 pounds from each delivery were carefully examined. Very few sick crab were observed with the percentage at 1/2 of 1%. A total of 500 blood smears, 20 from each of 25 deliveries, were collected from commercially harvested crabs. Results of microscopic examination showed 1.5% of the crab were infected. Levels of BCS found during the winter pot fishery were considerable less than what was observed during the 1992 summer trawl survey.

Further work was planned for December of 1993 to study the seasonality and gear selectivity aspects of Bitter Crab Syndrome in Tanner crabs. Alitak Bay was surveyed with both trawl and pot gear to compare infection rates with that found during the 1993 summer trawl sampling. Initial results showed a lower rate in the December trawl samples with an even lesser rate from crabs captured in pot gear. Complete information from the study will be available in the ADF&G regional information report series.

Stock Status

The Department of Fish and Game conducted a summer trawl survey in 1993 to assess both red king and Tanner crab populations. Two hundred and twenty-two tows were successful in sampling crab habitat. Of 10,541 male Tanner crab captured, 2,136 were legal-sized animals (Figure 2).

The 1993 population of legal-size Tanner crab is estimated to be 2.7 million crabs for the area surveyed. This is similar to levels observed in the previous season. The population estimate of all sizes and both sexes totaled observed 50.0 million crabs. This is an approximately 43% increase from the 34.9 million crabs estimated in 1992. The increase was seen primarily in the smallest age classes of crab.

The highest populations of legal-sized male Tanner crabs were found in the Northeast, Eastside Southwest and North Mainland sections. It was determined that a small fishery could be conducted during the 1993/94 season in these sections without harming the reproductive potential of the stocks. Based on a targeted 40% exploitation rate of legal crabs, harvest guidelines were set at 300,000 pounds for the Northeast section, 500,000 pounds for the Eastside section, 300,000 pounds for the Southwest section and 200,000 pounds for the North Mainland section. The South Mainland also opened to fishing. This is an unsurveyed section that is bordered by sections scheduled to open so it also was made available to the fleet.

Table 1. History of Kodiak District Tanner crab opening and closing dates, 1977-1993.

Year	Opened	Closed
1977	Jan 1	Apr 30
1978	Jan 1	May 15
1979	Jan 5	May 15
1980	Jan 5	May 15
1981	Jan 22	May 15
1982	Feb 10	Apr 13
1983	Feb 10	Mar 14
1984	Feb 10	Apr 1
1985	Jan 15	Feb 18
1986	Jan 15	May 15
1987	Jan 15	Feb 28
1988	Jan 15	Mar 10
1989	Jan 15	Mar 31
1990	Jan 15	Feb 21
1991	Jan 15	Mar 31
1992	Jan 15	Jan 30
1993	Jan 15	Feb 8

Table 2. Commercial catch and effort for the Tanner crab *Chionoecetes bairdi*, Kodiak Management District, 1967-1993^a.

Year	Vssls	Lndngs	Number of crabs ^a	Number of lbs. ^a	Pots Lifted	CPUE	Avg. Wt.	Price Per #
1967	-	83	-	110,961	-	-	-	\$.07
1968	-	817	-	2,560,687	-	-	-	.10
1969	85	955	-	6,827,312	72,748	43	-	.11
1969/70	67	833	3,237,244	8,416,782	78,266	42	2.6	.11
1970/71	82	453	2,686,067	6,744,163	60,967	44	2.5	.11
1971/72	46	505	3,878,618	9,475,902	65,907	59	2.4	.13
1972/73	105	1,466	13,609,688	30,699,777	188,158	67	2.3	.17
1973/74	123	1,741	11,857,573	29,820,899	217,523	59	2.5	.20
1974/75	74	471	5,459,940	13,649,966	73,826	83	2.5	.17
1975/76	104	1,168	10,748,958	27,336,909	199,304	64	2.5	.20
1976/77	102	998	7,830,727	20,720,079	164,213	48	2.6	.33
1977/78	148	1,483	12,401,243	33,281,472	251,621	49	2.6	.43
1978/79	218	1,225	10,702,829	29,173,807	275,455	38	2.7	.55
1979/80	211	1,385	6,813,128	18,623,875	282,946	24	2.7	.55
1980/81	188	771	4,398,631	11,748,629	174,351	25	2.7	.65
1981/82	221	950	5,413,467	13,756,159	230,403	24	2.5	1.65
1982/83	348	1,439	7,744,812	18,927,061	377,562	21	2.4	1.25
1983/84	303	1,229	5,891,968	14,478,066	303,764	10	2.5	1.20
1984/85	214	710	4,567,037	12,024,553	176,830	26	2.6	1.50
1985/86	233	601	3,457,930	8,996,151	160,808	21	2.6	1.90
1986/87	189	503	1,830,365	4,833,473	110,963	16	2.6	2.62
1987/88	176	557	1,614,874	3,888,906	101,488	16	2.4	2.40
1988/89	171	567	2,106,320	5,208,999	86,556	24	2.5	3.05
1989/90	233	548	1,435,477	3,456,314	97,333	15	2.4	2.40
1990/91	137	448	764,107	1,917,713	54,110	14	2.5	1.59
1991/92	143	434	982,391	2,400,213	47,384	20	2.4	2.22
1992/93	140	353	518,982	1,318,446	43,528	12	2.5	2.10
<hr/>								
TOTAL	-	-	129,952,376	340,217,274	3,896,014	-	-	-
<hr/>								
AVERAGE	163	844	5,414,682	12,600,640	155,841	32	2.6	-

^a Data Source: Alaska Department of Fish and Game annual Board of Fish and Game Reports and annual Kodiak Area Management Report.

Table 3. Tanner crab *Chionoecetes bairdi* catch in pounds by fishing section for the Kodiak Management District, 1986/87-1992/93 Seasons.

Section	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93
Northeast	613,791	566,129	466,069	499,341	473,591	381,512	264,913
Eastside	1,814,094	273,821	606,875	1,049,868	756,848	2,018,701	728,191
Southeast	513,058	1,087,696	1,183,098	484,514	450,455	Closed	Closed
Southwest	475,122	1,143,306	1,703,723	307,427	Closed	Closed	325,342
Semidi Is.	16,336	12,290	*	*	*	Closed	Closed
N Mainland	710,730	388,751	1,042,462	824,106	157,072	Closed	Closed
S Mainland	26,434	5,778	*	*	0	Closed	Closed
Westside	663,908	411,135	206,772	291,058	79,747	Closed	Closed
TOTAL	4,833,473	3,888,906	5,208,999	3,456,314	1,917,713	2,400,213	1,318,446

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

Table 4. Tanner crab *Chionoecetes bairdi* catch, landings, vessel effort and catch per pot (CPUE) by statistical subarea for the Kodiak District, 1992/93. Average catch per pot unstandardized for soak period and gear type.

Stat Area	Vessels	Landings	Pounds Harvested	Average Weight	CPUE
525701	44	89	316,878	2.7	10
525702	27	32	278,220	2.5	12
525703	15	32	112,695	2.6	10
525731	11	33	29,841	2.5	7
525733	26	98	203,072	2.5	15
525805	3	12	12,245	2.3	10
535635	3	3	5,239	2.4	17
535707	5	14	17,452	2.5	9
545631	4	5	20,760	2.5	10
545632	18	25	220,829	2.5	14
545704	6	12	57,732	2.4	15
***** ^a	9	17	43,483	2.4	11
TOTAL	140	353	1,318,446	2.5	12

^a Where number of vessels were less than 3, statistical area totals have been combined to protect vessel confidentiality.

KODIAK DISTRICT TANNER CRAB

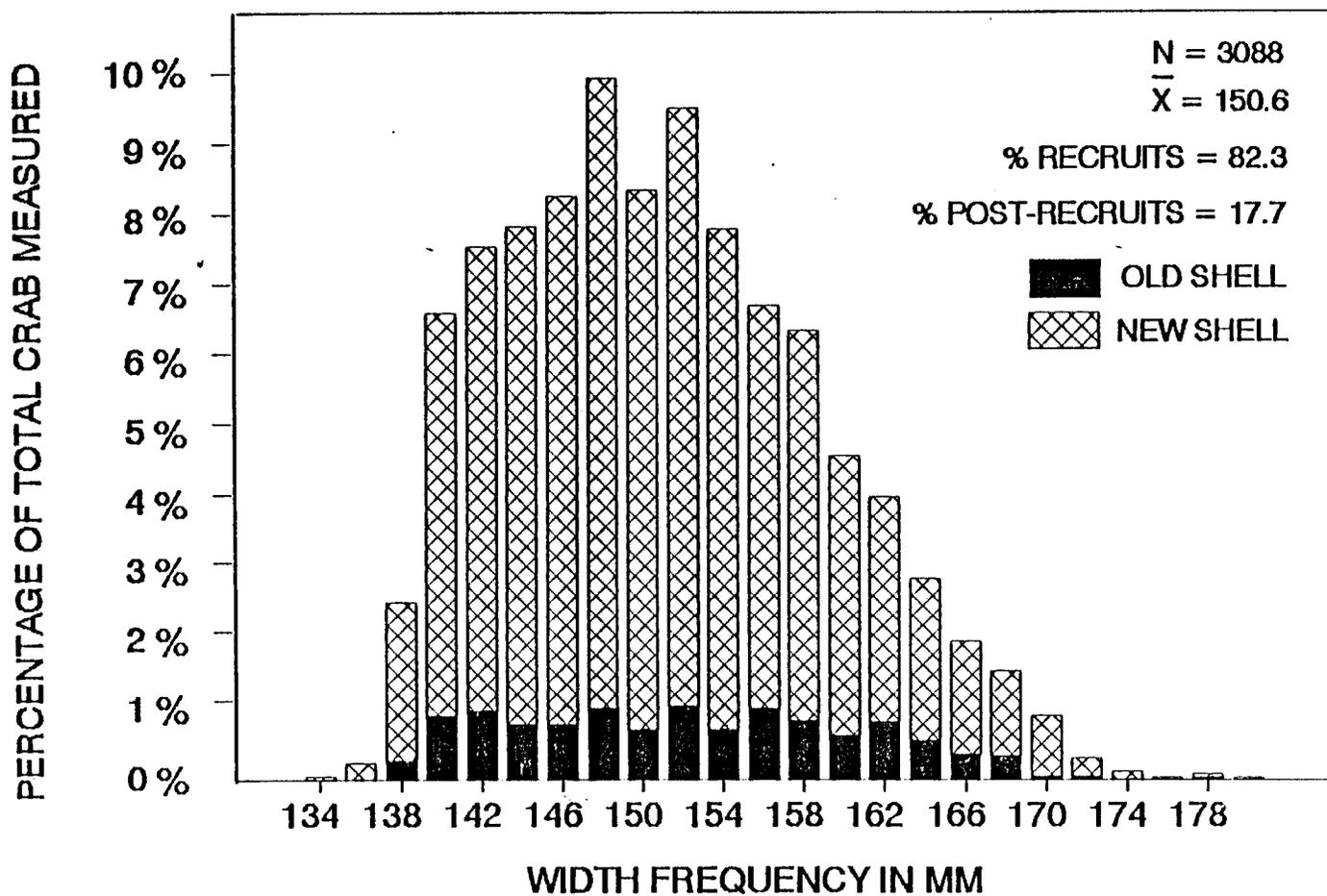


Figure 1. Tanner crab width frequencies from commercial fishery, 1992/93 fishing season.

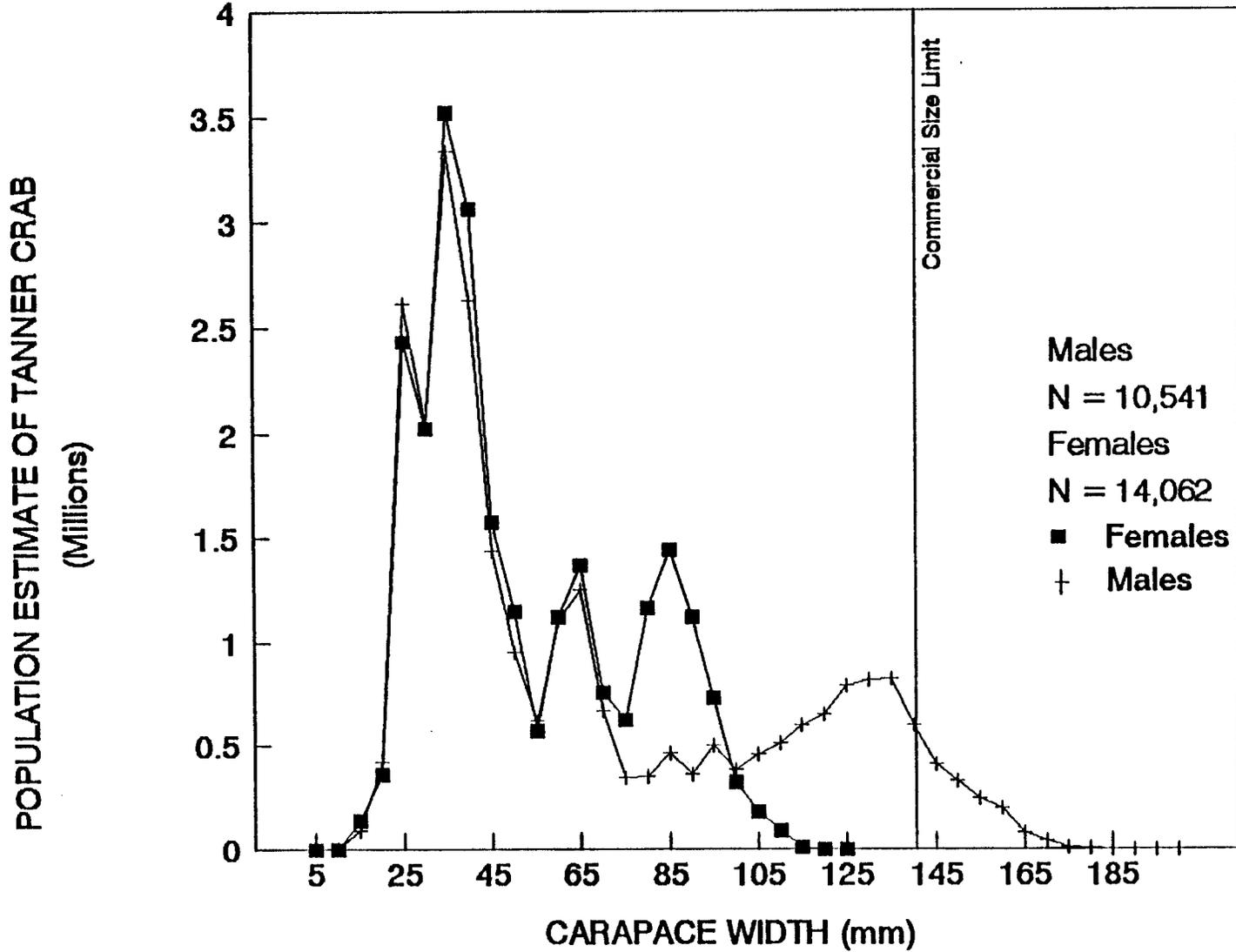


Figure 2. Carapace width frequency of male and female Tanner crab captured during the Kodiak trawl survey, 1993.

DUNGENESS CRAB

Historic Background

The first commercial Dungeness crab *Cancer magister* landings 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 was closed from April 1 to June 15 due to the high incidence of female king crab in shallow water. 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 and June 15 through December 31 for the southern portion (Figure 1). This closure period requires that crab pots be removed from the water and thus help to reduce the amount of "derelict" gear. Declines in other fisheries and favorable market conditions during the 1970's encouraged Dungeness fishing.

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

In 1992, the Department of Environmental Conservation (DEC) discovered the toxin causing paralytic shellfish poisoning (PSP) in the viscera of Dungeness crab. A drop in ex-vessel value was attributed to restrictions by DEC against the sale of whole cooked crabs.

1993 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, 1993. A total of 42 vessels made landings harvesting 1,369,889 pounds of Dungeness crab. This is similar to the 1992 harvest of 1.7 million pounds but only half of the 30 year average. (Table 1). The 1993 season catch was valued at \$1.3 million with an average price of \$.92 per pound. The Southeast Section continued to produce the majority of the harvest (57%) with the 1993 catch at 0.8 million pounds (Table 2). July, August, and September were the most productive months (Table 3).

The 1993 season was marked by the continued discovery of the toxin causing PSP in the viscera of Dungeness crab. Whole cook markets were again restricted and consumers were warned of the danger of eating crab "butter". The Department of Environmental Conservation (DEC) established action levels for monitoring Dungeness crab in Alaska. When in season samples from a particular monitoring area reached the action levels, the product from that area had to be eviscerated. Several bulletins were issued from DEC that specified no live Dungeness crab sales.

Stock Status

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

Table 1. Dungeness crab commercial catch and effort by fishing year for the Kodiak Management District, 1962-1993.

Year	Lndgs	Vsals	-----Commercial No. Crab	Catch----- No. Pounds	Pots Lifted	Avg Lbs Per Lndg	CPUE	Avg Price Per Lb	Exvessel Dollars
1962 ^a	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 ^b				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 ^c	466	50	2,614,545	5,566,463	295,138	11,945	9	.70	3,897,000
1982/83 ^d	991	111	2,004,075	4,546,311	481,542	4,588	4	.75	3,410,000
1983/84	1,079	103	2,044,505	4,752,148	503,464	4,408	4	1.05	4,989,000
1984/85	1,163	106	2,393,974	5,303,052	627,441	4,564	4	1.45	7,689,000
1985 ^e	1,243	125	1,791,446	4,160,435	599,291	3,347	3	1.20	4,992,522
1986	577	81	439,738	967,423	199,881	1,667	2	1.15	1,112,500
1987	379	45	747,117	1,450,983	150,067	3,828	5	1.26	1,828,000
1988	363	50	1,064,387	2,125,114	203,217	5,854	5	1.06	2,253,000
1989	359	47	1,428,973	3,077,937	185,242	8,574	8	1.10	3,385,730
1990	519	62	1,294,241	2,937,306	296,168	5,660	4	1.54	4,435,000
1991	732	62	695,470	1,414,499	279,872	1,932	2	1.37	1,938,000
1992	501	46	805,215	1,656,793	218,602	3,306	4	.86	1,425,000
1993	263	42	647,736	1,369,889	180,534	5,209	4	.92	1,260,000
Average	428	45	999,464	2,792,278	226,891	7,609	4	.63	1,666,354

^a Season open year round 1962 - 1976

^b Open May 1 through December 31, 1977 - 1980

^c Open February 27, 1981 through February 1, 1982

^d Open May 1, 1982 through February 1, 1983

^e Open May 1, 1985 through December 31, 1985

Table 2. Dungeness crab commercial harvest (in pounds) by fishing section, Kodiak Management District, 1987-1993.

Section	1987	1988	1989	1990	1991	1992	1993
Northeast	102,997	149,992	113,211	65,703	226,187	201,984	34,080
Eastside	173,438	177,523	193,200	170,081	141,053	270,370	115,421
Southeast	751,793	1,126,298	2,323,771	2,479,534	805,459	859,492	776,258
Southwest	84,352	190,280	165,401	101,376	50,183	89,342	95,128
N Mainland	106,449	97,924 ^a	^b	18,723	36,831	36,202	68,325
S Mainland	9,990	^b	0	0	^b	0	^a
Westside	221,964	383,097	282,354 ^c	101,889	114,786	199,403	280,677
Semidi Is.	0	0	0	0	0	0	0
Total	1,450,983	2,125,114	3,077,937	2,937,306	1,414,499	2,937,306	1,369,889

^a North Mainland and South Mainland catches combined to protect vessel confidentiality.

^b Confidential

^c North Mainland and Westside Section catches combined to protect vessel confidentiality.

Table 3. Kodiak Dungeness crab catch statistics for the Kodiak District, 1993. Average catch per pot unstandardized for soak period and gear type.

STAT AREA	NO. VSSLS	NO. LNDGS	POUNDS HARVESTED	AVG. WT.	CPUE	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
525701	4	31	100,894	2.04	2.7	918	7,482	39,952	22,676	19,517	8,546	1,803	0
525731	5	16	10,911	2.00	1.4	2,987	1,871	1,239	2,407	0	1,490	0	91
525733	12	56	23,169	2.03	1.6	2,263	4,482	10,784	2,975	1,491	1,110	64	0
535701	4	25	211,442	2.03	3.5	10,104	9,997	20,838	10,953	36,066	49,064	46,432	2,798
535703	3	9	13,630	2.08	2.7	2,823	1,042	5,572	4,193	0	0	0	0
535732	3	30	62,234	1.93	3.1	750	9,832	10,379	13,336	6,510	9,829	7,900	369
545601	14	63	689,199	2.18	4.2	0	64,718	225,067	109,249	163,521	90,234	36,410	0
545602	3	7	48,873	2.38	4.8	0	0	0	0	21,199	18,219	7,772	168
545632	6	13	65,074	2.03	4.3	0	26,643	16,212	11,521	6,598	4,100	0	0
545633	3	5	21,997	2.03	3.1	0	0	18,153	1,524	2,320	0	0	0
545802	4	17	34,634	2.17	3.4	0	3,544	11,688	15,747	0	3,655	0	0
*	15	29	87,882	2.08	3.7	0	9,561	12,519	15,661	24,046	20,001	2,190	385
TOTAL	42	263	1,369,889	2.11	3.6	19,845	139,172	372,403	210,242	281,268	206,248	102,571	3,814

* Stat area totals have been combined to protect vessel confidentiality

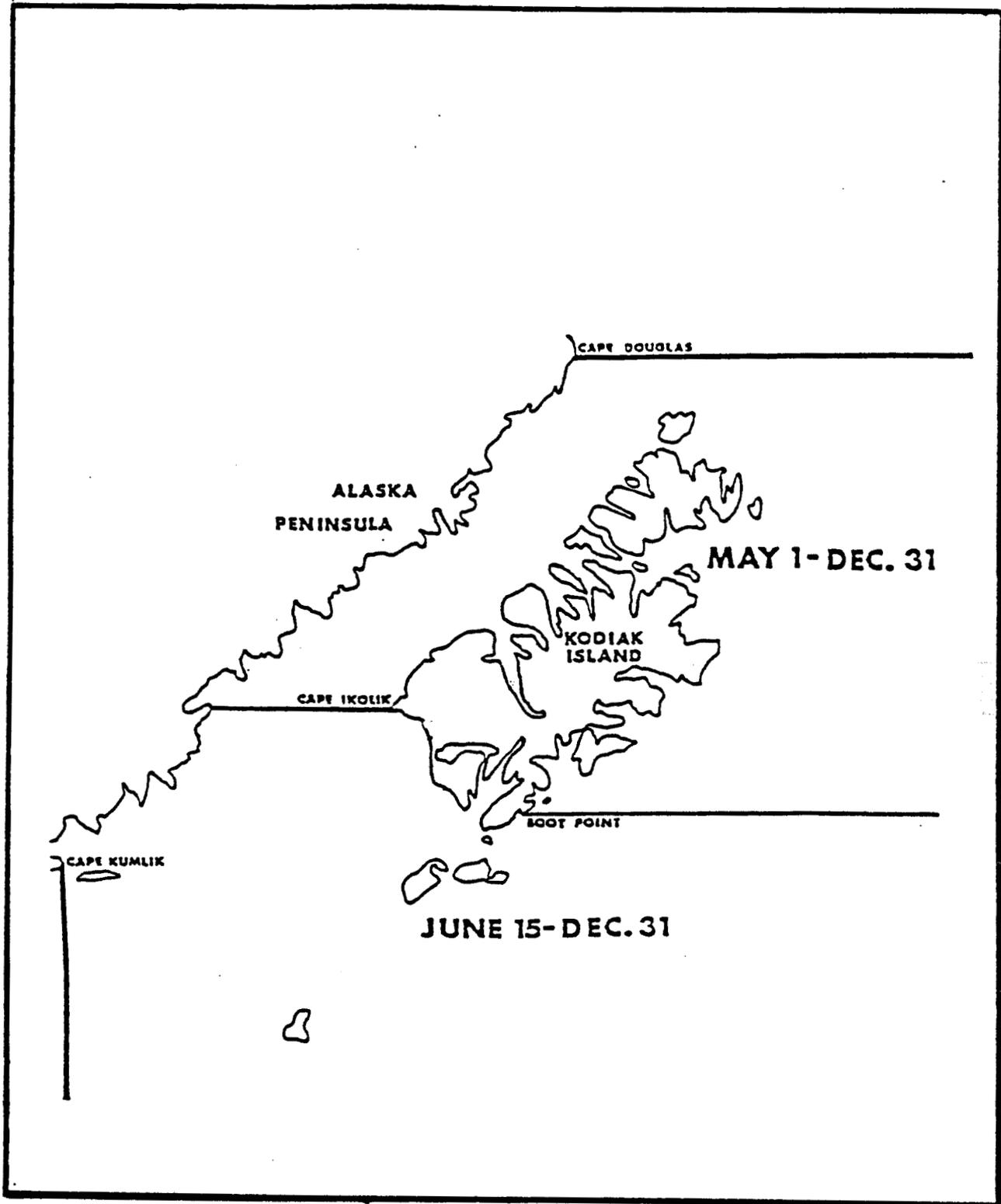


FIGURE 1. KODIAK DISTRICT COMMERCIAL DUNGENESS CRAB FISHING SEASONS.

KODIAK DISTRICT DUNGENESS CRAB

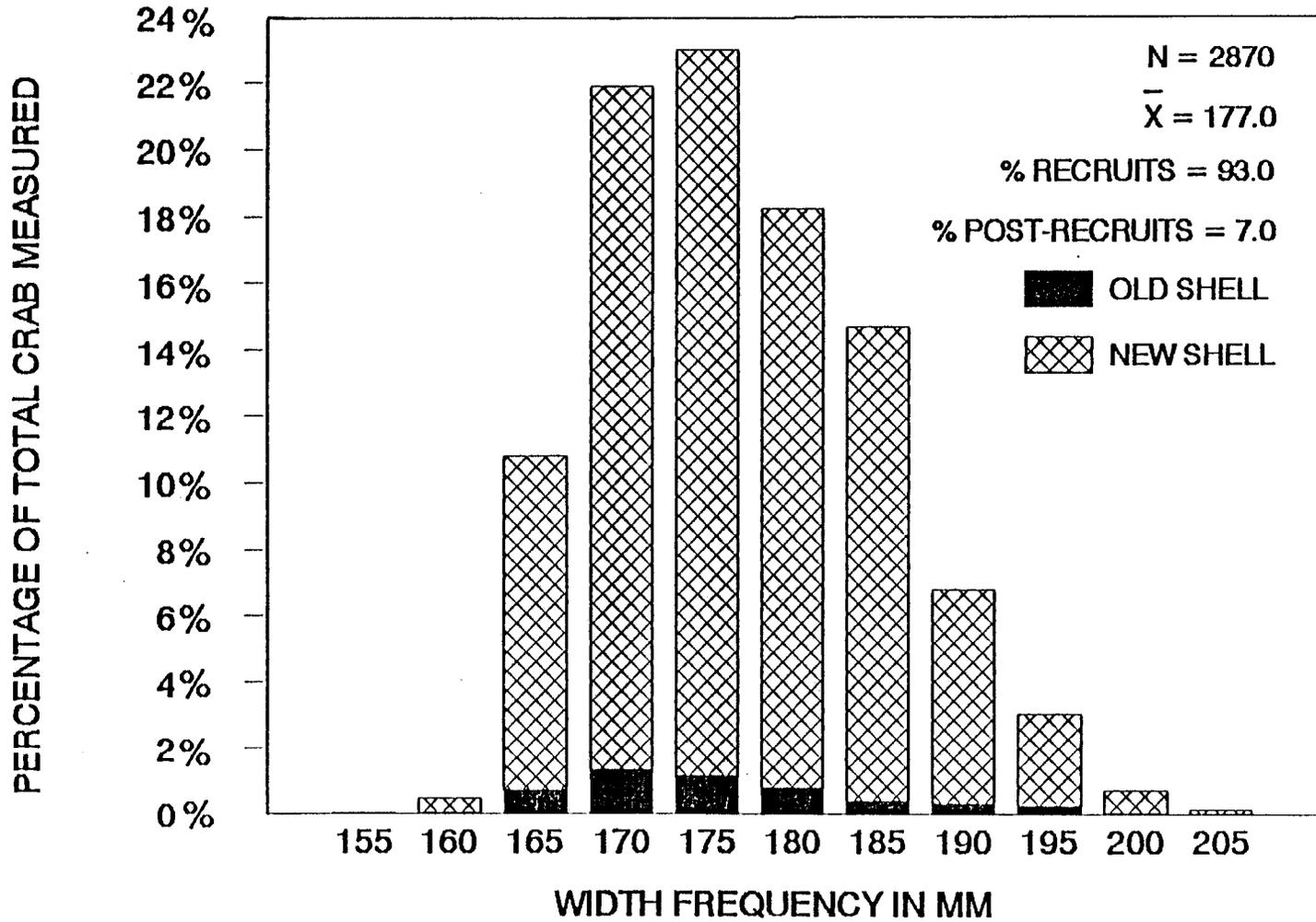


Figure 2. Kodiak District commercial Dungeness crab width frequencies, 1993.

KING CRAB

Introduction

This report will cover the commercial king crab fishery for Kodiak and the Alaska Peninsula. The Kodiak Management Area has its northern boundary at the latitude of Cape Douglas and a western boundary at the longitude of Cape Kumlik. Although this discussion will focus on the development of the commercial fishery and regulatory process in the Kodiak Management Area, the management strategies for the Alaska Peninsula and as other areas of the state were tailored after those developed for the Kodiak Area.

Historic Background

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

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

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

In 1960 the king crab season was opened year around. Eight processors bought 21 million pounds of king crab at 8 cents per pound from 143 vessels (Table 1). The months of January and February accounted for approximately 50 percent of the harvest. In 1961 the Department recommended that more research was needed to determine the various stocks breeding habits, age and size of maturity before more regulations were instituted. In 1963 the size limit was increased to 7 inches based on Kodiak area growth rate studies and to allow male king crab to breed at least one year before being available to the fishery. The early sixties saw continued growth in the fishery until 1964 when the Good Friday earthquake slowed production. Even with the earthquake, the 1964 harvest equalled the 37 million pound harvest of 1963.

In 1965 the 30 pot limit was no longer in the regulations. A new shell crab closure went into effect from May 1 to June 30 (Table 2). There were 19 shellfish processors in Kodiak paying 10 cents per pound. The Department had completed king crab tagging studies and had defined

four major separate stocks of crab. Also in 1965, the staff report to the Fish and Game Board stated that the stocks could not continue to support the large harvests that were then occurring. The staff recommended the implementation of a quota system to curtail the harvest. No numbers were provided by the staff and no action was taken by the Board.

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

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

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

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

1. To develop and establish a stable fishery, with the objective of eliminating fluctuating harvests characteristic of the fishery.
2. To develop and maintain a broad base of various age classes in order to insure breeding success.

ADF&G was to present estimates of abundance to the Board, which set the quotas. Quotas were not to be increased unless the Board was notified two weeks in advance. The quotas set by the Board were intended not only to arrest the decline of the king crab fishery but also to return a degree of economic stability and cost effectiveness. Sometimes these quotas resulted in very low fishing mortalities of 20 to 30 percent and carried over large numbers of crabs to following years. This stock pile effect caused extremely short, fast paced seasons. Many areas historically fished later in the year were left unharvested. In 1971 the Board increased the pot limit to 75 pots per vessel. By 1972 the decline had been reversed and harvests started increasing. The 1973 fishery lasted 10 days under a fixed quota system and the Southern District was reopened for an additional eight day fishery.

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

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

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

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

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

Also in 1981 the Board increased the pot limit to 150 pots per vessel. The 1981/82 season's harvest was the highest of the previous 14 years at 24.2 million pounds. This was followed by the 1982/83 season harvest of 8.7 million pounds, the lowest in 24 years. Although this season's harvest was low, the value of the fishery was the second highest, worth \$32.7 million. The effort level for this fishery is also the highest on record with 309 vessels participating.

In 1983 the traditional red king crab fishery was not opened by the Department of Fish and Game due to poor stock condition. This was a result of poor recruitment to legal-sized animals 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 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 crabs was nearly twofold the 5.5 million pound estimate of the 1983 survey. Additionally in 1983 the Alaska Board of Fisheries lowered the pot limit to 100 pots per vessel.

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

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

In 1987 a trawl survey was conducted throughout the management area for the first time to assess both red king and Tanner crab stocks. Previous ADF&G trawl surveys had been limited to Tanner crab assessment in the Shelikof and portions of the Northeast and Eastside Sections of Kodiak Island. Offshore areas of Chignik and Pavlof Bay in the South Peninsula had also been surveyed. This trawl survey estimated a population of 310,000 adult female red king crab around Kodiak of which 47% were not carrying egg clutches. Additionally the estimate of legal males was 177,000 crabs, the lowest estimate in the history of the survey. The 1987 survey results indicated a continuation of the decline in red king crab abundance that had been noted the past five years and the commercial fishery again remained closed. The 1993/94 fishing season was closed prior to the scheduled September 25th opening.

During 1988 through 1993, the department has continued trawl surveys to assess king and Tanner crab populations with the study areas expanded to encompass the Alaska Peninsula Management Area. Population estimates were derived for the main commercial fishing districts by sex and size categories. The Alaska Peninsula and Kodiak Management Areas continued to remain closed due to abundance estimates of females well below threshold levels. Complete information on the Westward Region trawl survey catches can be obtained from the department in a series of Regional Information Reports.

Stock Status

The Kodiak red king crab population remains at historically low population levels, and the fishing seasons for this species have remained closed since 1983. During the 1993 Kodiak trawl survey, one hundred and ninety-one male and one hundred nineteen female king crab were captured in 8% of the tows (Figure 1). Catches ranged from one animal per tow to a high of 166 king crabs in Uyak Bay. The 1993 Kodiak red king crab population was estimated to be 107,000 animals of which 72,000 were legal size males (Table 3). The adult female red king crab population was estimated to be approximately 10,000 crabs (Table 4). Sixty-nine percent of the adult female crab sampled had an ovigerity of 80% or greater.

Table 1. Historic commercial red king crab catch and effort for the Kodiak Registration Area 'K', 1960/61-1993/94.

Fishing Year ^a	Vessels	Landings	No. of Crab	No. of Pounds	Pots Lifted	CPUE	Average	
							Wt. Per Crab	Price Per #
1960/61	143	-	2,116,375	21,064,871	-	-	-	\$.085
1961/62	148	-	3,181,554	28,962,900	-	-	-	.95
1962/63	195	-	4,146,143	37,626,703	-	-	-	.10
1963/64	181	-	4,158,988	37,716,223	-	-	-	.10
1964/65	189	-	4,923,309	41,596,518	95,951	51	-	.10
1965/66	175	-	11,061,709	94,431,026	173,083	64	-	.128
1966/67 ^b	213	-	8,476,299	73,817,779	223,174	38	-	.11
1967/68	227	3,847	5,147,321	43,448,492	207,392	25	-	.26
1968/69	178	1,839	2,348,950	18,211,485	119,146	20	-	.26
1969/70 ^c	136	978	1,606,181	12,200,571	96,841	17	-	.28
1970/71	100	830	1,561,318	11,719,970	119,192	13	-	.30
1971/72	89	507	1,539,157	10,884,152	66,166	23	-	.39
1972/73	88	683	2,029,670	15,479,916	70,806	29	-	.55
1973/74	129	837	1,847,679	14,397,287	77,826	24	-	.45
1974/75	158	1,195	2,910,201	23,582,720	110,297	26	-	.45
1975/76	169	1,569	2,976,909	24,061,651	113,795	26	8.1	.66
1976/77	195	1,165	2,177,956	17,966,846	130,777	17	8.2	1.37
1977/78	179	1,186	1,590,477	13,503,666	145,867	11	8.5	1.34
1978/79	194	1,077	1,464,021	12,021,850	177,261	8	8.2	1.60
1979/80	247	1,346	1,979,394	14,608,900	207,991	9	7.3	.95
1980/81	164	1,175	2,787,199	20,448,654	201,531	14	7.3	1.05
1981/82	246	2,214	3,035,674	24,237,601	388,751	8	8.0	2.00
1982/83	309	1,373	1,011,109	8,729,761	283,795	4	8.6	3.75
1983/84			NO FISHERY	- SEASON CLOSED				
1984/85			NO FISHERY	- SEASON CLOSED				
1985/86			NO FISHERY	- SEASON CLOSED				
1986/87			NO FISHERY	- SEASON CLOSED				
1987/88			NO FISHERY	- SEASON CLOSED				
1988/89			NO FISHERY	- SEASON CLOSED				
1989/90			NO FISHERY	- SEASON CLOSED				
1990/91			NO FISHERY	- SEASON CLOSED				
1991/92			NO FISHERY	- SEASON CLOSED				
1992/93			NO FISHERY	- SEASON CLOSED				
1993/94			NO FISHERY	- SEASON CLOSED				
AVERAGE^d	174	1,359	2,963,898	24,834,120	143,813	21	-	-

^a Fishing year defined as May 1 - April 30.

^b July 1 - April 30 season established.

^c August 15-January 15 season established.

^d Average includes only years with open fishing season.

Table 2. Kodiak red king crab harvest composition and seasons, 1960/61-1993/94.

Season	Open	Closed	Catch Million Pounds	Percent Recruits ^a	Percent Post- Recruits	Size Limit
1960/61	Jul 1	Jun 30	18.9	8	92	6½"
1961/62	Jul 1	Jun 30	29.0	36	64	6½"
1962/63	Jul 1	Jun 30	37.6	26	74	6½"
1963/64	Jul 1	Jun 30	35.0	33	67	7"
1964/65	Jul 1	Jun 30	41.6	48	52	7"
1965/66	Jul 1	Apr 30	94.4	35	65	7"
1966/67	Jul 1	Apr 30	73.8	28	72	7"
1967/68	Jul 1	Apr 30	43.4	27	73	7"
1968/69	Jun 15	Mar 31	18.2	61	39	7"
1969/70	Aug 15	Jan 15	12.2	59	41	7"
1970/71	Aug 15	Jan 15	11.7	38	62	7"
1971/72	Aug 15	Oct 29	10.9	75	25	7"
1972/73	Aug 15	Oct 13	15.5	47	53	7"
1973/74	Aug 15	Oct 25	14.4	49	51	7"
1974/75	Aug 15	Sep 21	20.9	52	48	7"
	Oct 15	Jan 15	2.2	3	97	8"
1975/76	Aug 15	Oct 20	21.6	48	52	7"
	Oct 20	Dec 1	2.5	3	97	8" ^b
1976/77	Sep 1	Oct 16	14.6	33	67	7"
	Dec 1	Jan 15	3.1	.5	99.5	8"
1977/78	Sep 15	Nov 30	11.7	37	63	7"
	Dec 1	Jan 15	1.8	.7	99.3	8"
1978/79	Sep 10	Nov 30	10.3	44	56	7"
	Dec 1	Jan 15	1.7	15	85	7½"
1979/80	Sep 10	Nov 30	13.4	70	30	7"
	Dec 1	Jan 15	1.2	30	70	7½"
1980/81	Sep 15	Nov 30	18.4	69	31	7"
	Dec 1	Jan 15	2.1	22	78	7½" ^c
1981/82	Sep 15	Dec 15	20.3	61	39	7"
	Dec 15	Jan 15	3.9	7	93	7½"
1982/83	Sep 1	Dec 10	7.5	46	54	7"
	Dec 10	Dec 19	1.2	19	81	7½"
1983/84			FISHERY CLOSED			
1984/85 ^d			FISHERY CLOSED			
1985/86			FISHERY CLOSED			
1986/87 ^e			FISHERY CLOSED			
1987/88			FISHERY CLOSED			
1988/89			FISHERY CLOSED			
1989/90			FISHERY CLOSED			
1990/91			FISHERY CLOSED			
1991/92			FISHERY CLOSED			
1992/93			FISHERY CLOSED			
1993/94			FISHERY CLOSED			

^a Recruitment after 1963 based on 7" size limit.

^b Marmot Bay, Chiniak Bay and Kupreanof Strait did not open for 8" crab.

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

^d Harvest of crab by test fishery - 33,743 pounds.

^e Harvest of crab by test fishery - 13,393 pounds.

Table 3. Legal male red king crab abundance estimates for the Kodiak area, 1973-1993.

Year	Estimate in No. of Animals $\times 10^6$
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 ^a	0.177
1988 ^a	0.110
1989 ^a	0.240
1990 ^a	0.119
1991 ^a	0.064
1992 ^a	0.060
1993 ^a	0.072

^a Trawl Survey

Table 4. Adult female red king crab *Paralithodes camtschaticus* estimates by district for the Kodiak area (millions of animals). 1993.

	Threshold	1993 Trawl Estimate
District 1 (Northeast)	1.93	.004
District 2 (Southeast)	0.72	.003
District 3 (Southwest)	2.28	.002
District 4 (Shelikof)	0.19	.001
TOTAL	5.12	.01

Table 5. Historic commercial brown king crab *Lithodes aequispina* catch and effort for the Kodiak Registration Area 'K', 1983-1993.

Fishing Year	Landings	Vessels	No. of Crabs	No. of Pounds	Pots Lifted	Average			Exvessel Value (Millions)
						Crab Per Pot	Wt. Per Crab	Price Per Pound	
1983	36	12	16,349	111,398	8,490	2	6.8	3.00	.3
1984	8	6	3,513	22,066	1,950	2	6.3	2.50	.1
1985	19	4	10,005	63,641	2,693	4	6.4	1.95	.1
1986	31	4	21,862	146,478	5,463	4	6.7	3.00	.4
1987	38	5	9,484	67,191	3,187	3	7.1	3.44	.2
1988			----- Confidential -----						
1989			----- Confidential -----						
1990	6	3	1,214	7,314	1,090	1	6.02	3.00	.02
1991	0	0	0	0	0				
1992			----- Confidential -----						
1993			----- Confidential -----						
AVERAGE*	20	5	8,814	59,090	3,181	3	-	-	-

*Average for years with nonconfidential catch

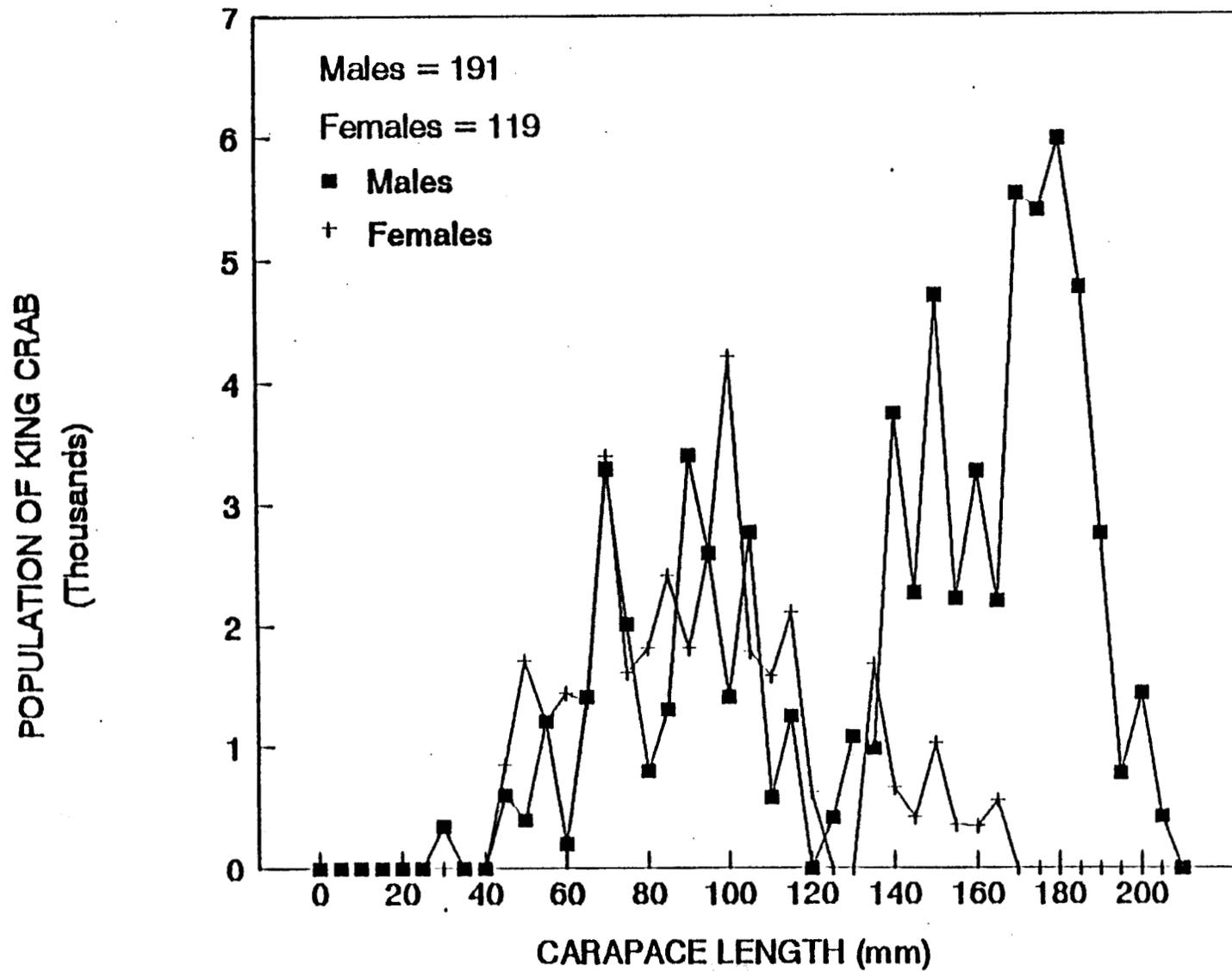


Figure 1. Carapace length frequency of male and female king crab, *paralithodes camtschaticus*, captured during the Kodiak trawl survey, 1993.

SHRIMP

Trawl Fishery Historic Background

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

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

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

The Department of Fish and Game conducted a voluntary logbook program beginning in 1967. This database, plus trawl surveys conducted by the department since the early 1970's, provided

means for establishing harvest levels by the late 1970's. This database and harvest adjustment system was quite flexible during its developing stage. By 1981 industry demanded this flexible management scheme be defined. This led to the *Westward Region Shrimp Management Plan* which was presented to the Board of Fisheries in April 1982. This plan was reviewed by the Board, and amendments in certain areas were made at the Board's request. The objectives of this management plan are to maintain shrimp stocks at a level termed "representative biomass index" (RBI) determined by survey trawls, 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. This "minimum acceptable biomass index" (MABI) is 40 percent of the representative index level.

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

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

(b) The Board is adopting this management plan for all water 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;
- (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 eight years. The Mainland fishery, while open, has steadily declined in both production and area fished.

1993/94 Trawl Fishery

The trawl fishery opened in the Kodiak District on June 15, 1993 and closed February 28, 1994. The areas open to shrimp trawl fishing were the areas under the *Mainland Shrimp Management Plan*, undefined areas and North Afognak (Figure 1). During the 1993/94 season there were three vessels registered to fish shrimp. Exploration was brief and only 1,704 pounds were landed (Table 1).

Stock Status

During 1992 the Department conducted a trawl survey for shrimp in the Westward Region. Population estimates for each section in Kodiak are listed on Table 2. All sections remained below the level required by the Westward Region Shrimp Management Plan to warrant an opening.

Stocks in the Kodiak District remain at depressed levels. There appears to be little if any improvement in stock conditions overall. Areas under the *Mainland Shrimp Management Plan*, while remaining open, continue to have little or no production.

Pot Shrimp Fishery

Currently, no assessment of stock size or condition is conducted by the Department other than information from the fleet. No pot shrimp harvest occurred during 1993 (Table 3).

Table 1. Historic commercial trawl shrimp catch and effort for the Kodiak District of Westward Statistical Area 'J', 1958-1993.

Calendar Year	Fishing Year	Vessels	Landings	Commercial Pounds	Per vessel Price
1958		-	-	31,886	\$.035
1959		-	-	2,861,900	.035
1960		11	94	3,197,985	.039
1961		12	203	11,083,500	.04
1962		11	204	12,654,027	.04
1963		-	-	10,118,472	.043
1964		6	-	4,339,114	.04
1965		11	320	13,823,061	.04
1966		17	551	24,097,141	.045
1967		23	-	38,267,856	.045
1968		16	-	34,468,713	.04
1969		26	935	41,353,461	.055
1970		18	1,024	62,181,204	.04
1971		49	1,746	82,153,724	.04
1972		63	1,398	58,352,319	.04
1973		50	1,283	70,511,477	.055
	1973/74	63	1,029	56,203,992	.08
	1974/75	75	1,100	58,235,982	.08
	1975/76	58	884	49,086,591	.08
	1976/77	62	762	46,712,083	.10
	1977/78	58	653	26,409,366	.13
	1978/79	50	328	20,506,021	.165
	1979/80	37	242	12,863,536	.225
	1980/81	67	462	27,101,218	.29
	1981/82	55	298	19,112,367	.27
	1982/83	40	224	10,391,207	.27
	1983/84	14	63	2,779,030	.35
	1984/85	13	59	2,942,922	.33
	1985/86	5	26	1,145,980	.20
	1986/87		Confidential		
	1987/88		Confidential		
	1988/89	0	0	0	.00
	1989/90	0	0	0	.00
	1990/91	0	0	0	.00
	1991/92	0	0	0	.00
	1992/93	0	0	0	.00
	1993/94	3	3	1,704	N.A
Fishing Year Averages*		33	556	25,917,820	\$.12

*Average calculated from years 1960-1985.

Table 2. Shrimp population indices from surveyed Westward Region fishing sections, 1992.

FISHING SECTION	AVERAGE LBS/NM	1992 SURVEY INDEX (MILLION OF POUNDS)
Marmot Bay	180	1.11
Chiniak Bay	182	.38
Kiliuda Bay	35	.32
Twoheaded Gully	159	1.16
Alitak Bay	24	.21
Uyak Bay	30	.16
Uganik Bay	123	.48
Wide Bay	660	.92
Chignik Bay	246	2.01
Kuiukta Bay	227	.69

Table 3. Pot shrimp catch statistics, Kodiak District of Statistical Area 'J', 1969-1993.

Year	Vessels	Landings	Pounds
1969		Confidential	
1970	-	20	12,302
1971	a	a	a
1972		Confidential	
1973		Confidential	
1974	6	73	10,336
1975	7	77	12,782
1976		Confidential	
1977	3	26	2,565
1978		Confidential	
1979		Confidential	
1980	4	25	4,700
1981	4	6	2,511
1982	6	18	9,754
1983	12	31	18,686
1984	6	21	4,361
1985		Confidential	
1986		Confidential	
1987	a	a	a
1988		Confidential	
1989		Confidential	
1990		Confidential	
1991	a	a	a
1992	a	a	a
1993	a	a	a

*No commerical landings recorded for 1971, 1987, 1991, 1992 or 1993.

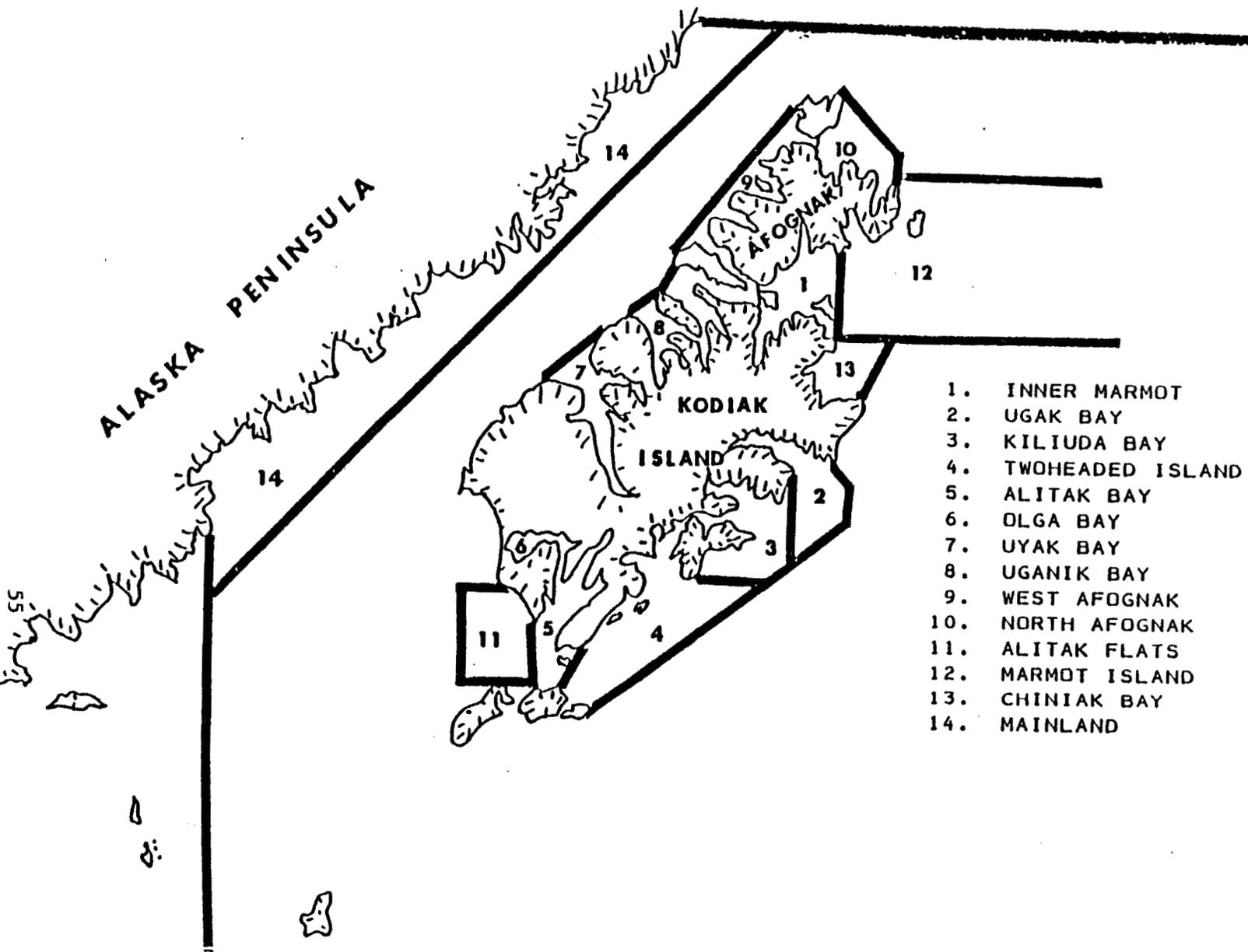


Figure 1. Kodiak District trawl shrimp fishing sections.

KODIAK SCALLOP FISHERY

Introduction

The Kodiak Registration Area includes the waters of the Pacific Ocean south of the latitude of Cape Douglas and east of the longitude of Cape Kumlik. (Figure 1)

The Kodiak scallop fishery began in the late 1960's and peaked in 1970 when 7 vessels landed 1.4 million pounds of scallops. Catches declined in the early 1970's to no harvest in 1977 and 1978. Since 1980 catches have fluctuated from a low of 191,510 pounds to a high of 898,277 pounds. (Table 1)

In the early 1970's the department closed the south end of Kodiak Island and Marmot Bay to scallop fishing. This was due to the observed high bycatch of king crab in these areas. Also Kodiak Island was closed to scallop fishing on March 31 of each year due to the molting period for king crab. In 1990, the Board of Fisheries closed areas to scallop fishing that had previously been closed to non-pelagic trawls in order to protect depressed king and Tanner crab populations. This included Kodiak's westside bays. (Figure 1)

The 1993 Fishery

The 1993 fishery started on January 1st. A total of four vessels landed 89,000 pounds of scallops prior to the March 31st regulatory closure.

In late May the Commissioner declared the Alaska scallop fishery a "High Impact Emerging Fishery". An interim management plan was drafted and the Kodiak scallop fishery remained closed until July 1st. This allowed time for adoption of the plan and the development of an observer program. At this time the department also developed king and Tanner crab bycatch caps for most of the areas within the Westward Region. Caps were based on population estimates derived from trawl surveys. Bycatch rates of one percent (1%) and one half of one percent (.5%) of the total population estimate of crabs were used to calculate the number of crab that would be allowed as bycatch. The Alaska Board of Fisheries adopted these same percentages for bycatch of crabs in groundfish fisheries around Kodiak. A one percent bycatch cap was used in areas where the directed commercial crab fishery was opened. If the area did not open to commercial crab fishing a cap of one half of one percent was utilized.

The Kodiak fishery reopened on July 1st with a mandatory observer program in place. Initial effort began in the Shelikof Strait. Each observer reported three times weekly as to the vessel's scallop harvest, crab bycatch and area fished. This information was compiled by department personnel in Kodiak. An emergency order was issued effective August 5th closing the Shelikof Strait to scallop fishing. This closure was based on Tanner crab bycatch. The Tanner crab bycatch established for the Shelikof Strait was 35,500 crabs. When the Shelikof closure was announced the department projected that 39,000 crab would have been caught. Actual bycatch rates of Tanner crab increased near the closure of this fishery and the overall bycatch total 51,000 crabs. Approximately 73,000 pounds of scallops were landed for this time period.

Vessels headed west to the Bering Sea and Dutch Harbor areas following the Shelikof closure. After the Bering Sea closed to fishing, vessels returned and began fishing the Northeast portion of Kodiak. The Tanner crab bycatch cap for the Northeast area of Kodiak was 164,000 crabs. Catch rates of shucked meats ranged from 40 to 75 pounds per haul at the start of the fishery. Catch rates decreased through the fishery to less than 25 pounds per haul. Catch per unit effort analysis of these catch rates indicated that approximately 60% of the stock had been harvested in the areas fished. Based on this information the department closed the Northeast portion of Kodiak on November 24th. A total of 10 vessels landed 191,000 pounds of scallops with an overall bycatch of 30,000 Tanner crabs.

With the most productive areas in Kodiak closed, the fishing fleet then decided to take a break for the Christmas holiday.

During 1993 a total of 10 vessels made 57 landings, harvesting 374,908 pounds of scallop meat.

Stock Status

The department does not conduct assessment surveys for weathervane scallops. Considering recent increases in effort and a decline in the harvest the past two years, one would expect the harvest to continue to decrease.

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

Year	Number Vessels	Number Landings	Commercial Catch (pounds)	Average Price Per Pound
1967			- - - CONFIDENTIAL - - -	
1968	8	89	872,803 ^b	.85
1969	11	86	1,012,860	.85
1970	7	102	1,417,612	1.00
1971	5	48	841,211	1.05
1972	5	68	1,038,793	1.15
1973	4	42	935,705	1.20
1974	3	14	147,945	1.30
1975	4	30	296,650	1.40
1976			- - - CONFIDENTIAL - - -	
1977	0	0	0	.00
1978	0	0	0	.00
1979			- - - CONFIDENTIAL - - -	
1980	7	33	371,008 ^c	3.60
1981	15	61	441,401	4.00
1982	8	82	641,336	3.25
1983	4	29	191,510	5.00
1984	7	37	309,502	4.00
1985	3	26	608,955	4.00
1986	6	58	587,242	4.25
1987	4	43	583,686	3.70
1988	4	37	302,738	4.00
1989	6	48	464,421	4.06
1990	8	86	898,277	3.53
1991	7	75	683,261	3.91
1992	3	43	389,854	3.96
1993	10	57	374,908	5.00

^a Unshucked scallops

^b 718,671 pounds shucked - 154,132 pounds unshucked

^c 353,433 pounds shucked - 17,575 pounds unshucked

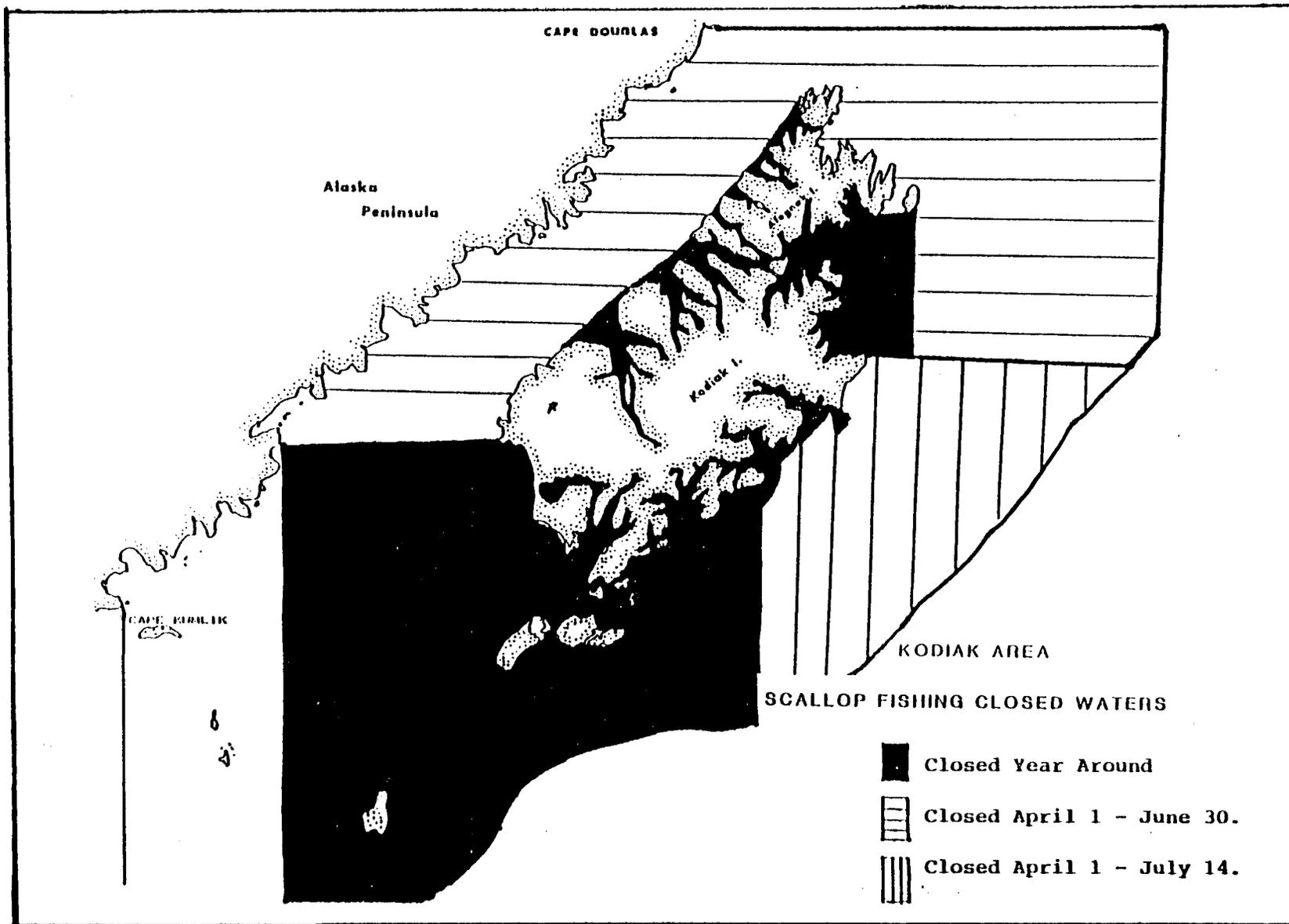


Figure 1. Kodiak Registration Area and closed waters for scallop.

SEA CUCUMBERS

Historic Background

Sea cucumbers were not harvested commercially in the Kodiak area until 1991. In 1991 and 1992 small numbers of the red sea cucumber, *Parastichopus californicus*, were taken to test marketability. The spring of 1993 saw an increase of interest with several processors recruiting divers to commercially pick sea cucumbers in the Kodiak and Chignik areas.

1993 Fishery

The fishery was allowed to develop under the terms of a permit authorized by 5 AAC 38.062. The department specified dive gear as the only legal gear and required dive logs to be submitted with fish tickets. Harvests were monitored to determine abundance and distribution as the department does not have a stock assessment program. Landing weights were recorded as the eviscerated weight with the 1993 catch totaling 564,516 pounds taken by 50 divers. (Table 1).

Activity started in March as divers registered to fish and began exploring the area for the most abundant population of cucumbers. Catches remained at less than 10,000 pounds per week until the last week of April when good weather accompanied by increasing effort pushed the harvest to over 20,000 pounds for the week. By this time approximately 20 divers had registered with the department. Landings were compiled by fishing sections as described in chapter 35 of the shellfish regulations (Figure 1). Commercial fishermen concentrated primarily in the Eastside and Southeast sections of Kodiak Island with some effort scattered throughout the district. At the end of June with over 40 divers registered the catch approached 200,000 pounds from the Eastside and Southeast sections. The department felt an adequate, harvest in light of an unknown population size, had occurred and a closure was announced effective July 5, 1994 for those two areas. Total catch from the Eastside section was 179,205 pounds. The Southeast section contributed 68,028 pounds of eviscerated product (Table 2).

Subsequently, fishermen targeted the Southwest and Westside Sections of the Kodiak District. Toward the end of July the department determined a significant harvest had also occurred in those areas. To reduce the risk of overharvest these areas were closed effective August 5, 1994 with catches of 32,329 and 151,903 pounds respectively.

Some sea cucumbers from the Westside Section were sampled for weight. Of 1,988 animals observed the average was 0.6 pounds per sea cucumber. The Northeast section also closed on this date. This section had been explored sporadically throughout the fishery and logbook information indicated the sea cucumber resource was not

extensive. The season harvest totaled 21,890 pounds.

Many of the divers ceased operations with the close of the last section around Kodiak Island proper but some did continue to explore along the Alaska Peninsula. Kodiak's North Mainland section produced 17,460 pounds. The Chignik District harvest totaled 93,701 pounds with the majority of effort occurring during November and December. These areas remained open until April, 1994.

1994 Fishery

A news release dated February 28, 1994 announced a sea cucumber fishing period for the Kodiak District from April 1 - 30. In addition, all areas in the Westward Region would close from May 1 through September 30th. This closure period was established to protect aggregated sea cucumber populations during the spawning portion of their life cycle.

Diver reports and logbook information indicated that spawning actively takes place from June to August in the Kodiak area. This is similar to the time frame found in Southeast Alaska and elsewhere on the Pacific Coast.

The February news release also described the guideline harvest levels (GHL) that were set for the Kodiak and Chignik Districts. A total of 200,000 pounds was announced for Kodiak with the Chignik GHL set at 50,000 pounds. Other districts within the Westward Region would remain open for exploration until April 30th without guideline harvest levels established. The next openings are scheduled for October 1994 with guidelines determined after examining fishery performance from the 1993 and April, 1994 harvest periods.

Table 1. Historic harvest of sea cucumbers in the Kodiak and Chignik Districts, 1991-1993.

Year	Number of Permits	Number of Landings	Pounds Harvested	Average Price Per Pound
1991		Confidential		
1992		Confidential		
1993	50	487	564,516	.93

Table 2. Sea cucumber commercial harvest by area, Kodiak and Chignik Districts, 1993.

Area	Pounds
Chignik District	93,701
Kodiak District	
Northeast Section	21,890
Eastside Section	179,205
Southeast Section	68,028
Southwest Section	32,329
Westside Section	151,903
North Mainland Section	17,460
Kodiak District Total	470,815

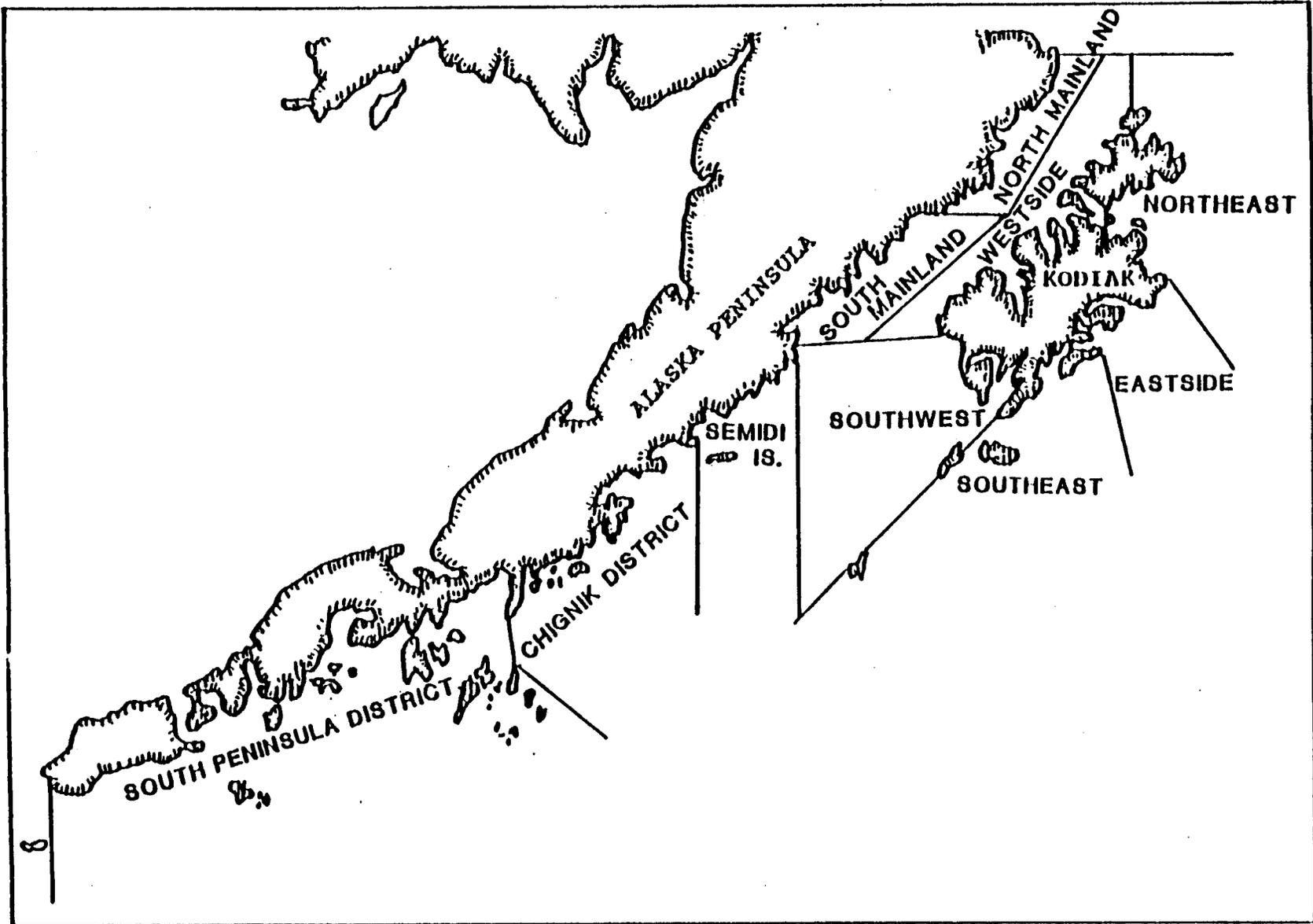


Figure 1. Commercial sea cucumber management areas.

SEA URCHINS

Historic Background

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

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

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

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

1993 Fishery

Interest in harvesting sea urchins waned during 1993. Seventeen drivers were registered, but the majority did not make any landings. The harvest was the lowest since the mid-80's. Catches remain confidential as less than three buyers participated.

Stock Status

No assessment work is currently being done on sea urchins in the Kodiak area. Recent fishery information indicates the resource biomass is not large when compared to other areas on the Pacific Coast.

Table 1. Historic harvest of sea urchins in the Kodiak area, 1980-1993.

Year	No. of Permits	No. of Landings	Pounds Harvested (Live Weight)	Average Price Per/Lb.
1980		Confidential		
1985		Confidential		
1986		Confidential		
1987	12	78	104,139	.69
1988	28	260	190,509	.80
1989	29	81	44,862	.82
1990	25	83	84,004	.84
1991	6	24	29,947	.92
1992		Confidential		
1993		Confidential		

OCTOPUS

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

Interest in the fishery has been increasing due to the demand by longline fishermen for bait octopus. The octopus fishery experienced a dramatic increase in 1990. Caught incidentally to Pacific cod fishing the rapidly expanding pot cod fishery, the harvest increased to 132,212 pounds in 1992. The catch for 1993 pounds increased to 138,333 with 58 vessels making landings.

Stock Status

Although the octopus is thought to be 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, 1977-1993.

Year	Number of Vessels	Number of Landings	Commercial Catch (Pounds)	Avg. Price Per Pound	Est. Value Exvessel (dollar)
1977	5	9	1,000	.71	1,136
1978	11	21	3,336	.75	2,502
1979	20	43	6,978	.74	5,164
1980	27	61	19,342	.75	14,506
1981	21	46	5,872	.70	4,110
1982	12	29	3,854	.70	2,697
1983	12	20	3,764	.70	2,634
1984	17	43	6,487	.70	4,341
1985	10	12	4,812	.78	3,753
1986	5	8	643	.70	450
1987	8	15	14,151	1.08	15,300
1988	4	4	1,949	1.08	2,105
1989			Confidential		
1990	31	131	69,607	1.08	80,000
1991	70	342	129,355	1.07	138,410
1992	105	---	132,212	1.07	141,466
1993	58	---	138,333	1.00	138,333

RAZOR CLAMS

Historic Background

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

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

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

Stock Status

The potential for a razor clam harvest in the Kodiak Management Area has been established by historic catch records and studies conducted by the Department. These studies, however, were conducted in the mid 70's and are of little benefit in judging stock status at this time due to environmental changes that 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.

1993 Fishery

There were no landings of clams from the Kodiak Area during 1993.

Table 1. Historic commercial razor clam catch effort and value for Kodiak Management Area, 1960-1993.

Year	No. of Registered Diggers ^a	No. of Lndgs.	Commercial Catch (Pounds)	Avg. Catch Per Lndg. (Pounds)	Average Price Per #	Est. Price Exvessel (Dollars)
1960	76		420,636		\$.105	44,000
1961	95		381,971		.105	40,000
1962	66		297,516		.105	31,000
1963	39		323,757		.11	35,600
1964	2		0		.00	-
1965	4		20,000		.25	5,000
1966	29		15,429		.38	6,000
1967	9		2,155		.40	900
1968	19		6,384		.40	2,600
1969	5	6	12,029	2,005	.40	4,812
1970	6	32	132,261	4,133	.40	53,000
1971	73	82	190,394	2,322	.30	57,000
1972	95	128	152,116	1,188	.35	53,000
1973	64	140	165,282	1,181	.40	66,000
1974	58	74	198,381	2,681	.50	99,000
1975	18	5	6,188	1,238	.50	3,000
1976	9	0	0	0	.00	-
1977			Confidential			
1978			Confidential			
1979	-	0	0	0	.00	-
1980	-	8	8,006	1,001	.79	6,325
1981	-	5	8,186 ^b	1,637	1.00	8,186
1982	-	11	11,608 ^c	1,055	1.00	11,608
1983	-	7	7,920	1,131	1.00	7,920
1984	-	21	33,972	1,613	1.00	33,972
1985	-	11	16,945 ^d	1,540	1.00	16,945
1986	-	4	3,993	998	1.00	3,993
1987	-	-	-	-	-	-
1988	-	-	-	-	-	-
1989	-	-	-	-	-	-
1990	-	-	-	-	-	-
1991	-	-	-	-	-	-
1992	-	-	-	-	-	-
1993	-	-	-	-	-	-

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

^b Additional 985 pounds of hardshell clams harvested.

^c Additional 1,506 pounds of hardshell clams harvested.

^d Additional 1,496 pounds of hardshell clams harvested.

ANNUAL MANAGEMENT REPORT FOR THE
SHELLFISH FISHERIES OF THE ALASKA PENINSULA AREA, 1993

By

James A. Spalinger - Area Management Biologist

David R. Jackson - Assistant Area Management Biologist

Kodiak Area Office
211 Mission Road
Kodiak, Alaska 99615
(907) 486-1840

JULY 1994

ALASKA PENINSULA

Introduction

The Alaska Peninsula Management Area includes those waters of the Pacific Ocean west of the longitude of Cape Kumlik and east of the longitude of Scotch Cap Light (Figure 1).

Commercial shellfish fisheries have traditionally occurred in the Alaska Peninsula on king crab, Tanner crab, Dungeness crab, shrimp, scallops and octopus. Shellfish stocks are considered depressed and no commercial fishery has occurred since 1982 for king crab and shrimp and since 1989 for Tanner crab. Limited effort has occurred on Dungeness crab, scallops and octopus. This management area includes within it the communities of Chignik Lake, Chignik Lagoon, Anchorage Bay, Perryville, Ivanoff, Sand Point, King Cove, Cold Bay and False Pass.

KING CRAB

Introduction

The red king crab fishery in the Alaska Peninsula Registration Area M began in 1947, when 141,000 pounds were landed (Figure 1). The historic high catch of 22.6 million pounds occurred in 1966 (Table 1).

Of the three Area M king crab districts, (Figure 1), the major portion of the harvest in the last ten years of fishing came from the Central District with Pavlof Bay being the major producer. The annual catch in the Unimak Bight District during the same period averaged less than half the Central District annual harvest. Catches in the Chignik District during this period varied depending on effort but did not exceed 386,000 pounds.

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

1993/94 Season Summary

As has been the case since 1983/84, the 1993/94 commercial fishery in Area M was not opened. The closure was announced by Emergency Order 4-S-19-93 on September 22, 1993.

Stock Status

This is the sixth year that the Department has used trawl gear to assess the crab populations in the Alaska Peninsula. The 1993 survey was conducted aboard the R/V *Resolution* during August. One hundred forty-six (146) successful tows were completed in the Alaska Peninsula District to assess both king and Tanner crab populations.

The total number of red king crab captured during the Alaska Peninsula survey was 42. Twenty (20) of the crabs captured were males, nine being legal and eleven sublegal. Twenty two females were caught of which sixteen were mature and six were juveniles. The king crab stocks in the Alaska Peninsula remain depressed and no commercial fishing is anticipated in the near future.

Brown King Crab

Occasionally fishermen express an interest in exploring Area M for brown king crab *Lithodes aequispina*. In 1983 five vessels registered but no catch was recorded. Presently, male brown king crab 6-inches or greater in shell width may be taken from January 1 through December 31 under a permit issued by the Commissioner.

1993 Season

No vessels registered to fish for brown king crab in Area M during 1993.

Stock Status

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

Table 1. Catch and effort statistics for king crab in the Alaska Peninsula Area M since 1947.

Year	No. Vssls	No. Lndgs	No. Crab	No. Pounds	Pots Lifted	CPUE	Avg. Wt.	Price Per Lb.
1947	NA	NA	18,800	141,000	NA	NA	7.5	NA
1948	NA	NA	518,500	3,363,000	NA	NA	6.5	NA
1949	NA	NA	205,500	3,476,000	NA	NA	12.0	NA
1950	NA	NA	270,000	2,124,000	NA	NA	7.9	NA
1951	NA	NA	86,500	599,000	NA	NA	6.9	NA
1952	NA	NA	32,400	298,000	NA	NA	7.6	NA
1953	NA	NA	38,400	380,000	NA	NA	10.0	NA
1954	NA	NA	31,666	316,660	NA	NA	10.0	NA
1955	NA	NA	164,069	1,640,688	NA	NA	10.0	NA
1956	NA	NA	421,651	4,221,496	NA	NA	10.0	NA
1957	NA	NA	668,709	6,687,092	NA	NA	10.0	NA
1958	NA	NA	724,595	7,245,947	NA	NA	10.0	NA
1959	NA	NA	568,303	6,166,974	NA	NA	10.0	NA
1960	NA	1,496	677,100	6,700,000	NA	NA	9.9	NA
1961	NA	959	419,354	3,900,000	NA	NA	9.3	NA
1962	NA	657	287,624	2,273,013	NA	NA	7.9	NA
1963	27	1,037	970,739	6,539,129	NA	NA	6.7	.09
1964	40	1,297	1,906,018	14,354,060	NA	NA	7.5	.10
1965	36	1,081	1,813,728	14,713,501	NA	NA	8.1	.10
1966	37	1,255	2,494,949	22,577,587	NA	NA	9.0	.10
1967	39	1,062	1,943,463	17,252,307	NA	NA	8.9	.19
1968/69	34	885	1,273,567	10,944,472	NA	NA	8.6	.34
1969/70	33	415	558,800	4,137,000	51,300	11	7.7	.25
1970/71	25	339	446,042	3,425,760	38,995	11	7.7	.25
1971/72	26	364	597,394	4,123,130	41,759	14	6.9	.28
1972/73	29	301	610,300	4,069,362	34,408	18	6.7	NA
1973/74	36	389	658,632	4,260,674	53,642	12	6.9	.72
1974/75	36	318	644,054	4,572,101	44,951	14	7.1	.43
1975/76	37	248	367,221	2,605,310	35,104	11	7.2	.41
1976/77	26	122	125,778	958,069*	17,748	7	7.7	.61
1977/78	15	73	119,641	726,382	10,551	11	6.1	1.00
1978/79	33	226	520,168	3,093,859	31,142	17	5.9	1.27
1979/80	68	288	738,859	4,453,557	41,753	18	6.0	.92
1980/81	51	358	821,071	5,080,632*	54,114	15	6.2	.96
1981/82	56	341	515,882	3,168,689	51,776	10	6.1	1.40
1982/83	63	157	271,237	1,683,654	30,894	9	6.2	3.20
1983/84			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				
1989/90			NO	F I S H E R Y				
1990/91			NO	F I S H E R Y				
1991/92			NO	F I S H E R Y				
1992/93			NO	F I S H E R Y				
1993/94			NO	F I S H E R Y				

NA = Not Available

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

Table 2. King crab commercial fishing periods in the Alaska Peninsula (Area M) since 1974-1993.

Year	Open	Closed
1974/75	August 15	January 15
1975	August 15	December 18
1976	August 15	October 1
1976/77	November 15	January 15
1977/78	August 15	January 15
1978/79	September 15	January 15
1979	September 15	December 31
1980/81	September 10	January 15
1981/82	September 10	January 15
1982	September 15	September 25
1983	Closed	
1984	Closed	
1985	Closed	
1986	Closed	
1987	Closed	
1988	Closed	
1989	Closed	
1990	Closed	
1991	Closed	
1992	Closed	
1993	Closed	

Table 3. Comparative male king crab catch data abundance survey for the Alaska Peninsula (Area M) since 1975.

Year	Stations Fished	Pots Lifted	----Legals---- Number	CPUE ^b	---Sublegals--- Number	CPUE
1975	110	610	815	1.4	4,776	7.8
1976	129	801	874	1.1	8,006	10.0
1977	75	354	3,610	10.2	16,986	48.0
1978	62	355	7,259	20.4	10,960	30.9
1979	69	330	4,411	13.4	7,141	21.6
1980	120	700	8,110	11.6	7,263	10.4
1981	127	750	4,545	6.1	2,538	3.4
1982	113	630	1,197	1.9	805	1.3
1983	77	307	317	1.0	216	0.7
1984	218	498	324	0.6	25	0.0
1985	138	410	36	0.1	18	0.0
1986	129	400	65	0.2	52	0.1
1987	145	434	11	0.1	17	0.0
1988 ^a	106		45		27	
1989	167		19		215	
1990	157		4		16	
1991	146		5		53	
1992	143		9		7	
1993	146		9		11	

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

^b Catch per pot lift.

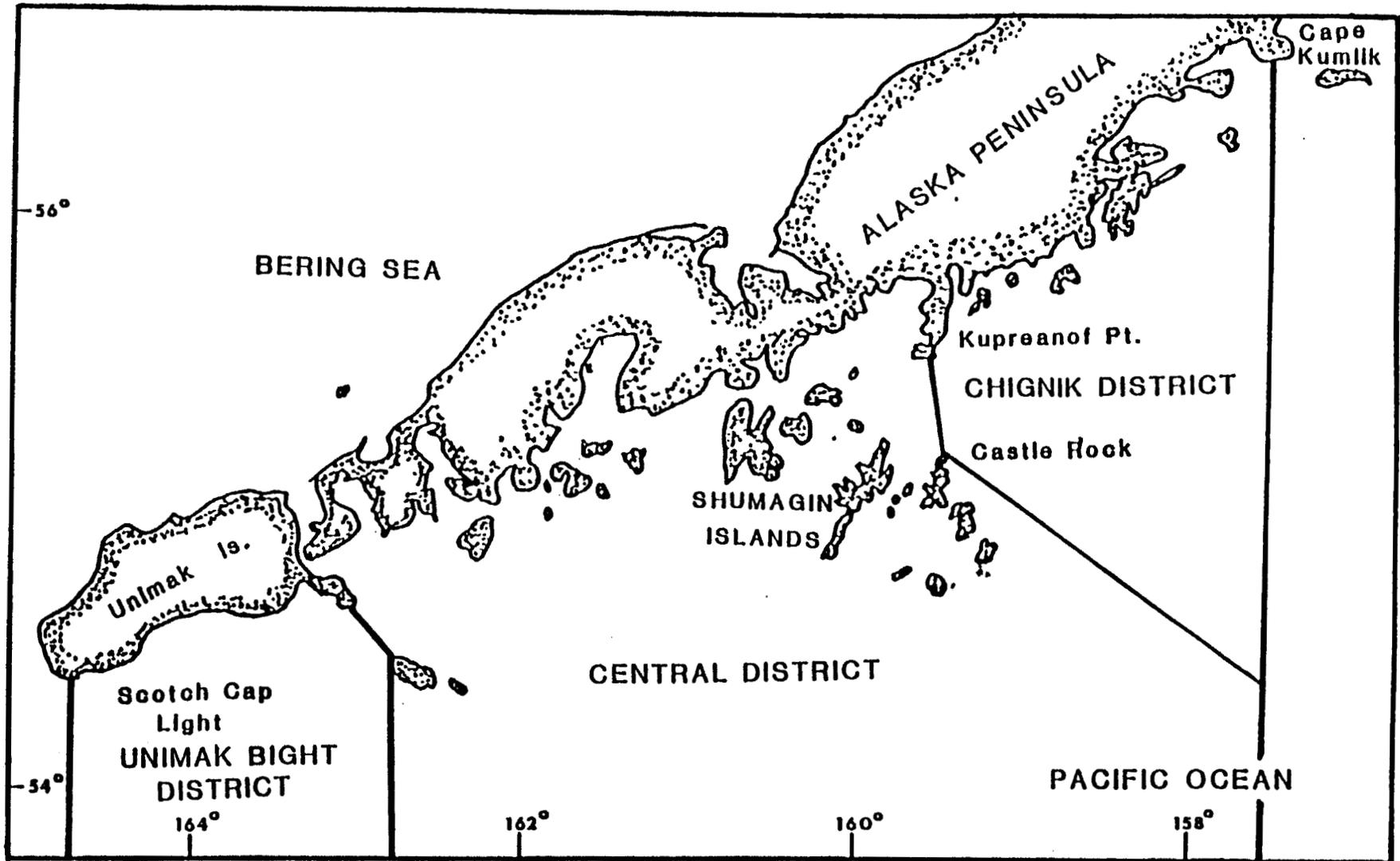


Figure 1. Alaska Peninsula (Area M) king crab districts.

CHIGNIK TANNER CRAB

Historic Background

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

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

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

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

Since 1981, there have been several changes in the fishery. The Department conducted trawl surveys each summer from 1981 to 1984. The surveys predicted poor recruitment after the 1983 fishing season. Harvest projections were drastically reduced for the 1984 and 1985 fisheries.

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

The dwindling catches, along with attempts to make the District a superexclusive registration area, caused a reduction in the fleet size. In 1983, 48 vessels, including several large, Bering Sea

type vessels, participated in the fishery. By 1988 the fleet consisted of four locally owned seine vessels, one boat from Sand Point, and one 65 foot vessel from Kodiak.

Beginning with the 1981 season, the fleet has commenced fishing on the opening date of the season and continued fishing until the District was closed. The altered nature of the fishery prompted several changes to the opening date of the fishery: first to December 15, in 1981/82; then to February 10, for the 1983 and 1984 seasons. In part, the new dates were established to harvest the crab at peak quality. Further, some fishermen hoped the new dates would find the large vessels busy fishing in the Bering Sea thus reducing competition in the Chignik and South Peninsula Districts. However, in the adjoining South Peninsula District, seasons opening in February were found to extend into the crab molting period. Therefore, beginning in 1985, the opening date has been January 15. In 1988, the Board of Fisheries adopted a March 31 closure date because molting was occurring before the former May 15 closure. Since 1990 the Chignik Tanner crab fishing has remained closed due to the low abundance of Tanner crab in the area.

In 1993 the Alaska Board of Fisheries adopted pot limits for the Chignik District. This pot limit, effective for the Chignik and South Peninsula Districts, is 40 pots when the guideline harvest level is less than 600,000 pounds and 75 pots when the guideline harvest is 600,000 pounds or more.

1993 Fishery

The 1993 Tanner crab fishery in the Chignik District did not open. Emergency Order 4-S-02-93 was issued on January 11, 1993 closing the Chignik District to Tanner crab fishing.

Stock Status

The department has conducted a trawl survey in the Chignik District for the past five years. Population estimates of legal crabs have declined since 1989 from 497,000 legal males to 236,000 in 1991 and down to 46,500 legal Tanners in 1992. The 1993 survey showed an increase of legal male Tanner crab to 115,000 crabs. Although the 1993 survey shows an increase in the legal crab population, the population of crab is well below the levels of the late 1980's when a fishery occurred. Prerecruit crab abundance appears weak, and the department expects no significant increase of legal crab to levels of the late 70's, in the near future. The commercial fishery remained closed during 1993.

Table 1. Chignik District Tanner crab catch and effort statistics since 1968.

Year	Vsals	Number Lndgs	No. Crab ^a	No. Pounds ^a	Pots Lifted	Avg. Wt.	CPUE	Price Pound ^b	Percent Recruits ^c
1968	-	-	-	21,100	-	.-	-	.-	.-
1969	-	-	-	38,100	-	.-	-	.-	.-
1970	-	-	-	2,800	-	.-	-	.-	.-
1971	-	-	-	152,300	-	.-	-	.-	.-
1972				Harvest Confidential					
1973	15	56	297,363	747,788	8,080	2.5	51	.16	.-
1974	25	115	1,586,560	4,054,873	28,083	2.6	57	.20	.-
1974/75	25	91	1,438,508	3,649,444	22,675	2.5	63	.14	.-
1975/76	35	288	2,724,509	6,926,161	52,381	2.5	52	.185	.-
1976/77	21	141	2,098,226	5,672,919	40,604	2.7	52	.33	.-
1977/78	32	140	1,725,042	4,693,830	38,414	2.8	45	.42	.-
1978/79	39	126	926,253	2,536,105	28,378	2.7	33	.55	.-
1979/80	42	155	2,340,004	3,517,920	54,627	2.6	25	.54	.-
1980/81	24	112	1,534,847	3,653,723	44,022	2.4	35	.64	65.6
1981/82	45	174	1,343,500	3,240,576	47,830	2.4	28	1.21	64.7
1983	48	136	1,432,029	3,497,370	60,210	2.4	24	1.12	65.1
1984	17	41	269,724	659,043	14,665	2.4	18	1.09	33.5
1985	15	27	162,448	375,476	15,708	2.3	10	1.42	51.2
1986	6	12	85,697	188,162	7,435	2.2	12	1.97	85.3
1987	10	20	89,329	195,060	7,052	2.2	13	2.28	90.1
1988	6	11	87,148	183,111	6,544	2.1	13	2.33	91.3
1989	6	34	142,470	323,120	9,845	2.3	15	3.05	95.0
1990				NO OPEN SEASON					
1991				NO OPEN SEASON					
1992				NO OPEN SEASON					
1993				NO OPEN SEASON					

^a Includes deadloss

^b Computed only for live poundage where price information was available

^c Recruits = newshell male crab from 137 to 163 mm carapace width

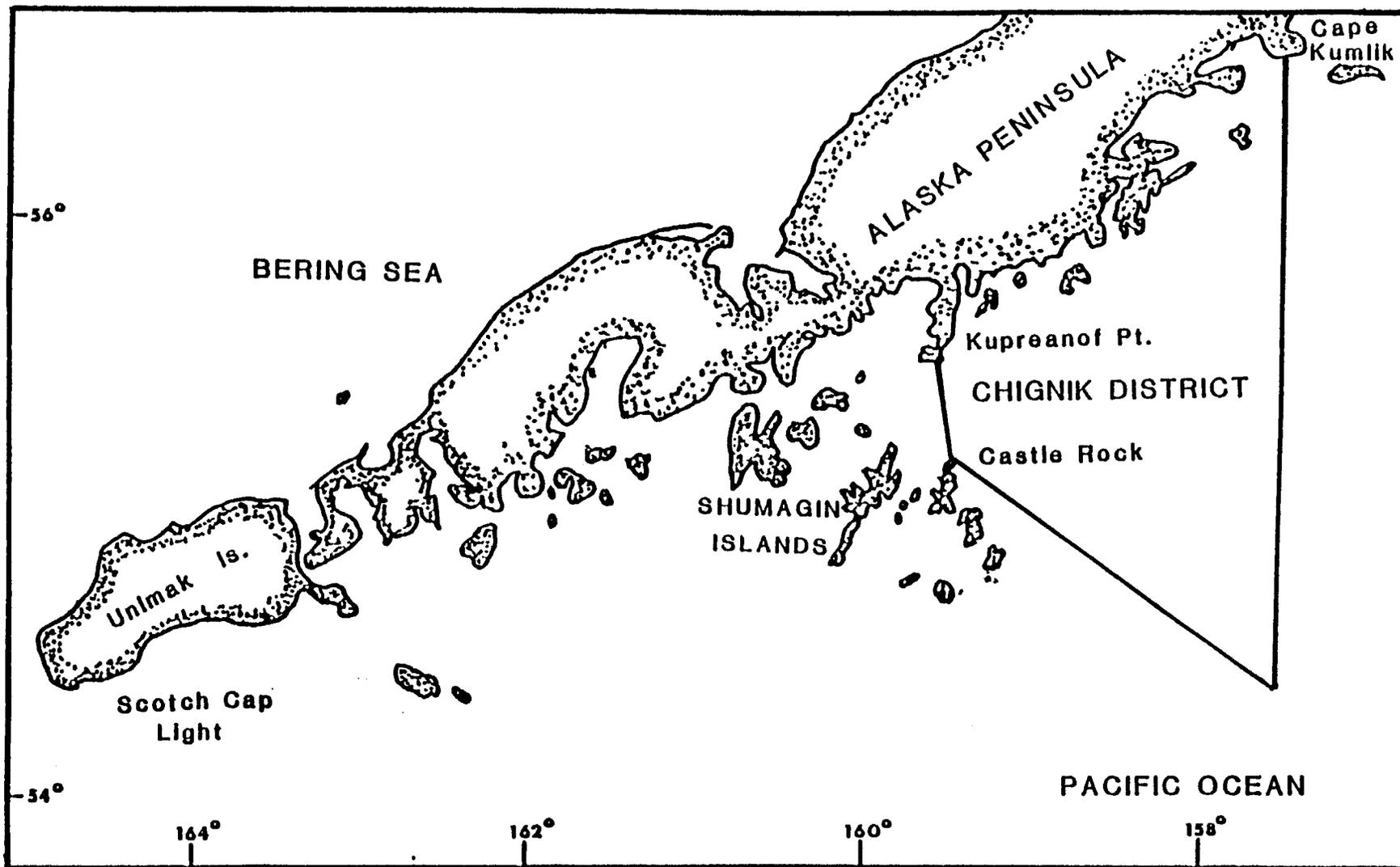


Figure 1. Chignik Tanner crab district.

SOUTH PENINSULA TANNER CRAB

Introduction

The South Peninsula District of Area J includes all waters south of the Alaska Peninsula from Kupreanof Point to Scotch Cap Light on Unimak Island (Figure 1). The first harvest of Tanner crab from the area occurred in 1967 when 3,100 pounds were landed. The fishery grew quickly, and by 1973 harvests exceeded five million pounds (Table 1). In 1974 guideline harvest levels were established, and in 1975 seasons were imposed to protect adult crab during the mating and molting period. In 1976, the minimum size limit of 5.5 inches across the carapace was established. During the six seasons from 1974 through 1978/79, harvests ranged from 5 to 9 million pounds (Table 1). The fishery peaked in 1978/79 when 9 million pounds of crab were caught (Table 1). From 1979/80 to 1984 the harvest and CPUE declined in response to low recruitment to legal size into the population (Table 1). The population declined in 1984 and the fleet only landed 2 million pounds (Table 1). Recruitment improved in the years 1985 through 1988 and the harvest ranged from 2 million pounds to 4 million pounds. In 1989 the harvest decreased to 1 million pounds and recruitment also declined. The fishery has been closed since 1990 due to the low abundance of legal crab and the lack of recruitment. In 1993 the Alaska Board of Fisheries established a pot limit of 75 pots when the guideline harvest is 600,000 pounds or greater. When the guideline harvest is less than 600,000 pounds the pot limit is 40 pots per vessel.

1993 Fishery

The 1993 Tanner crab fishery in the South Peninsula District did not open (Table 3). Emergency Order 4-S-02-93 was issued on January 11, 1993 closing the South Peninsula District to Tanner crab fishing.

Stock Status

In 1993 the department conducted a trawl survey in the South Peninsula District to assess king and Tanner crab populations. Total estimated legal crab in the South Peninsula for 1993 was 267,000 crabs, up slightly from the 1992 estimate of 231,000 crabs. Due to the low abundance of legal male Tanner crab and poor anticipated recruitment, the 1994 Tanner crab fishery will also remain closed.

Table 1. Tanner crab catch and effort statistics for South Peninsula District since 1967.

Year	Number Vssls.	Number Lndgs.	No. Crab ^a	No. Pounds ^a	Pots Lifted	Avg. Wt.	CPUE	Price Pound ^b	Percent Recruits
1967				3,100					
1968		155	36,835	110,610		3.0			
1969		173	221,946	606,178		2.7			
1970				2,093,600					
1971	17	242	813,610	2,140,585		2.6		.10	
1972				3,618,900					
1973	36	390	2,213,006	5,615,563	53,573	2.5	41		
1974	44	386	3,504,668	8,300,578	58,444	2.4	60		
1974/75	44	131	2,053,530	5,195,800	38,153	2.5	54	.14	
1975/76	36	288	2,724,509	6,926,161	52,381	2.5	52	.20	
1976/77	28	389	2,524,565	6,773,838	63,143	2.7	40	.32	
1977/78	36	374	2,847,948	7,446,270	70,587	2.6	40	.40	
1978/79	48	332	3,267,122	8,684,408	82,374	2.7	40	.51	65.8
1979/80	61	363	2,581,544	6,961,251	96,989	2.7	27	.54	39.5
1980/81	43	268	1,274,539	3,294,106	59,560	2.6	21	.58	34.7
1981/82	72	365	1,815,060	4,589,042	81,008	2.5	22	1.05	50.2
1983	82	230	1,144,096	2,863,798	70,524	2.5	16	1.20	55.4
1984	61	207	775,472	1,789,883	50,726	2.3	15	1.04	29.6
1985	52	184	1,097,182	2,549,686	47,465	2.3	23	1.42	73.0
1986	74	187	1,589,759	3,781,950	65,078	2.4	24	1.72	72.9
1987	54	106	950,300	2,400,784	37,511	2.5	25	2.03	56.1
1988	73	148	1,359,371	3,328,809	52,516	2.5	26	2.20	78.6
1989	65 ^c	87	433,112	1,055,082	27,958	2.4	16	2.70	52.9
1990				NO OPEN SEASON					
1991				NO OPEN SEASON					
1992				NO OPEN SEASON					
1993				NO OPEN SEASON					

^a Includes deadloss

^b Computed for live crab only

^c One additional vessel was registered but did not fish in the District

Table 2. Historic vessel size and pot use, South Peninsula District Tanner crab fishery, 1978-1989.

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

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

Year	Open	Closed
1974/75	August 15	June 15
1975/76	November 1	June 30
1976/77	November 1	May 15
1977/78	November 1	May 15
1978/79	November 1	May 15
1979/80	November 1	May 15
1980/81	November 1	May 15
1981/82	December 1	March 13
1982/83	December 15	March 17
1984	February 10	March 10
1985	February 10	March 20
1986	January 15	March 10
1987	January 15	February 5
1988	January 15	January 26
1989	January 15	January 22
1990	Closed	
1991	Closed	
1992	Closed	
1993	Closed	

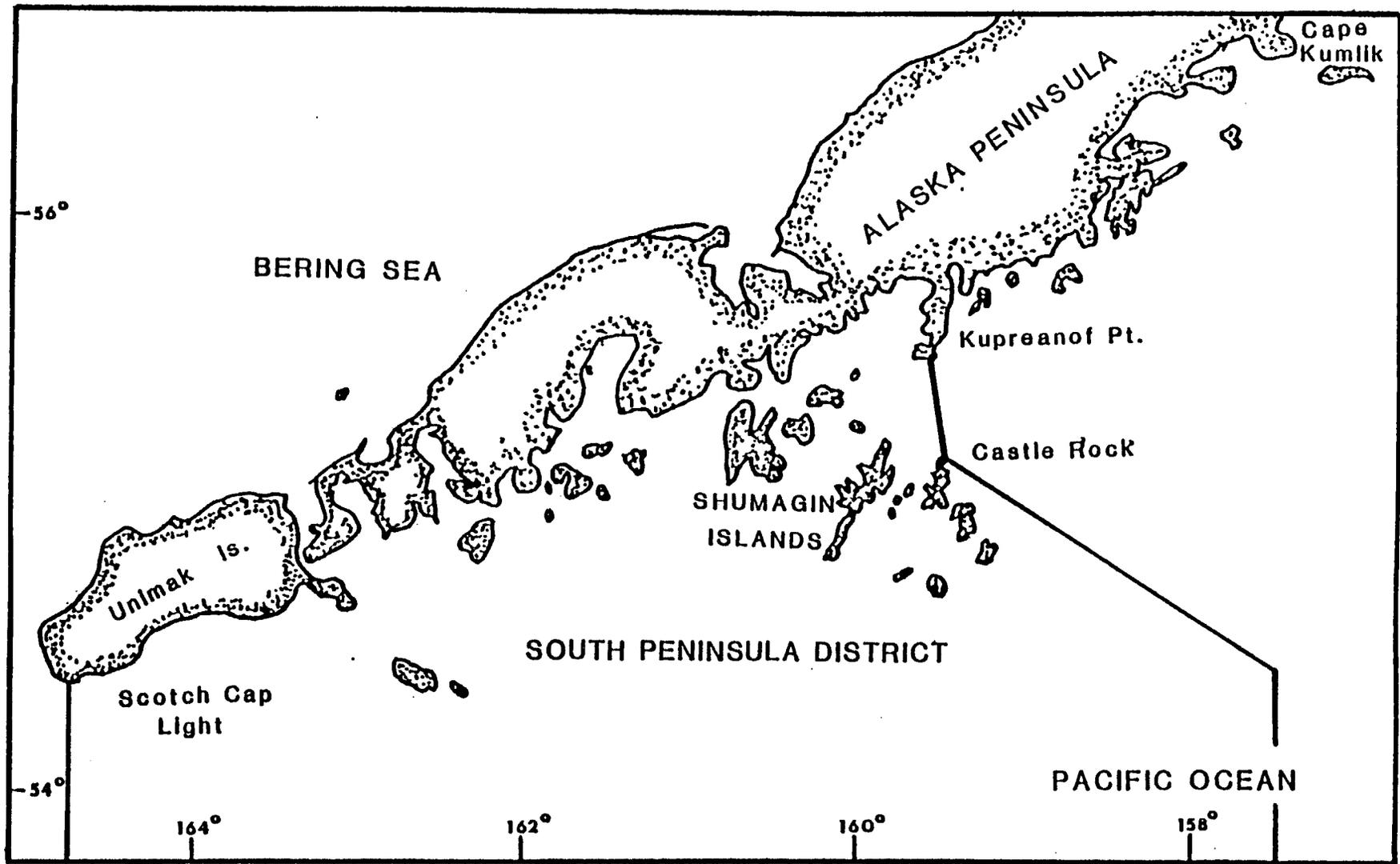


Figure 1. South Peninsula Tanner crab district.

ALASKA PENINSULA SHRIMP

Introduction

Shrimp fishing in the Alaska Peninsula (Figure 1) began in 1968 when 5.9 million pounds were landed (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 the 1977/78 season 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.

1993/94 Season Summary

During the 1993/94 season, none of the inshore shrimp sections were opened to fishing in the Chignik and South Peninsula Districts. No vessels registered and no deliveries were made from the offshore sections open to fishing.

Stock Status

During 1992 ADF&G conducted a trawl survey in the portion of the Chignik District. National Marine Fisheries Service surveyed the Pavlof section of the South Peninsula District. A total of 13 shrimp tows were made in the Chignik District while 22 tows were made in the Pavlof section.

The catch of shrimp in the Chignik District averaged 246 pounds per nautical mile towed. The Chignik Bay section population estimate was 2.0 million pounds. The minimum acceptable biomass index to warrant a fishery in Chignik is 4.55 million pounds. Although Chignik did not open to commercial fishing the population appears to be rebuilding. The catch of shrimp in the Pavlof section average 17 pounds per mile towed. The population estimate for this area was 393,600 pounds. Shrimp populations in the Pavlof Bay section are severely depressed. No significant recovery is anticipated until fish populations decline dramatically. The department intends to survey the Chignik and South Peninsula Districts in the fall of 1995 using trawl gear.

Table 1. Historic South Peninsula and Chignik District shrimp harvest statistics.

Year	-----South Peninsula-----				-----Chignik-----			
	Vssls.	Lndgs.	No. Pounds	Price/Lb.	Vssls.	Lndgs.	No. Pounds	Price/Lb.
1968		Harvest	Confidential				1,153,721	\$ -
1969		Harvest	Confidential				419,830	-
1970	4	173	4,398,800	.04	-	-	890,705	-
1971		Harvest	Confidential			27	1,091,711	.04
1972/73	-	-	14,740,801	.07	-	-	4,829,117	-
1973/74	12	347	19,987,246	.07	33	277	51,673,788	.08
1974/75	22	387	26,145,720	.08	37	323	23,392,352	.08
1975/76	24	326	20,044,112	.09	50	334	24,435,480	.08
1976/77	19	424	37,148,932	.09	48	303	27,232,630	.10
1977/78	48	409	45,003,794	.13	50	271	26,512,791	.13
1978/79	23	108	9,418,276	.16	40	201	23,257,869	.17
1979/80	10	41	3,134,367	.21	35	195	23,722,330	.23
1980/81	-	-	CLOSED	-	54	148	12,843,270	.29
1981/82	-	-	CLOSED	-	3	4	70,948	.27
1982/83	-	-	NO DELIVERIES	-	-	--	NO DELIVERIES	-
1983/84	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1984/85	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1985/86	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1986/87	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1987/88	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1988/89	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1989/90	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1990/91	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1991/92	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1992/93	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-
1993/94	-	-	NO DELIVERIES	-	-	-	NO DELIVERIES	-

ALASKA PENINSULA DUNGENESS CRAB

Introduction

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

Historically, Dungeness catches from the District have been sporadic with the highest catch recorded in 1968 when 1.26 million pounds were landed (Table 1). Subsequent effort and catches remained low for many years due to low prices and better prospects in other fisheries. During the early 1980's, the decline in king crab stocks and a stronger market for Dungeness generated a renewed interest in the fishery. Local fishermen became concerned with overexploitation of the Dungeness stock along with an increase in effort. In 1983 the Alaska Board of Fisheries made the Alaska Peninsula District a superexclusive registration area. The superexclusive regulation has reduced effort in the district and poor catches of the last few seasons also discouraged participation in the fishery.

Management of the Alaska Peninsula District Dungeness fishery has been by sex, size and season. Only males greater than 6.5 inches in carapace width may be harvested from May 1 until January 1 or February 1 (the exact closing date has varied over the years). No research, including abundance surveys, has been conducted on the Dungeness of the area. Management activity has been limited to monitoring the deliveries and recording the harvest.

1993 Fishery

The Alaska Peninsula crab season opened May 1st. Three vessels landed 274,000 pounds of Dungeness crab in the Alaska Peninsula District during 1993.

Stock Status

Information collected from the Alaska Peninsula Dungeness crab fishery has been limited to a few skipper interviews and catch samples from the mid 1980's. This sampling indicated that the catch has been predominantly recruit crab. Recruits are new-shelled legal males less than 194mm in carapace width. Considering the dependance of this fishery on recruitment one would expect extreme fluctuations in harvest!

Since the department does not survey the Dungeness Crab population there is no way to predict harvests or recruitment for the 1994 fishery. Dramatic cycles of low and high abundance have been observed in other Dungeness fisheries. The department has observed abnormally high catches of small Dungeness crab during the summer trawl survey in the Chignik area. If these crab survive and recruit into commercial sized animals, the commercial catch should increase in the near future.

Table 1. Dungeness crab harvest statistics, Alaska Peninsula District since 1968.

Year	Vssls	Lndgs	No. of Crab ^a	No. of Pounds ^a	Pots Lifted	CPUE	Avg. Wt.	Price Per #
1968	NA	NA	434,142	1,259,013	NA	NA	2.9	NA
1969	NA	NA	411,000	1,056,000	NA	NA	NA	NA
1970	NA	NA	4,200	13,000	NA	NA	NA	NA
1971	NA	NA	3,900	11,000	NA	NA	NA	NA
1972	NA	NA	29,400	65,000	NA	NA	NA	NA
1973	C o n f i d e n t i a l							
1974	N O E F F O R T							
1975	N O E F F O R T							
1976	N O E F F O R T							
1977	N O E F F O R T							
1978	N O E F F O R T							
1979	C o n f i d e n t i a l							
1980	N O E F F O R T							
1981/82	C o n f i d e n t i a l							
1982/83	16	79	357,955	779,600	59,265	6	2.2	\$.75
1983/84	18	132	565,430	1,207,128	113,061	5	2.1	\$.97
1984/85	13	99	294,191	647,497	106,056	3	2.1	\$ 1.38
1985/86	7	31	239,202	488,107	52,117	5	2.0	\$ 1.26
1986/87	6	28	87,925	180,261	30,280	3	2.0	\$ 1.05
1987/88	6	21	88,744	182,706	22,588	4	2.1	\$ 1.11
1988	C o n f i d e n t i a l							
1989	C o n f i d e n t i a l							
1990	4	10	31,074	65,806	5,225	6	2.1	\$ 1.53
1991	7	18	39,069	80,248	12,813	3	2.1	\$ 1.24
1992	C o n f i d e n t i a l							
1993	3	15	127,979	273,811	15,675	8.2	2.1	\$.79

NA = Not Available

^a Includes deadloss

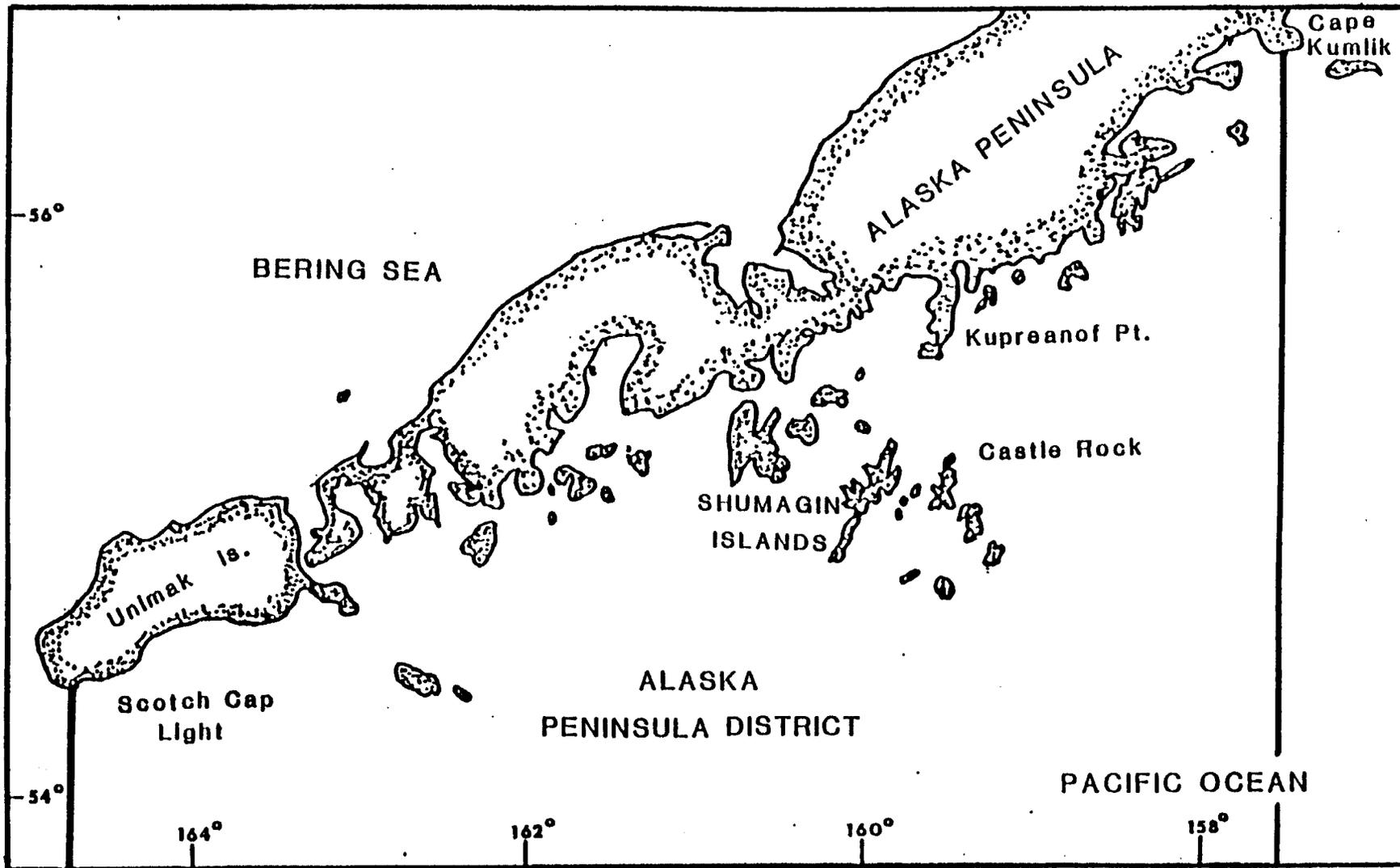


Figure 1. Alaska Peninsula Dungeness district.

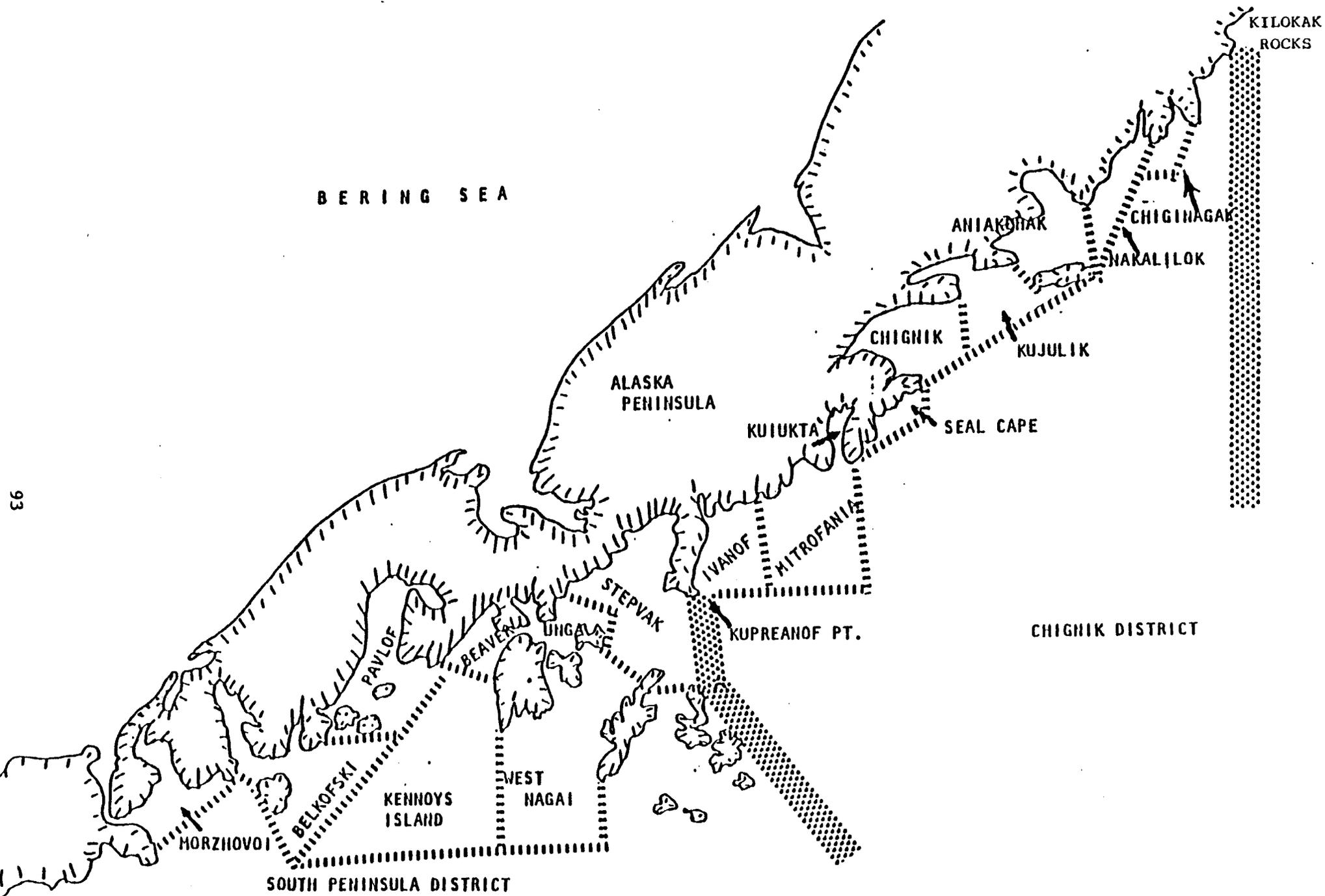


Figure 1. South Peninsula and Chignik shrimp sections.

ALASKA PENINSULA SCALLOPS

Introduction

The Alaska Peninsula Registration Area include the waters of the Pacific Ocean west of the longitude of Cape Kumlik and east of the longitude of Scotch Cap Light (Figure 1).

Historic fishing effort for scallops around the Alaska Peninsula has been sporadic and most catch and effort information is confidential due to the few vessels participating. However in 1982, six vessels landed 205,691 pounds of scallops from this area.

Closed areas include waters within three miles of shore and the offshore waters of Unimak Bight and around Mitrofanina Island. The Unimak closure was adopted in the early 1970's to protect king crab habitat. The Mitrofanina Island closure was adopted in the mid-1980's to protect Tanner crab populations.

In late May the Commissioner declared the Alaska scallop fishery a "High Impact Emerging Fishery". An interim management plan was drafted and the Kodiak scallop fishery remained closed until July 1st. This allowed time for adoption of the plan and the development of an observer program. At this time the department also developed king and Tanner crab bycatch caps for most of the areas within the Westward Region. Caps were based on population estimates derived from trawl surveys. Bycatch rates of one percent (1%) and one half of one percent (.5%) of the total population estimate of crabs were used to calculate the number of crab that would be allowed as bycatch. The Alaska Board of Fisheries adopted these same percentages for bycatch of crabs in groundfish fisheries around Kodiak. A one percent bycatch cap was used in areas where the directed commercial crab fishery was opened. If the area did not open to commercial crab fishing a cap of one half of one percent was utilized.

1993 Fishery

Most of the fishing effort in the Alaska Peninsula started in late September. The bycatch cap established for the Alaska Peninsula was 52,500 Tanner crabs. The bycatch rate of Tanner crab early in the fishery was around 1000 crab per day. Through early October the rate from the fishery dropped to less than 500 crab per day. Then suddenly in mid-October the rate climbed to 18,000 crabs per day and continued to increase. Observers reported 52,000 crabs as bycatch for the first reporting period during this increase. The department was unsure that the reports were correct and waited until the next reporting period to double check bycatch rates. The next reporting period had a total bycatch of 80,000 Tanner crabs. The department immediately announced the closure of the Alaska Peninsula for October 21, 1993. The scallop fleet had caught a total of 135,000 Tanner crabs in a six day period.

In the Alaska Peninsula scallop fishery a total of six vessels made nine landings harvesting 135,487 pounds of scallops. The total Tanner crab bycatch was 151,000 crabs.

Stock Status

The department does no assessment of the abundance of scallops in the Alaska Peninsula. Effort in the Alaska Peninsula has been low and sporadic for the past 15 years. The 1993 fishery indicated that there may be populations of scallops that have not been fished in recent years. As the fleet fishes this area in future years the catches should remain stable or increase some over the 1993 harvest.

ALASKA PENINSULA OCTOPUS

Introduction

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

Until 1988 octopus were usually taken incidentally during the Tanner crab fishery. Since then, octopus has been landed by trawl and pot fishermen targeting codfish.

1993 Fishery

The 1993 commercial harvest of octopus was 24,417 pounds landed by 48 vessels.

SEA CUCUMBERS

The Alaska Peninsula was initially explored for sea cucumbers in 1993. There were 93,701 pounds of eviscerated product landed by 13 divers primarily in November and December. The fishery remained open until April 8, 1994 when closed by emergency order until October 1, 1994.

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

Year	Vssls.	Lndgs.	Pounds	Avg. Price
1980		Harvest Confidential		
1981		Harvest Confidential		
1982		Harvest Confidential		
1983		Harvest Confidential		
1984		NO FISHING		
1985		Harvest Confidential		
1986		NO FISHING		
1987		NO FISHING		
1988	30	185	43,332	\$.92
1989	27	122	14,890	\$1.00
1990	20	83	11,504	\$1.00
1991	30	106	21,812	\$1.00
1992	94	---	61,943	\$1.00
1993	48	---	24,417	\$1.00

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES OF THE
EASTERN ALEUTIANS AREA, 1993

By

Rance Morrison - Area Management Biologist

Robert K. Gish - Assistant Area Management Biologist

Dutch Harbor Area Office
P.O. Box 308
Dutch Harbor, Alaska 99692
(907) 581-1239

July 1994

DUTCH HARBOR RED KING CRAB

Introduction

The Dutch Harbor area or Statistical Area O, has as its northern boundary the latitude of Cape Sarichef, its eastern boundary the longitude of Scotch Cap Light on Unimak Island, its western boundary 171° West longitude (Figure 1). Area O is further broken down into five fishing districts (Figure 2). Declining red king crab stocks in the early 1980's resulted in a closure of the fishery in 1983; no fishing has occurred since that year. Although red king crab was the primary target species, a brown king crab fishery has developed that is now the focal point for the Dutch Harbor area king crab fishery.

Historic Background

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

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

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

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

1993/94 Fishery

There was no fishery for the 1993 season due to low abundance of red king crab.

Stock Status

The Department did not conduct a survey of the Dutch Harbor area in 1992 or 1993. A 10 day survey was conducted in 1991 with emphasis on areas where historically significant fisheries had occurred, and where juvenile and female king crab should have been concentrated. The survey indicated a very low stock abundance with no improvement in these stocks since the area was closed in 1983. Also, the survey results indicate that recovery should not be expected in the near future.

Table 1. Dutch Harbor, Area O, historic red king crab catch, 1968/69-1993.

Season	Date		Number of			Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Size ^d	Price/Pound
	Opened	Closed	Vessels	Landings	Crab ^a						
1968/69	01/01 ^e	03/15	NA	NA	NA	11,300,000	NA	NA	NA	7.0	NA
1969/70	09/15	02/15	41	375	NA	8,950,000	72,683	NA	NA	7.0	NA
1970/71	09/15	01/10	32	268	NA	9,652,000	56,198	NA	NA	7.0	NA
1971/72	09/15	10/23	32	210	1,447,692	9,391,615	31,531	6.5	46	6.5	NA
1973/74	11/01	11/24	56	290	1,780,673	12,722,696	41,840	7.1	43	6.5	\$0.65
1974/75	11/01	01/14	87	372	1,812,647	13,991,129	71,821	7.7	25	6.5	\$0.37
1975/76	11/01	01/10	79	369	2,147,350	15,906,666	86,874	7.4	25	6.5	\$0.42
1976/77	11/01	12/07	72	226	1,273,298	9,367,965	65,796	7.4	10	6.5	\$0.64
	12/13	01/13	38	61	86,619	830,458	17,298	9.6	5	8.0	\$0.79
1977/78	09/15	12/08	33	227	539,656	3,658,860	46,617	6.8	12	6.5	\$0.99
	12/08	01/05	6	7	3,096	25,557	812	8.3	4	7.5	\$1.35
1978/79	09/10	11/20	60	300	1,233,758	6,824,793	51,783	5.5	24	6.5	\$1.35
1979/80	09/10	01/10	104	542	2,551,116	15,010,874	120,554	5.9	21	6.5	\$0.90
1980/81	11/01	01/12	114	830	2,772,287	17,660,642	231,607	6.4	12	6.5	\$1.02
	01/15	02/15	54	120	182,349	1,392,923	30,000	7.6	6	7.5	\$1.03
1981/82	11/01	02/15	92	683	741,966	5,155,345	220,087	6.9	3	6.5	\$2.30
1982/83	11/01	01/15	81	278	64,380	431,179	72,924	6.7	1	6.5	\$3.43
1983/84					C L O	S E D					
1984/85					C L O	S E D					
1985/86					C L O	S E D					
1986/87					C L O	S E D					
1987/88					C L O	S E D					
1988/89					C L O	S E D					
1989/90					C L O	S E D					
1990/91					C L O	S E D					
1991/92					C L O	S E D					
1992/93					C L O	S E D					
1993/94					C L O	S E D					

^aIncludes deadloss

^bIn pounds.

^cDefined as catch per pot pull.

^dMinimum legal size in inches.

^ePrior to 1968/69 fishery was open 12 months/year. 1968/69 season ran 1-1-68 to 3-15-69.

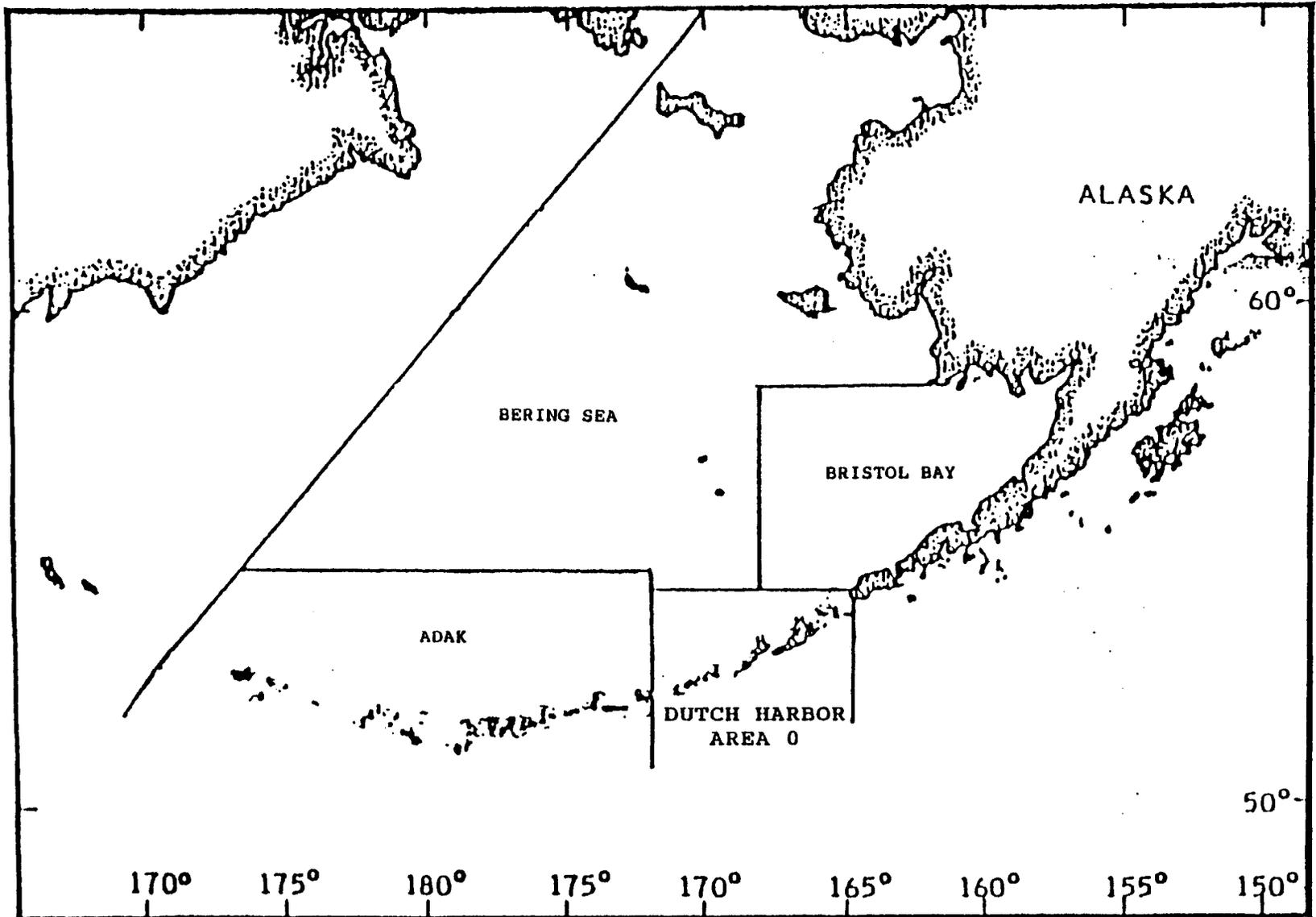


Figure 1. Dutch Harbor, Area 0, king crab area.

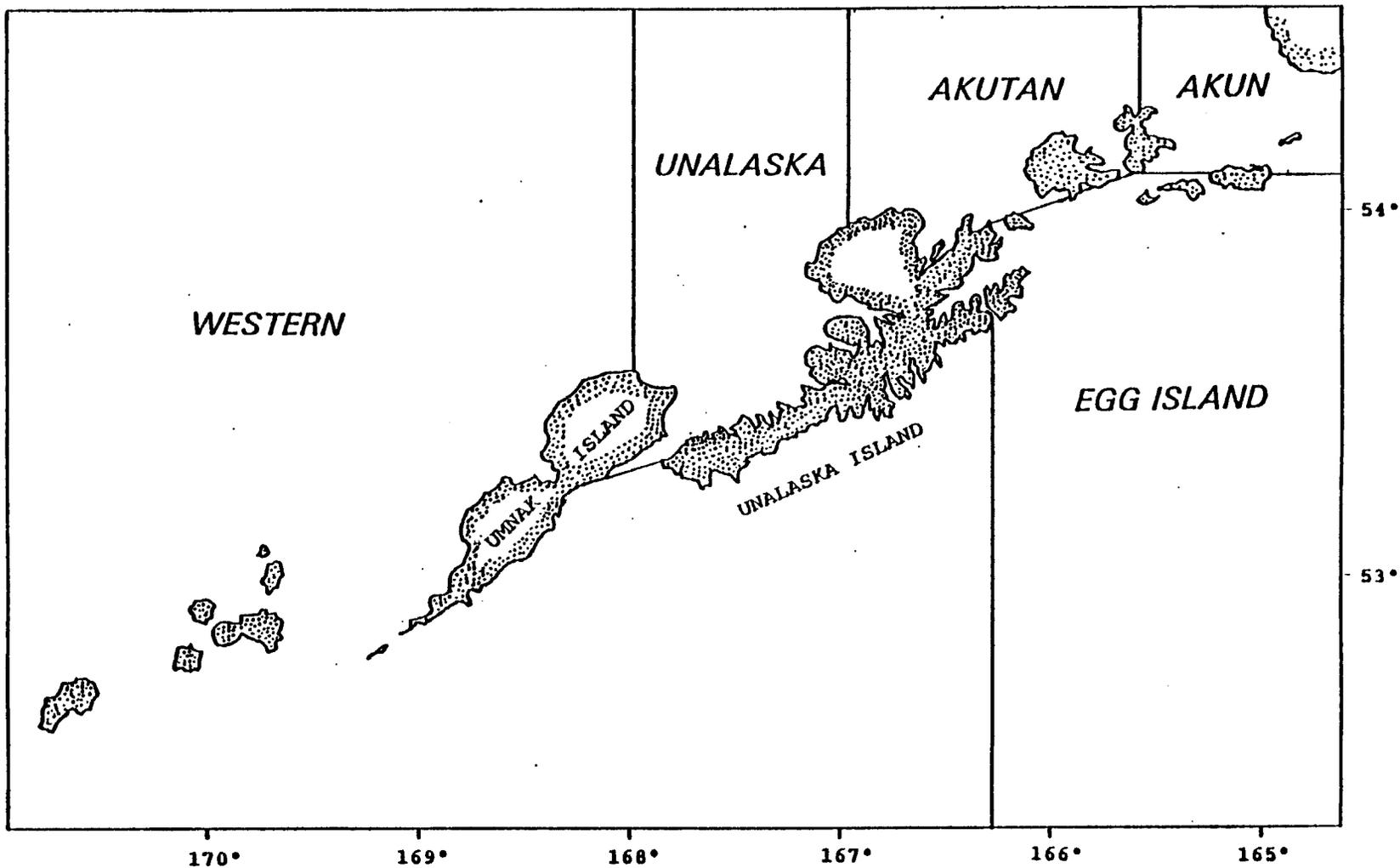


Figure 2. Dutch Harbor, Area O, king crab districts.

DUTCH HARBOR BROWN KING CRAB

Introduction

Dutch Harbor Statistical Area O has as its northern boundary the latitude of Cape Sarichef (54° 36' North latitude), as its eastern boundary the longitude of Scotch Cap Light (164°44' West longitude), and as its western boundary 171° West longitude.

Historic Background

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

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

Interest in the fishery grew 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 declined, effort and interest in brown king crab continued into the 1983/84 season, when 1.8 million pounds were landed by 47 vessels (Table 1).

In 1984 the Board of Fisheries adopted staff proposals to lower the brown king crab size limit from 6.5 inches to 6.0 inches (Table 3), 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. Thirteen vessels landed 1.5 million pounds of brown king crab (Table 1 and Table 2). Since the permit system was implemented the catch has averaged over 1.6 million pounds per year. All landings were taken from historical grounds developed during the 1982/83 season.

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

1993/94 Fishery

The Dutch Harbor brown king crab fishery opened on September 1, with approximately one-half the effort of the 1992/93 season, and one-quarter of the effort of three years ago (Table 1). The smaller effort levels may be attributed to the St. Matthew blue king crab and Pribilof red king

crab fisheries opening just 15 days later. The Bristol Bay red king crab Guideline Harvest Level (GHL) was larger than anticipated and may have contributed to the continued low participation.

Five vessels registered for this fishery; four vessels participated with 14 deliveries for a total of 915,460 pounds. The catch rate was ten crab per pot which is consistent with recent years. Average weight decreased slightly to 4.2 pounds (Table 1). The total value of the fishery this year was estimated to be \$1.9 million dollars (Table 2).

The fishery had little industry participation after November (Table 4), and was closed on March 1, 1994. Closure at this time avoided the possible movement of a large number of vessels into this fishery after the March 1 closure of the *C. opilio* fishery.

Stock Status

As there is no survey of the Dutch Harbor brown king crab stocks, the fishery is managed based on in-season and historic catch data. Tag returns from a study initiated in 1991, and dockside sampling data will assist with the future management of this fishery.

Table 1. Historic Dutch Harbor, Area O, brown king crab catch, 1981/82-1993.

Season	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Percent Oldshell	Average		Deadloss ^b
	Vessels	Landings						Weight ^b	Length ^d	
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	3.9	5.21	58.1	47,479
1983/84	47	132	328,353	1,810,973	29,595	11	NA	5.5	NA	45,268
1984 ^e	13	67	327,440	1,521,142	24,044	14	NA	4.6	161.2	70,362
1985	13	67	410,977	1,968,213	34,287	12	16.0	4.7	155.7	38,663
1986	17	71	400,389	1,869,180	37,585	11	-	4.7	NA	9,510
1987	22	77	299,734	1,383,198	43,017	7	25.0	4.6	149.6	24,210
1988 ^f	21	57	323,695	1,545,113	40,869	8	23.0	4.8	154.3	22,960
1989/90	13	70	424,067	1,852,249	43,345	10	30.0	4.4	150.9	17,421
1990/91	16	68	395,502	1,718,848	54,618	7	3.0	4.3	147.5	42,800
1991/92	11	50	335,647	1,447,732	40,604	8	4.0	4.3	147.9	45,100
1992/93	10	44	330,159	1,357,048	37,718	9	4.0	4.3	147.8	37,200
1993/94 ^g	4	14	217,788	915,460	22,490	10	NA	4.2	NA	7,324

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

^eSix inch permit season opened July 1.

^fSeptember 1 established as season opening date.

^gAs of December 31, 1993.

Table 2. Historic Dutch Harbor brown king crab economic performance, 1981/82-1993.

Year	GHL ^a	Season Total ^b	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)	Dates
1981/82	N/A	0.1	6	16	-0- ^d	2,906	\$ 2.05	\$ 0.2	(75)	11/01-1/15
1982/83	N/A	1.1	49	136	-0- ^d	29,369	\$ 3.00	\$ 3.3	(105)	11/1-2/15
1983/84	N/A	1.8	47	132	4,514	29,595	\$ 3.05	\$ 5.5	(105)	11/01-2/15
1984/85	N/A	1.5	13	67	1,394	24,044	\$ 1.35	\$ 2.0	(229)	07/01-2/15
1985/86	N/A	1.9	13	67	1,479	34,287	\$ 2.00	\$ 3.8	(121)	07/1-10/31
1986/87	N/A	1.8	17	71	1,575	37,585	\$ 2.85	\$ 5.1	(182)	07/1-12/31
1987/88	N/A	1.4	22	77	3,591	43,017	\$ 2.85	\$ 4.0	(62)	07/01-9/02
1988/89	N/A	1.5	21	57	4,215	40,869	\$ 3.00	\$ 4.5	(93)	09/01-12/4
1989/90	N/A	1.8	13	70	5,635	43,345	\$ 3.50	\$ 6.3	(104)	09/1-12/15
1990/91	N/A	1.7	16	68	5,225	54,618	\$ 3.00	\$ 5.1	(68)	9/01-11/09
1991/92	N/A	1.4	11	50	3,760	40,604	\$ 2.00	\$ 2.8	(74)	9/01-11/15
1992/93	N/A	1.3	10	44	4,222	37,718	\$ 2.50	\$ 3.3	(76)	9/01-11/17
1993/94 ^e	N/A	.9	5	14	2,334	22,490	\$ 2.15	\$ 1.9	(212)	09/1-03/31

^aGuideline Harvest Levels based on historic catches.

^bMillions of pounds.

^cMillions of dollars.

^dIncidental catches to red king crab fishery.

^eAs of December 31, 1993.

Table 3. Brown king crab harvest composition, Area O, Dutch Harbor.

Season	-----Season-----		Harvest ^{a, b}	Size Limit ^c	Price Per Pound
	Opened	Closed			
1981/82	11/01	01/15	115,715	6½	\$ 2.05
1982/83	11/01	02/15	1,184,971	6½	\$ 3.00
1983/84	11/01	02/15	1,810,973	6½	\$ 3.05
1984 ^d	07/01	12/31	1,521,142	6	\$ 1.35
1985	01/01	02/15	177,995	6	\$ 1.70
	07/01	10/31	1,799,656	6	\$ 2.00
1986 ^d	07/01	12/31	1,869,180	6	\$ 2.85
1987	07/01	09/02	1,383,198	6	\$ 2.85
1988	09/01	12/04	1,545,113	6	\$ 3.00
1989/90	09/01	02/15	1,852,249	6	\$ 3.50
1990/91	09/01	11/09	1,718,848	6	\$ 3.00
1991/92	09/01	11/15	1,447,732	6	\$ 2.00
1992/93	09/01	11/17	1,375,048	6	\$ 2.50
1993/94 ^e	09/01	03/31	915,460	6	\$ 2.15

^aDeadloss included.

^bIn pounds.

^cCarapace width in inches.

^dPartial closure 9/27 West of 169° 30'.

^eAs of December 31, 1993.

1945-46 preliminary Leach Harbor brown king crab catch by month

Month	Number of Pots	Average Weight ^a	Seadloss ^b
SEASON	11	217,708	912,480
TOTAL	22,450	14.2	10
			7,324

^aIn pounds.
^bDefined as catch per unit effort.

EASTERN ALEUTIAN DISTRICT TANNER CRAB

Introduction

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

1993 Fishery

The 1993 fishery opened at 12:00 noon January 15 with three registered vessels. This was similar to the prior year when four vessels registered. In February and March three more vessels registered bringing the total to six. One unregistered vessel fished, and made one delivery. Fishing effort was from seven vessels, one more than the 1992 fishery.

All vessels registered in the 1993 fishery made at least one delivery (ranging from one to 14 deliveries). There were 34 deliveries for a total harvest of 118,609 pounds. The 1993 harvest was 20 percent greater than the 1992 harvest of 98,703 pounds, and 137 percent greater than the 1991 harvest of 50,038 pounds, the smallest catch on record (Table 1). Most of the fishing effort was during the month of March (Table 2).

As in the past few years the majority of the catch came from bays around Akutan and Unalaska Islands, 44% and 56% respectively. Due to the distribution of fishing effort, statistical area information is confidential for the 1993 fishery. For the past several years catches have been confined to areas close to Dutch Harbor due to the predominance of small vessels in this fishery.

There has been little variation in average weight of crab since the fishery began, ranging from 2.2 to 2.5 pounds per crab. This year's average was 2.3 pounds per crab. Catch per unit of effort (CPUE) has also remained relatively stable between 12 and 15 crab per pot since the early 1980's. The 1993 CPUE was at the high end of the historic range averaging 15 crab per pot.

Stock Status

In the summer of 1990 and 1991 a trawl survey was conducted in the Eastern Aleutian district to determine the number of crab in the area. Survey results for both 1990 and 1991 indicated

C. bairdi population levels could support a harvest in the 100,000 pound range. Subsequently, the fishery has been managed inseason since 1991.

Table 1. Eastern Aleutian District historic *Chionoecetes bairdi* fishery statistics^a, 1973/74-1993.

Season	Date		Vessels	Number of		Harvest ^{b, c}	Pots Pulled	Average Weight ^c	CPUE ^d	Price per Pound
	Opened	Closed		Landings	Crab ^b					
1973/74	10/1	7/31	6	14	210,539	498,836	NR ^e	2.4	60	\$.NR ^e
1974/75	1/18	10/15	C o n f i d e n t i a l							
1975/76	1/20	10/15	8	13	219,166	534,295	4,646	2.4	47	\$0.20
1976/77	11/7	6/15	12	35	544,755	1,239,569	9,640	2.3	57	\$0.30
1977/78	11/1	6/15	15	198	1,104,631	2,494,631	29,855	2.3	37	\$0.38
1978/79	11/1	6/15	20	174	542,081	1,280,115	18,618	2.4	20	\$0.52
1979/80	11/1	6/15	18	107	352,819	886,487	18,040	2.4	20	\$0.52
1981	1/15	6/15	29	119	264,238	654,514	21,771	2.4	12	\$0.58
1982	2/15	6/15	31	138	332,260	739,694	30,109	2.2	11	\$1.25
1983	2/15	6/15	23	107	250,774	547,830	22,168	2.1	11	\$1.20
1984	2/15	6/15	16	91	104,761	239,585	11,069	2.3	9	\$0.98
1985	1/15	6/15	6	56	71,918	165,529	5,620	2.3	13	\$1.30
1986	1/15	6/15	9	37	73,187	167,339	10,244	2.3	7	\$1.50
1987	1/15	6/15	7	63	71,338	160,292	5,294	2.2	13	\$2.00
1988	1/15	4/10	19	130	129,468	309,918	11,011	2.4	12	\$2.10
1989	1/15	5/07	12	109	144,746	326,396	14,685	2.2	10	\$2.90
1990	1/15	4/09	10	75	73,269	171,785	6,858	2.3	11	\$1.85
1991	1/15	3/31	5	27	21,511	50,038	1,849	2.3	12	\$1.25
1992	1/15	3/31	6	29	42,096	98,703	2,963	2.3	14	\$1.75
1993	1/15	3/31	7	34	51,441	118,609	3,530	2.3	15	\$1.70

^a5½ inch minimum carapace width.

^bDeadloss included beginning 1980.

^cIn pounds.

^dDefined as catch per pot pull.

^eNo Record.

Table 2. Eastern Aleutian District *Chionoecetes bairdi* catch by month, 1993.

Month	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^c	CPUE ^c	Dead-loss ^b
	Vessels	Landings						
Feb ^d	5	15	13,298	28,529	835	2.2	16	0
Mar	6	19	38,143	90,080	2,695	2.4	14	0
TOTAL	7	34	51,441	118,609	3,530	2.3	15	0

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dJanuary and February combined.

ALEUTIAN DISTRICT DUNGENESS CRAB

Introduction

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

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

Historic Background

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

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

1993 Fishery

The Aleutian District Dungeness crab fishery opened by regulation on May 1. Similar to the 1992 fishery, no vessels immediately entered the 1993 fishery at the regulatory opening. A total of five vessels made 12 landings, the first of which occurred in September. A total harvest of 7,531 pounds of crab were harvested with an average CPUE of four crab per pot. The majority of deliveries were made during the month of October, primarily from the south side of Unalaska Island and the northwest side of Akutan Island. The fishery closed by regulation on December 31 as it has for the past seven years (Table 1).

Table 1. Aleutian District historic Dungeness crab catch statistics, 1974-1993.

Year	Season Dates	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Price Per Pound
		Vessels	Landings						
1974	1-1/12-31			Confidential					
1975	1-1/12-31			Confidential					
1976	5-1/12-31			N O C A T C H					
1977	5-1/12-31			N O C A T C H					
1978	5-1/12-31			Confidential					
1979	5-1/12-31			Confidential					
1980	5-1/12-31			N O C A T C H					
1981	5-1/12-31			N O C A T C H					
1982/83	5-1/ 2-1			Confidential					
1983/84	5-1/ 2-1			Confidential					
1984/85	5-1/ 2-1	4	50	40,128	91,739	13,555	2.3	3	\$1.15 to \$1.50
1985	5-1/ 2-1			Confidential					
1986	5-1/12-31			Confidential					
1987	5-1/12-31	5	43	13,247	26,627	2,987	2.0	4	\$0.95
1988	5-1/12-31	6	45	10,814	22,634	2,581	2.1	4	\$0.90
1989	5-1/12-31	4	31	5,165	11,124	2,078	2.1	2	\$0.90
1990	5-1/12-31	3	11	8,379	17,365	1,345	2.1	6	\$0.90
1991	5-1/12-31	4	14	3,654	7,412	732	2.0	5	\$1.25
1992	5-1/12-31	4	13	2,854	5,649	555	2.0	5	\$0.80
1993	5-1/12-31	5	12	3,448	7,531	797	2.2	4	\$0.78

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

DUTCH HARBOR SCALLOPS

Introduction

The Dutch Harbor Scallop Management Area includes the waters within the boundaries of 164° 44' West longitude, 54° 36' North latitude, and 171° West longitude. The southern boundary extends 200 miles seaward from the territorial sea baseline (Figure 1).

Historic Background

Scallop fishing in Alaskan waters dates back to the late 1960's when scallops were primarily harvested in the Kodiak and Yakutat areas. Alaska Department of Fish and Game records indicate the first harvest of Weathervane scallops from the Dutch Harbor area took place in 1982 when 5 vessels landed 62,105 pounds of shucked meats (Table 1).

From 1983 to 1992, with the exception of 1986, fewer than three vessels fished for scallops in this area. As a result the catch and effort data are confidential or was not reported. In 1986 five vessels landed 406,642 pounds of shucked meats. The average annual catch from 1985 through 1992 was 250,000 pounds.

Through the 1992 season the Dutch Harbor Management Area was open year around to scallop dredging, with only specific embayments closed to fishing as a protective measure for crab nursery areas.

1993 Fishery

In May of 1993 the Commissioner of Fish and Game declared the state's scallop fisheries a "High Impact Emerging Fishery" and established new regulations concerning crab bycatch limits, fishing seasons and observer requirements. At that time the entire Westward Region was closed until new regulations could be implemented.

On July 1 the Dutch Harbor Area reopened to scallop fishing with a new Fisheries Management Plan (FMP) which required 100% observer coverage. The 1993 scallop guideline harvest was established at 170,000 pounds with bycatch caps of 45 king crab and 50,500 *C. bairdi* Tanner crab.

Fewer than three vessels reported landing scallops from the Dutch Harbor Management area during any given month in 1993, consequently monthly catch and effort information is confidential. During 1993 three vessels harvested a total of 39,346 pounds of shucked scallops from the Dutch Harbor Management Area. While the total harvest was well below the 170,000

pound harvest guideline, the fishery was closed on September 18 when the total number of incidentally captured Tanner crab exceeded the bycatch cap with an estimated take of 50,800 crabs. The fishing effort was concentrated inside three miles off the northwest shore of Umnak Island, with the most poundage delivered in July.

Table 1. Commercial harvest of weathervane scallops from the Dutch Harbor Scallop Management Area, 1982-1993.

Season	Number of		Pounds of Scallops ^a	Average		
	Vessels	Landings		Drags	Pounds/Drag	Price/Pound
1982	5	8	NA	62,105	NA	\$ 3.11
1983		NO REPORTED CATCH				
1984		NO REPORTED CATCH				
1985		CONFIDENTIAL				
1986	5	37	8,752	406,642	47	\$ 3.50
1987		CONFIDENTIAL				
1988		CONFIDENTIAL				
1989		CONFIDENTIAL				
1990		CONFIDENTIAL				
1991		CONFIDENTIAL				
1992		CONFIDENTIAL				
1993	3	6	572	39,346	69	NA

^aShucked meats.

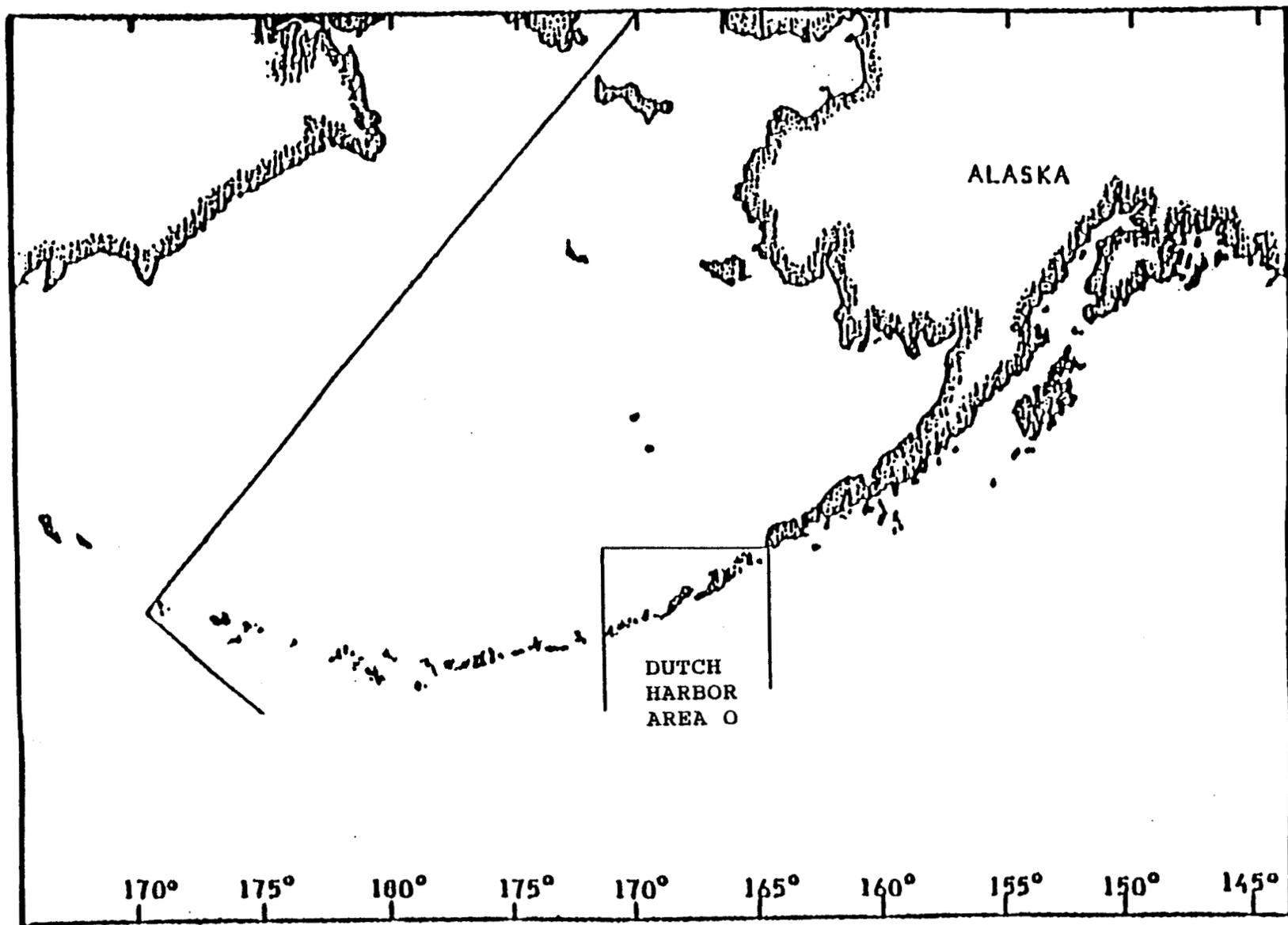


Figure 1. Dutch Harbor, Area O, scallop registration area.

ALEUTIAN DISTRICT TRAWL SHRIMP

Introduction

The Aleutian District of Area J for shrimp includes all Bering Sea and Pacific Ocean waters west of the longitude of Cape Sarichef. The Aleutian District includes four identified sections: Unalaska Bay, Makushin Bay, Usof Bay, and Beaver Inlet.

Historic Background

The trawl fishery for shrimp in the Aleutian District began in 1972. Catch and effort increased in subsequent years to a peak harvest of 6.8 million pounds in 1977/78. Since 1978 seasons have been reduced as a result of sharp declines in catches. From 1983 to 1992 no fishing occurred. In 1992 four vessels, all catcher processors, prospected in the Aleutians during the closed pollock season for an alternate fishery to their main pollock trawling activities. Few shrimp were located and all four vessels quit fishing after making a total of six landings for 72,133 pounds (Table 1).

1993 Fishery

A total of three vessels registered to fish for shrimp in the Aleutian District, however no landings were made during the 1993 season.

Table 1. Aleutian District historical trawl shrimp fishery statistics, 1972-1993.

Season ^a	Date		Number of			Harvest ^c	Price/ Pound
	Opened	Closed	Vessels	Landings	Tows		
1972	1/72	12/72	C O N F I D E N T I A L				
1973	1/73	12/73	C O N F I D E N T I A L				
1974	1/74	12/74	7	88	721	5,749,407	NR
1975	1/75	12/75	C O N F I D E N T I A L				
1976	1/76	12/76	8	66	689	3,670,609	\$.07
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 ^c	5/82	6/83	C O N F I D E N T I A L				
1983			N O F I S H I N G				
1984			N O F I S H I N G				
1985			N O F I S H I N G				
1986			N O F I S H I N G				
1987			N O F I S H I N G				
1988			N O F I S H I N G				
1989			N O F I S H I N G				
1990			N O F I S H I N G				
1991			N O F I S H I N G				
1992	1/92	12/92	4	6	94	72,133	NR
1993			N O F I S H I N G				

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

^bIn pounds.

^cCatch occurred May and June 1982.

ALEUTIAN ISLANDS MISCELLANEOUS SPECIES

Octopus

A total of two vessels registered to harvest octopus from the Aleutian Islands District, however no landings were made during the 1993 season.

Urchins

No vessels registered to harvest urchins from the Aleutian Islands District during the 1993 season.

Snails

No vessels registered to harvest snails from the Aleutian Islands District during the 1993 season.

Hair crab

A total of eight vessels registered to fish hair crab in the Aleutian Islands District during the 1993 season. Of these, only three made deliveries. A total of 3,452 pounds were landed from the four deliveries recorded for this fishery (Table 1). This year's level of effort was double that of the 1992 fishery, and is reflective of increased interest in hair crab in other areas of the region. This years harvest came predominantly from that portion of the district west of Adak Island, incidental to the harvest of Area R brown king crab.

No stock assessment surveys are conducted for hair crab in the Aleutian Islands district. However, based on a general lack of significant harvest from this area despite moderate levels of exploratory fishing in recent years, stocks are believed to be limited.

Table 1. Aleutian Islands District Korean hair crab catch statistics, 1993.

Year	Vessels	Number of Landings	Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Average Weight ^b	Length ^d	Deadloss ^b
1993	3	4	2,648	3,452	6,104	.4	1.3	N/A	0

^aDeadloss included

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

ANNUAL MANAGEMENT REPORT FOR THE SHELLFISH FISHERIES OF THE
WESTERN ALEUTIANS AREA, 1993

By

Rance Morrison - Area Management Biologist

Robert K. Gish - Assistant Area Management Biologist

Dutch Harbor Area Office
P.O. Box 308
Dutch Harbor, Alaska 99692
(907) 581-1239

July 1994

ADAK BROWN KING CRAB

Introduction

Adak, Area R, has as its eastern boundary 171° West longitude, as its western boundary the U.S.-Russian Convention Line of 1867, and as its northern boundary 55°30' North latitude (Figure 1).

Historic Background

The Adak brown king crab fishery began during the 1975/76 season when one vessel made one delivery containing this species. Occurring incidentally to the red king crab fishery, catches of brown crab were low during the 1975/76 to 1980/81 seasons (Table 1).

Fishermen began to target on brown king crab for the first time during the 1981/82 season when 14 vessels made 76 landings totaling 1.2 million pounds (Table 1). When this fishery began, most of the catch came from the North Amlia and Petrel Bank Districts. Recently the Western Aleutian District has become a significant producer as well (Figure 2). Lacking the large inter-island passes where brown king crab are most numerous, the other three districts in Area R produce much lower catches. In July 1985, the minimum legal size was reduced from 6.5 to 6.0 inches across the carapace.

1992/93 Fishery

The Adak brown king crab fishery opened on November 1, concurrent with the Adak and Bristol Bay red king crab seasons and the Tanner crab season in the Western Aleutian Islands Area. Prior to the start of the season registrations and tank inspections were given to two catcher-processors and three catcher-only vessels.

Eighteen vessels registered to fish Adak brown king crab during the 1992/93 season, and 130 landings were made for an overall catch of 4,916,149 pounds. This is approximately 78% of the 1991/92 catch and the lowest catch on record since the 1984/85 fishing year (Table 1). A total of 165,503 pots were pulled during the course of the fishery with an average of seven legal sized brown king crab per pot. Average weight for the season was 4.1 pounds per crab (Table 1).

The overall average size of crab in this year's fishery was 147 millimeters carapace length (Table 2). While comparable to the overall average size of crab harvested in the past 6 years, this is a full 10 millimeters smaller than the average size of crab harvested during the early 1980's. The minimum legal carapace width was 6.5 inches through the 1984/85 season, and 6.0 inches since the 1985/86 season. New shell crab accounted for approximately 94% of crab harvested in this fishery which closed by regulation on August 15, as it has for the past 7 years (Table 2).

Exvessel value for the 1992/93 fishery averaged \$2.05 per pound compared to \$2.50 per pound for the prior year's fishery. Total fishery value was approximately \$10.1 million (Table 3).

Although effort occurred throughout the entire registration area (Table 4), the majority of the catch came from the Amukta and Seguam Pass areas, and to a lesser degree, the Petrel Banks area around Semisopchnoi Island. Most of the effort this year was during the spring and early summer, from April through July (Table 5).

Stock Status

The Adak brown king crab stocks were surveyed in a small portion of this area in 1991. No population estimates are available. The fishery continues to be managed based on historical catch information and is monitored through weekly observer reports.

Table 1. Adak, Area R, historic brown king crab catch statistics, 1975/76-1992/93.

Season	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Vessels	Landings						
1975/76				C O N F I D E N T I A L				
1976/77				C O N F I D E N T I A L				
1977/78				C O N F I D E N T I A L				
1978/79				C O N F I D E N T I A L				
1979/80				C O N F I D E N T I A L				
1980/81	4	4	11,523	58,914	700	5.1	17	5,000
1981/82	14	76	217,700	1,194,046	24,627	5.5	9	22,064
1982/83	99	501	1,509,001	8,006,274	150,103	5.3	10	220,743
1983/84	157	1,002	1,534,909	8,128,029	226,798	5.3	7	171,021
1984/85	38	85	643,597	3,180,095	64,777	4.9	10	125,073
1985/86 ^d	49	386	2,052,048	11,124,759	202,401	4.5	12	5,304
1986/87	62	525	2,923,947	12,798,004	392,185	4.4	7	276,736
1987/88	46	386	1,908,989	8,001,177	267,705	4.2	7	165,415
1988/89	74	455	2,165,508	9,080,196	280,732	4.2	8	122,251
1989/90	64	505	2,520,786	10,162,400	324,153	4.0	8	100,724
1990/91 ^e	13	167	1,312,116	5,250,687	160,960	4.0	8	176,583
1991/92	16	206	1,511,751	6,254,409	192,949	4.1	8	96,848
1992/93	18	130	1,198,169	4,916,149	165,503	4.1	7	104,215

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dSize limit reduced from 6.5 to 6 inches.

^ePartial closure August 7.

Table 2. Adak brown king crab harvest composition by fishing seasons. 1975/76-1992/93.

Season	-----Season----- Opened Closed		Harvest ^{a, b}	Percent New Shell	Average Length ^c	Minimum Size ^d
1975/76	11/01	12/18	25,490	NA	NA	6.5
1976/77	01/07	04/15	2,285	NA	NA	6.5
1977/78	02/20	03/20	47,445	NA	NA	6.5
1978/79	02/21	10/01	0	NA	NA	6.5
1979/80	01/15	04/01	23,485	NA	NA	6.5
1980/81	01/15	03/28	58,914	97.6	158.4	6.5
1981/82	11/01	06/15	1,194,046	90.5	159.6	6.5
1982/83	11/01	04/15	8,006,274	92.4	158.2	6.5
1983/84	11/10	04/15	8,128,029	87.8	NA	6.5
1984/85	11/10	07/08	3,180,095	87.5	156.7	6.5
1985/86	11/01	08/15	11,124,759	86.3	151.3	6.0
1986/87	11/01	08/15	12,798,004	69.1	149.5	6.0
1987/88	11/01	08/15	8,001,177	91.7	146.9	6.0
1988/89	11/01	08/15	9,080,196	91.2	149.1	6.0
1989/90	11/01	08/15	10,162,400	95.3	148.5	6.0
1990/91 ^e	11/01	08/15	5,250,687	91.5	144.5	6.0
1991/92	11/01	08/15	6,254,409	94.4	144.7	6.0
1992/93	11/01	08/15	4,916,149	93.5	147.0	6.0

^aDeadloss included.

^bIn pounds.

^cIn millimeters.

^dCarapace width in inches.

^ePartial closure August 7.

Table 3. Historic Adak brown king crab economic performance, 1980/81-1992/93.

Year	GHL ^a	Season Total ^b	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered ^c	Pulled	Exvessel	Total ^d	(Days)	Dates
1980/81	N/A	0.05	4	4	581	700	\$ 0.90	\$ 0.05	(72)	01/15-3/28
1981/82	N/A	1.2	14	76	2,647	24,627	\$ 2.06	\$ 2.5	(227)	11/01-6/15
1982/83	N/A	7.8	99	501	13,111	150,103	\$ 3.01	\$23.5	(166)	11/01-4/15
1983/84	N/A	8.0	157	1,002	17,406	226,798	\$ 2.92	\$23.4	(157)	11/10-4/15
1984/85	N/A	3.1	38	85	5,270	64,777	\$ 2.00	\$ 6.2	(240)	11/10-7/08
1985/86	N/A	11.1	49	386	7,057	202,401	\$ 2.50	\$27.8	(288)	11/01-8/15
1986/87	N/A	12.5	62	325	12,958	392,185	\$ 3.00	\$37.5	(288)	11/01-8/15
1987/88	N/A	7.8	46	386	10,687	267,705	\$ 3.00	\$23.4	(289)	11/01-8/15
1988/89	N/A	9.0	74	455	23,627	280,732	\$ 3.20	\$28.8	(288)	11/01-8/15
1989/90	N/A	10.1	64	505	14,724	324,153	\$ 3.00	\$30.3	(288)	11/01-8/15
1990/91	N/A	5.3	13	167	7,380	160,960	\$ 3.00	\$15.9	(288)	11/01-8/15
1991/92	N/A	6.1	16	206	7,635 ^e	192,949	\$ 2.50	\$15.2	(289)	11/01-8/15
1992/93	N/A	4.9	18	130	8,236 ^e	165,503	\$ 2.05	\$10.1	(288)	11/01-8/15

^aNo preseason Guideline Harvest Levels.

^bMillions of pounds.

^cNo separate registration from red king crab.

^dMillions of dollars.

^eGear directed fishing on brown king crab.

Table 4. 1992/93 Adak brown king crab catch by statistical area.

Stat. Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Dead-loss ^b
	Landings	Crab ^a					
715201	7	51,054	196,879	5,475	4.0	9	7,650
715202	26	239,103	972,657	20,973	4.1	11	37,900
715231	24	174,917	718,783	23,418	4.1	8	20,992
715232	5	36,507	146,287	3,625	4.0	10	4,875
725201	22	180,359	750,952	21,671	4.2	8	18,667
725230	12	50,236	202,251	4,714	4.0	11	2,416
735201	7	9,413	42,762	1,983	4.5	5	1,000
735230	8	13,686	60,871	3,753	4.5	4	0
745131	5	22,335	101,333	9,885	4.5	2	743
775136	6	4,778	20,579	830	4.3	6	0
785131	11	28,719	124,636	4,875	4.3	6	0
785135	5	3,911	16,135	645	4.1	6	0
795102	5	5,614	22,262	896	4.0	6	0
795131	12	20,112	82,304	3,069	4.1	7	0
795132	6	9,366	37,663	1,329	4.0	7	0
795200	18	14,130	58,459	3,853	4.1	4	0
805103	23	19,447	81,150	2,665	4.2	7	0
805131	8	5,650	24,187	1,211	4.3	5	0
805132	25	91,105	376,885	8,740	4.1	10	0
805201	15	20,426	85,216	2,646	4.2	8	0
815100	7	2,824	11,915	510	4.2	6	0
815131	14	14,099	58,187	2,104	4.1	7	0
835200	7	22,406	97,031	2,997	4.3	8	0
845130	4	7,088	31,008	1,011	4.4	7	0
845202	5	5,396	22,929	717	4.3	8	0
855200	5	4,305	17,688	622	4.1	7	0
875232	4	7,933	31,193	1,769	4.0	5	1,490
Others ^d	64	133,250	523,947	29,517	4.1	5	8,482
TOTAL	130	1,198,169	4,916,149	165,503	4.10	7	104,215

^aDeadloss included.

^bIn Pounds.

^cDefined as catch per pot pull.

^dTotal of 38 statistical areas.

Table 5. 1992/93 Adak brown king crab catch statistics by month.

Month	Number of		Crab ^a	Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Vessels	Landings						
Nov	5	6	65,073	263,067	3,600	4.0	17	22,200
Dec	6	9	76,634	323,987	17,401	4.2	4	11,500
Jan ^d	5	10	197,741	833,355	15,509	4.3	14	10,000
Feb			C O N F I D E N T I A L					
Mar	3	7	136,375	534,908	12,064	4.0	11	17,000
Apr	11	21	170,422	694,326	20,079	4.1	8	10,490
May	11	28	245,502	1,006,976	39,648	4.1	6	16,725
Jun	11	21	130,112	534,534	19,449	4.1	7	6,000
Jul	8	19	120,687	486,463	24,773	4.0	5	10,300
Aug	8	9	52,927	228,233	12,980	4.3	4	0

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dJanuary and February combined.

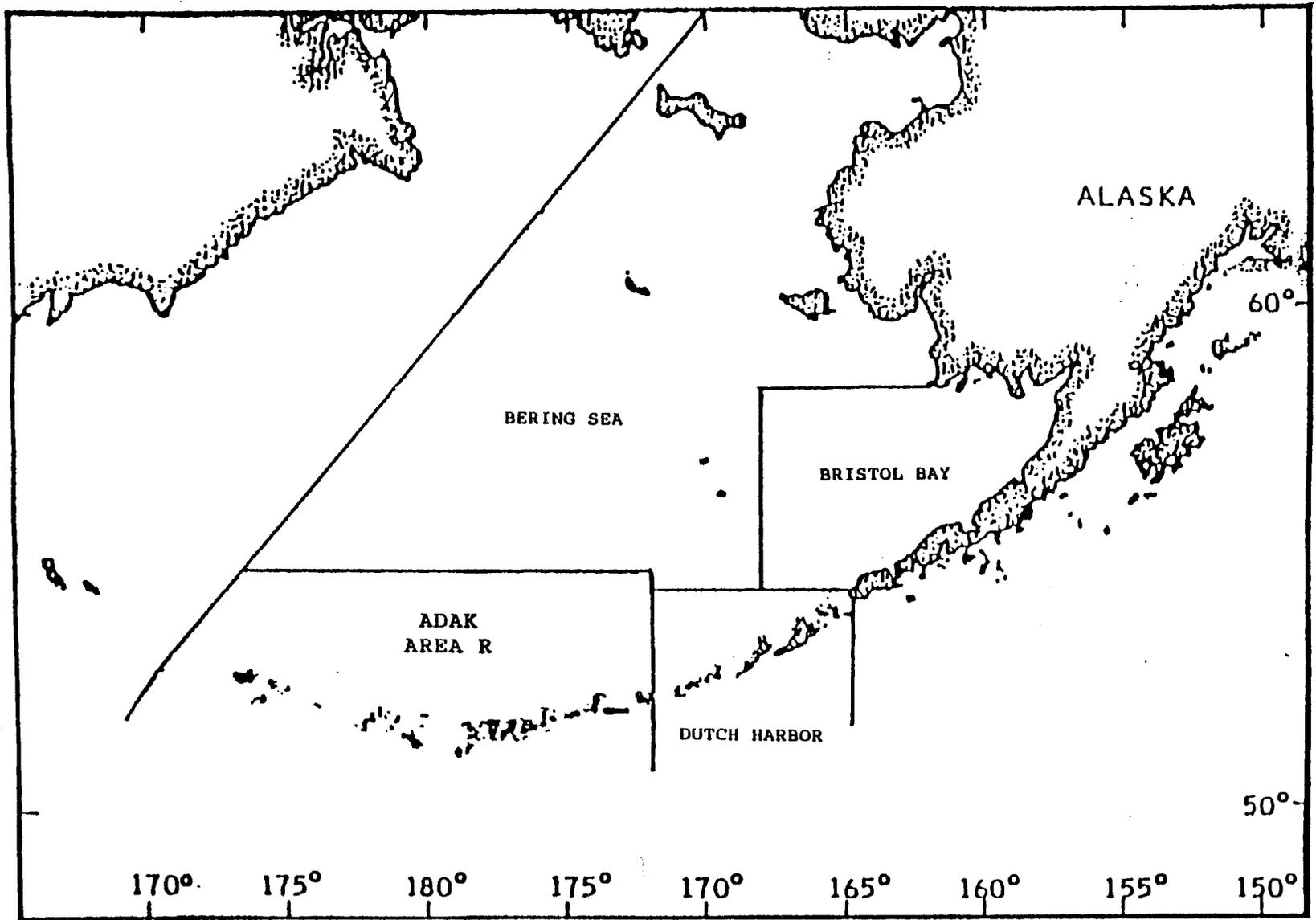


Figure 1. Adak, Area R, king crab area.

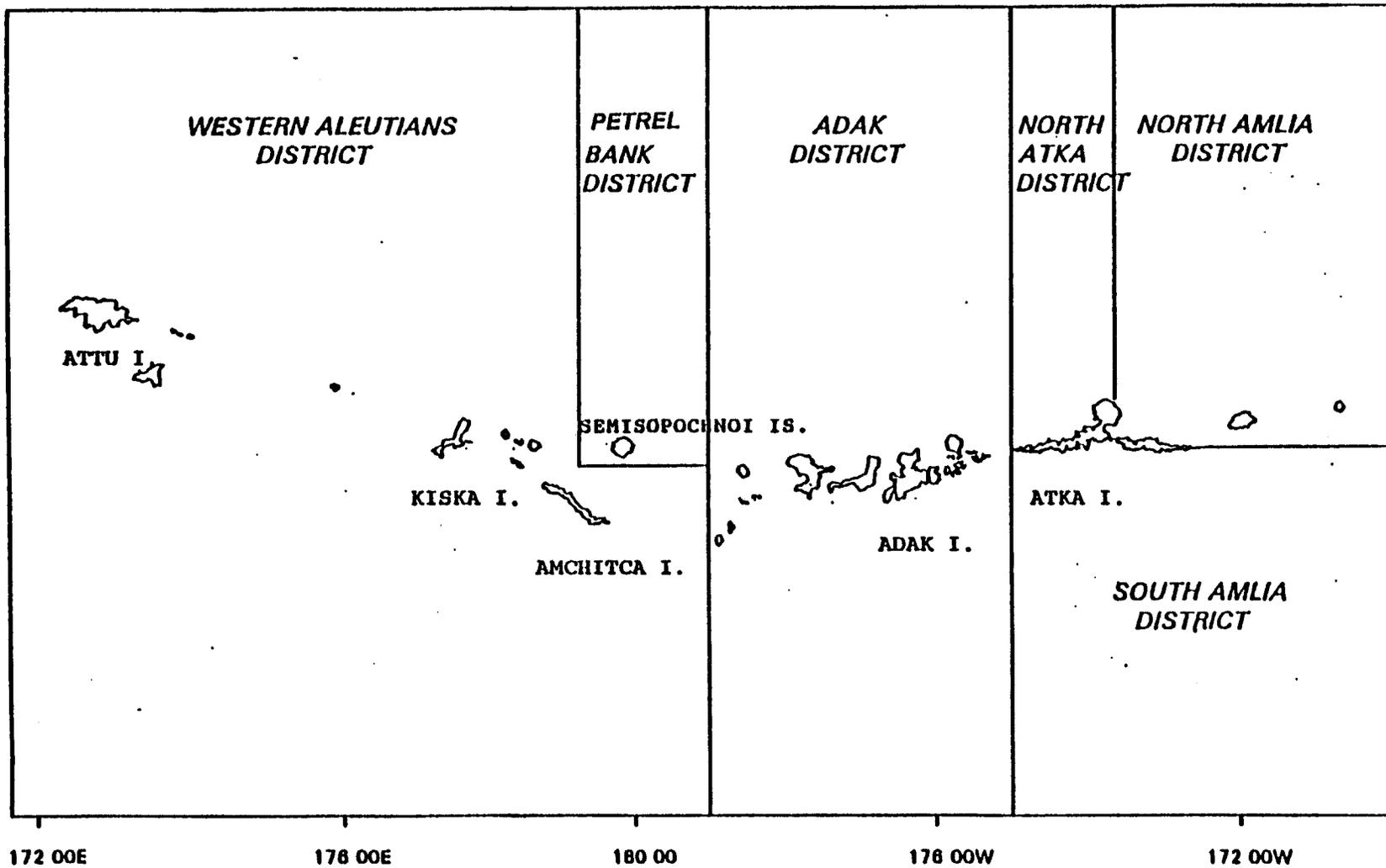


Figure 2. Adak, Area R, king crab districts.

ADAK RED KING CRAB

Introduction

Adak, Area R, is comprised of all continental shelf waters west of 171° West longitude, south of 55° 30' North latitude and east of the U.S. - Russian Convention Line of 1867 (Figure 1).

Historic Background

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

From 1967/68 to the 1972/73 seasons, catches were relatively stable at 14 million to 19 million pounds (Table 1). The large catches were maintained by several years of strong recruitment and by the exploitation of populations discovered east of Adak Island. In addition to the eastward exploration, some vessels moved into the waters of the Petrel Banks, Amchitka Islands and other westward islands creating the separate Western Aleutians, Area S, fishery in 1967/68. The catch in Area S was not large, and in 1978 management was simplified by eliminating Area S to form the Petrel Bank and Western Aleutian Districts of Area R (Figure 2).

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

1992/93 Fishery

The red king crab fishery in the Adak Management Area opened on November 1 concurrently with the Bristol Bay red king, Adak brown king and Western Aleutian Tanner crab seasons. Directed vessel effort on red king crab in the Adak area was once again low due to the opening of the Bristol Bay red king crab fishery. Also the *C. bairdi* fishery in Bristol Bay opened seven days following the closure of the red king crab season.

Total catch for the 1992/93 season was 1,286,424 pounds, an increase from the 951,278 pounds harvested during the 1991/92 season. A total of 12 vessels made 30 landings during this fishery (Table 1). The total number of landings in 1992/93 were down from the 35 made in 1991/92, the average delivery was almost 43,000 pounds compared to 27,000 pounds, respectively.

The exvessel price for this year's fishery was \$5.05 per pound, up from last year's \$3.00 per pound. As a result the total exvessel value for the 1992/93 fishery was \$6.5 million (Table 2).

Catches came predominantly from four statistical areas (Table 3) in the Petrel Bank District around Semisopochnoi Island (Figure 2). Landings occurred primarily during November (Table 4). The average weight was 6.0 pounds, and the overall CPUE for legal crab was 13 per pot (Tables 3 and 4).

Due to higher than average catches during November and the concentration of landings from one small area, a fishery closure was announced on January 15, a full month before the regulatory closure scheduled for February 15 (Table 5).

Stock Status

Adak king crab stocks have not been surveyed since 1977, however the Mandatory Observer Program has maintained 100 percent coverage on processing vessels on the fishing grounds since 1988. Much needed biological information is being obtained in the form of bycatch sampling on catcher-processors and is being analyzed by the Alaska Department of Fish and Game staff.

Compared to historic levels, the population is depressed; most of the catch continues to come from the Petrel Banks area.

Table 1. Adak, Area R, historic red king crab catch statistics, 1960/61-1992/93.

Season	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Percent Recruits	Average		Deadloss ^b
	Vessels	Landings						Weight ^b	Length ^d	
1960/61	4	41	NA	2,074,000	NA	9	NA	NA	NA	NA
1961/62	8	218	NA	6,114,000	NA	NA	NA	NA	NA	NA
1962/63	9	248	NA	8,006,000	NA	NA	NA	NA	NA	NA
1963/64	11	527	NA	17,904,000	NA	NA	NA	NA	NA	NA
1964/65	18	442	NA	21,193,000	NA	NA	NA	NA	NA	NA
1965/66	10	431	NA	12,915,000	NA	NA	NA	NA	NA	NA
1966/67	10	90	NA	5,883,000	NA	NA	NA	NA	NA	NA
1967/68	22	505	NA	14,131,000	NA	NA	NA	NA	NA	NA
1968/69	30		NA	16,100,000	NA	NA	NA	NA	NA	NA
1969/70	33	435	NA	18,016,000	115,929	NA	NA	6.5	NA	NA
1970/71	35	378	NA	16,057,000	124,235	NA	NA	NA	NA	NA
1971/72	40	166	NA	15,475,924	46,011	NA	NA	NA	NA	NA
1972/73	43	313	3,461,025	18,724,144	81,133	43	50.9	5.4	NA	NA
1973/74	41	239	1,844,974	9,741,464	70,059	26	48.5	5.3	148.6	NA
1974/75	36	97	532,298	2,774,963	32,620	16	48.6	5.2	148.6	NA
1975/76	20	25	79,977	411,583	8,331	10	67.5	5.2	147.2	NA
1976/77										
				C l o s e d						
1977/78	12	18	160,343	905,527	7,269	22	43.9	5.7	152.2	NA
1978/79	13	27	149,491	807,195	13,948	11	56.7	5.4	NA	1,170
1979/80	18	23	82,250	467,229	9,757	8	42.8	5.7	152.0	24,850
1980/81	17	52	254,390	1,419,513	20,914	12	65.2	5.6	149.0	54,360
1981/82	46	106	291,311	1,648,926	40,697	7	55.5	5.7	148.3	8,759

-Continued-

Table 1. (page 2 of 2)

Season	Number of		Harvest ^{a, b}	Pots Pulled	CPUE ^c	Percent Recruits	Average		Deadloss ^b	
	Vessels	Landings					Crab ^a	Weight ^b		Length ^d
1982/83	72	191	284,787	1,701,818	66,893	4	49.9	6.0	150.8	7,855
1983/84	106	248	298,948	1,981,579	60,840	5	30.4	6.6	157.3	3,833
1984/85	64	113	206,751	1,367,672	50,685	4	31.4	6.6	155.1	0
1985/86	35	89	162,271	906,293	32,478	5	40.0	5.6	152.2	6,120
1986/87	33	69	126,146	712,243	29,189	4	NA	5.6	NA	500
1987/88	71	109	211,712	1,213,933	43,433	5	65.3	5.7	148.5	6,900
1988/89	73	156	266,053	1,567,314	64,374	4	39.0	5.9	153.1	557
1989/90	56	123	196,070	1,118,566	54,513	4	NA	5.7	NA	759
1990/91	7	34	146,903	828,105	10,674	14	NA	5.6	NA	0
1991/92	10	35	165,356	951,278	16,636	10	NA	5.7	NA	0
1992/93	12	30	218,049	1,286,424	16,129	13	NA	6.0	NA	5,000

^aIncludes deadloss.

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

Table 2. Historic Adak red king crab economic performance, 1980/81-1992/93.

Year Dates	Season GHL ^a	Number of		Number of Pots		Value		Season Length	
		Total ^b	Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)
1980/81	N/A	1.4	17	52	2,471	20,914	\$ 0.92	\$ 1.3	(72) 01/15-03/28
1981/82	N/A	1.6	46	106	8,698	40,697	\$ 2.01	\$ 3.2	(107) 11/01-02/15
1982/83	N/A	1.7	72	191	13,111	66,893	\$ 3.44	\$ 5.9	(76) 11/01-01/15
1983/84	N/A	2.0	106	248	19,407	60,840	\$ 3.43	\$ 6.9	(340) 01/10-12/16
1984/85	N/A	1.4	64	113	8,876	50,685	\$ 2.10	\$ 2.9	(97) 11/10-02/15
1985/86	N/A	.9	35	89	8,274	32,478	\$ 2.15	\$ 1.9	(107) 11/01-02/15
1986/87	N/A	.7	33	69	12,958	29,189	\$ 3.85	\$ 2.7	(107) 11/01-02/15
1987/88	N/A	1.2	71	109	17,720	43,433	\$ 4.00	\$ 4.8	(107) 11/01-02/15
1988/89	N/A	1.6	73	156	23,927	64,374	\$ 5.00	\$ 8.0	(34) 11/01-12/04
1989/90	N/A	1.1	56	123	19,363	54,513	\$ 4.20	\$ 4.6	(107) 11/01-02/15
1990/91	N/A	.7	7	34	8,500	10,674	\$ 4.00	\$ 2.8	(107) 11/01-02/15
1991/92	N/A	.9	10	35	2,305	16,636	\$ 3.00	\$ 2.9	(107) 11/01-02/15
1992/93	N/A	1.3	12	30	2,716 ^d	16,129	\$ 5.05	\$ 6.5	(107) 11/01-02/15

^aNo preseason Guideline Harvest Levels.

^bMillions of pounds.

^cMillions of dollars.

^dIncludes gear of vessels landing both red and brown king crab.

Table 3. 1992/93 Adak red king crab catch by statistical area.

Stat Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Dead-loss ^b
	Landings	Crab ^a					
795200	14	50,263	308,201	4,017	6.1	13	0
805131	12	43,741	255,007	1,753	5.8	25	0
805132	9	39,490	228,738	1,683	5.8	24	0
805201	22	74,015	421,991	6,953	5.7	11	5,000
Other	9	10,540	72,487	1,723	6.9	7	0
Total	30	218,049	1,286,424	16,129	6.0	13	5,000

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 4. 1992/93 Adak red king crab catch statistics by month.

Month	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Dead-loss ^b
	Vessels	Landings						
Nov	10	16	134,250	782,217	8,241	6.0	16	5,000
Dec ^d	10	14	83,799	504,207	7,888	6.0	11	0
Total	12	30	218,049	1,286,424	16,129	6.0	13	5,000

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dDecember and January combined.

Table 5. Adak, Area R, red king crab harvest composition by season. 1960/61-1992/93.

Season ^a	Season		Harvest ^b	Minimum Size ^c	Price Per Pound
	Opened	Closed			
1960/61	01/01	12/31	2,074,000	-	N/A
1961/62	01/01	12/31	6,114,000	-	N/A
1962/63	01/01	12/31	8,006,000	-	N/A
1963/64	01/01	12/31	17,904,000	-	N/A
1964/65	01/01	12/31	21,193,000	-	N/A
1965/66	01/01	12/31	12,915,000	6.5	N/A
1966/67	01/01	12/31	5,883,000	6.5	N/A
1967/68 ^d	01/01	12/31	14,131,000	6.5	N/A
1968/69		03/15	16,100,000	7.0	N/A
1969/70	09/15	01/15	18,016,000	7.0	N/A
1970/71	11/01	03/31	6,057,000	7.0	N/A
1971/72	11/01	12/16	15,475,924	6.5	N/A
1972/73 ^e	11/01	02/17	18,724,144	6.5	N/A
1973/74	11/01	02/26	9,741,464	6.5	N/A
1974/75	01/10	03/05	2,774,963	6.5	.35
1975/76	11/01	12/18	411,583	6.5	.38
1976/77		-----CLOSED-----			
1977/78	02/20	03/20	905,527	6.5	1.36
1978/79 ^f	02/21	03/29	807,195	6.5	1.23
1979/80	01/15	04/01	467,229	6.5	.68
1980/81	01/15	03/28	1,419,513	6.5	.92
1981/82	11/01	02/15	1,648,926	6.5	2.01
1982/83	11/01	01/15	1,701,818	6.5	3.44
1983/84	11/10	12/16	1,981,579	6.5	3.43
1984/85	11/10	02/15	1,367,672	6.5	2.10
1985/86	11/01	02/15	906,293	6.5	2.15
1986/87	11/01	02/15	712,243	6.5	3.85
1987/88	11/01	02/15	1,213,933	6.5	4.00
1988/89	11/01	12/04	1,567,314	6.5	5.00
1989/90	11/01	02/15	1,118,566	6.5	4.20
1990/91	11/01	02/15	828,105	6.5	4.00
1991/92	11/01	02/15	951,278	6.5	3.00
1992/93	11/01	01/15	1,286,424	6.5	5.05

^aIncludes catch from Area S, 1960/61 - 1977/78.

^bIncludes deadloss.

^cCarapace width in inches.

^dArea S fishery began.

^eArea S continued until June.

^fArea S eliminated - added to Area R.

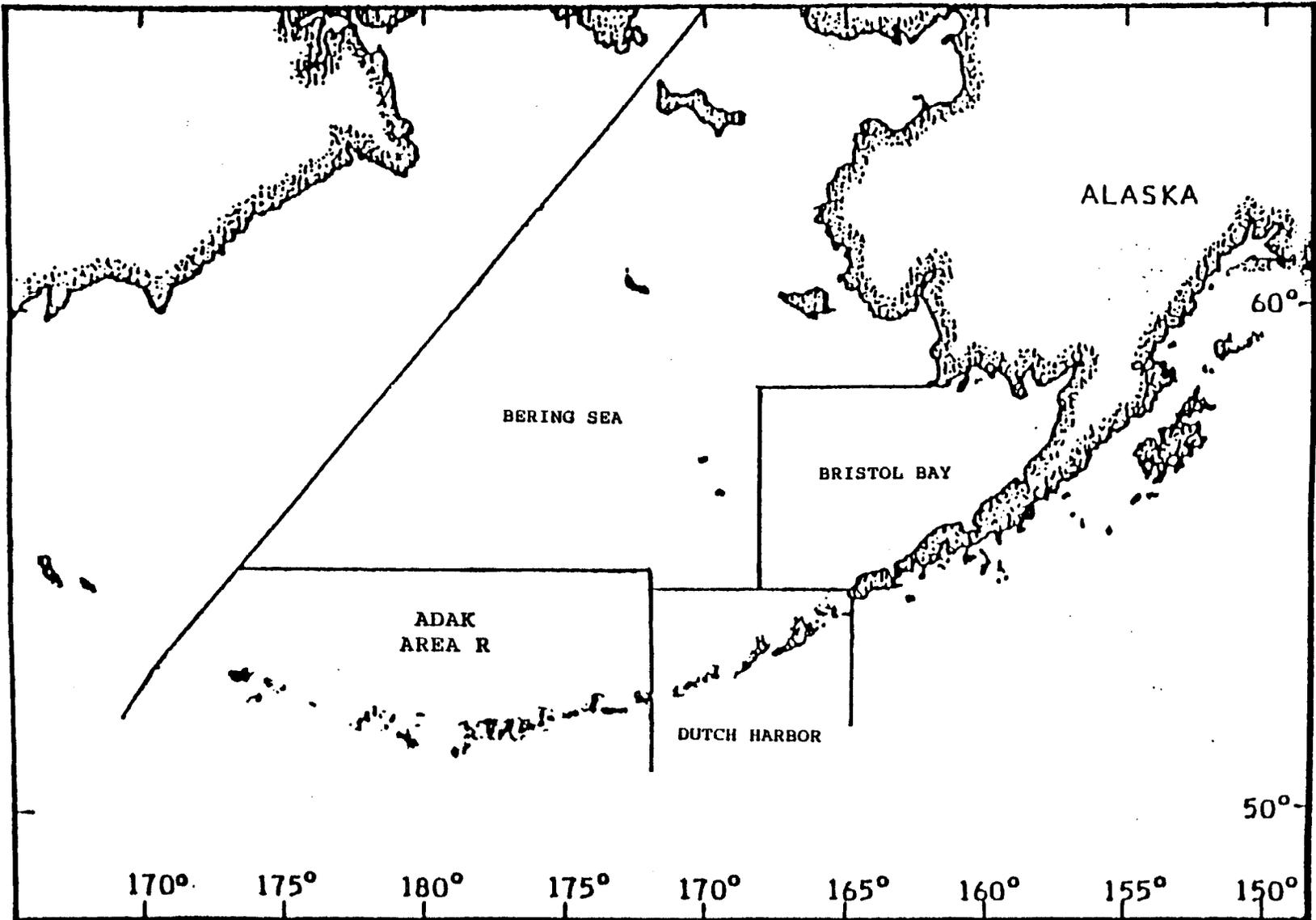


Figure 1. Adak, Area R, king crab area.

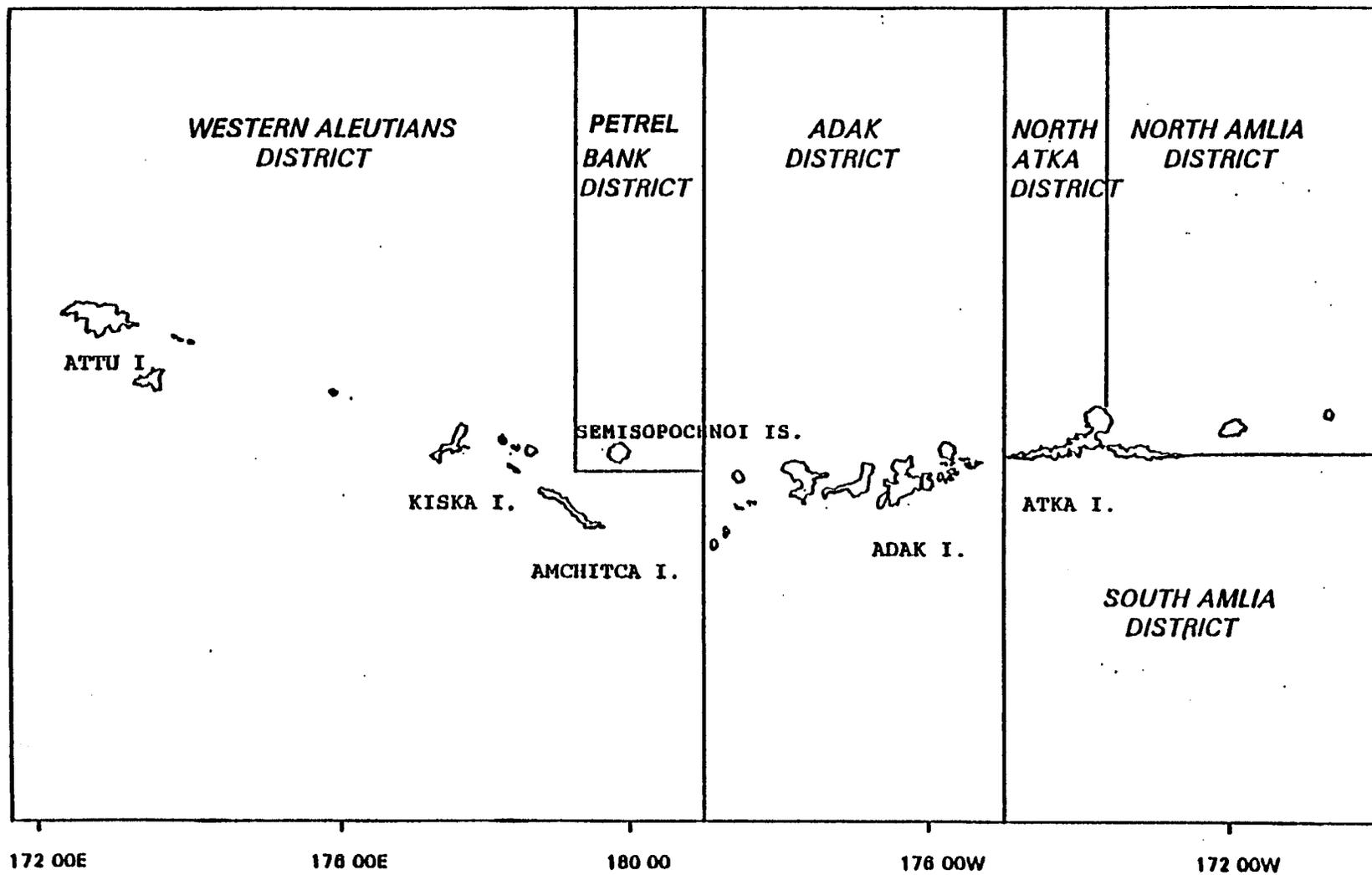


Figure 2. Adak, Area R, king crab districts.

WESTERN ALEUTIAN DISTRICT TANNER CRAB

Introduction

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

Historic Background

Tanner crab (*C. bairdi*) from the Western Aleutians have generally been harvested incidentally in the Adak red king crab fishery. Since the late 1970's, the harvest has ranged from over 800,000 pounds in 1981/82 down to the 1991/92 season harvest of 7,825 pounds (Table 1).

1992/93 Fishery

The fishery opened concurrent to the Adak red and brown king crab fisheries on November 1, 1992. At that time four vessels were registered. An additional two vessels registered later which brought the number of vessels to six. Of the six vessels registered, only two made deliveries.

The 1992/93 season harvest was less than the total catch reported for the 1991/92 season. Since fewer than three vessels made landings during the 1992/93 season, the fishery performance statistics are confidential.

Table 1. Western Aleutians District historic *C. bairdi* Tanner crab catch statistics, 1973/74-1992/93.

Year	Date		Number of			Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Size ^d	Price/Pound	
	Opened	Closed	Vessels	Landings	Crab ^a							
1973/74	11/01	10/15	7	12	31,079	71,887	2,390	2.3	13	-	N/A	
1974/75	11/01	10/15	C o n f i d e n t i a l									
1975/76	11/01	10/15	C o n f i d e n t i a l									
1976/77	11/01	10/15	----- N o F i s h i n g -----									
1977/78	11/01	06/15	6	7	103,190	237,512	2,700	2.3	38	5.5	\$ 0.38	
1978/79	11/01	06/15	6	9	84,129	197,244	4,730	2.3	18	5.5	\$ 0.53	
1979/80	11/01	06/15	10	12	147,843	337,297	5,952	2.3	25	5.5	\$ 0.52	
1980/81	01/15	06/15	9	23	95,102	220,716	7,327	2.3	13	5.5	\$ 0.54	
1981/82	01/15	06/15	17	43	364,164	838,697	21,910	2.3	17	5.5	\$ 1.30	
1982/83	11/01	06/15	61	125	225,491	488,399	40,450	2.2	6	5.5	\$ 1.27	
1983/84	11/10	06/15	31	86	171,576	384,146	20,739	2.2	8	5.5	\$ 0.95	
1984/85	11/10	06/15	31	41	75,009	163,460	13,416	2.2	6	5.5	\$ 1.30	
1985/86	11/01	06/15	15	30	98,089	206,814	7,999	2.1	12	5.5	\$ 1.40	
1986/87	11/01	06/15	8	24	19,874	42,761	10,878	2.1	2	5.5	\$ 1.50	
1987/88	11/01	04/20	15	37	63,545	141,390	7,453	2.2	8	5.5	\$ 2.10	
1988/89	11/01	05/07	36	77	69,280	148,997	18,906	2.1	4	5.5	\$ 1.00	
1989/90	11/01	04/09	12	30	22,937	48,746	6,204	2.1	4	5.5	\$ 1.00	
1990/91	11/01	03/25	5	21	6,901	14,779	1,309	2.1	5	5.5	\$ 1.25	
1991/92	11/01	03/31	8	8	3,483	7,825	986	2.2	4	5.5	\$ 1.00	
1992/93	11/01	03/31	C o n f i d e n t i a l									
1993/94 ^e	11/01	03/31	C o n f i d e n t i a l									

^aDeadloss included

^bIn pounds.

^cDefined as catch per pot pull.

^dMinimum carapace width in inches.

^eFishery in progress.

ANNUAL MANAGEMENT REPORT FOR THE
SHELLFISH FISHERIES OF THE BERING SEA AREA, 1993

By

Rance Morrison - Area Management Biologist

Robert K. Gish - Assistant Area Management Biologist

Dutch Harbor Area Office
P.O. Box 308
Dutch Harbor, Alaska 99692
(907) 581-1239

July 1994

BERING SEA DISTRICT TANNER CRAB

Introduction

The Bering Sea District of Statistical Area J includes all waters of the Bering Sea north of the latitude of Cape Sarichef and east of the U.S.-Russian Convention Line of 1867. This district is divided into the Eastern and Western Subdistricts, east and west of 173° West Longitude, respectively (Figure 1). The Eastern Subdistrict is further divided into the Norton Sound and General Sections. Two Tanner crab species, *Chionoecetes bairdi* and *C. opilio*, are commercially harvested in the Bering Sea District.

Historic Background

The first reported Tanner crab catches were made in 1968 incidental to the king crab fishery. In 1974 a directed *C. bairdi* crab fishery began. In the 1977/78 season, an incidental catch of *C. opilio* was reported. During the fall Board of Fisheries meeting in 1978, the National Marine Fisheries Service (NMFS) estimated as much as a 50% decline in *C. bairdi* stocks could be expected during the 1978/79 fishing season, and that the stock would continue to decline for several years. As predicted, the *C. bairdi* stocks showed a sharp decline. Catches decreased from 29.7 million pounds 1981, to 5.3 million pounds in 1983, to a total closure of the *C. bairdi* fishery in 1986 (Table 1). Concurrent with the decline of the *C. bairdi* fishery, effort and catch has increased in the *C. opilio* fishery (Table 7).

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

1992/93 C. bairdi Tanner Crab Fishery

During their Spring 1992 meeting the Alaska Board of Fisheries passed regulations which set a 250 pot limit on all vessels fishing king and Tanner crab in the Bering Sea. The pot limits, which were to be applied through a bouy sticker program, were implemented to assist inseason management of the fisheries and to reduce the potential for pot loss.

On November 10, 1992 bouy sticker requirements were suspended due to a high failure rate of the stickers adhering properly to buoys. Despite suspension of the bouy sticker requirement, the 250 pot limit remained in effect until repealed by the National Marine Fisheries Service (NMFS)

on November 30. This action by NMFS was due to perceived inconsistencies with provisions of the Bering Sea/Aleutian Island king and Tanner crab Federal Management Plan (FMP) which mandated application of pot limits in a nondiscriminatory manner.

This fishery opened seven days after the Bristol Bay red king crab season closed. In the interim, the fleet was allowed to leave their king crab gear, approximately 71,000 pots, on the fishing grounds east of 166° West longitude. The guideline harvest level (GHL) for the 1992/93 fishery was 39.2 million pounds (Table 3).

Registrations and tank inspections for the 1992/93 *C. bairdi* fishery were conducted by ADF&G personnel located at Dutch Harbor, Akutan, King Cove, and St. Paul beginning at 12:00 noon on November 14. A total of 299 vessels were registered, there were 272 catcher-only and 27 catcher-processors; 5 of the 27 catcher-processors did not make deliveries. An additional 22 floating processors also registered for on-the-grounds processing.

The 1992 *C. bairdi* fishery opened at 12:00 noon, November 15. A total of 294 vessels made 2,084 landings for a harvest of 35.1 million pounds (Table 1). The average weight of crab in this year's fishery was 2.3 pounds, down from the 2.5 pound average from the prior year's fishery. Average CPUE was 12.6 crab per pot and brought fishermen \$1.69 per pound, up from the 10 crab per pot average and \$1.50 per pound for the 1991/92 season (Table 2 and Table 3).

As is normal for this fishery, the majority of this season's catch came from the southern portion of the Eastern Subdistrict during November and December (Tables 4, 5 and 6). Catches traditionally decline after mid-January with the opening of the Bering Sea for the smaller, more numerous *C. opilio* crab. An increase in catch reported in March was due primarily to the March 15 closure of the *C. opilio* crab fishery. From that point until the regulatory close on March 31, all vessels remaining on the fishing grounds once again shifted back to the harvest of *C. bairdi* crab.

On March 4th, the department received a petition from the Alaska Crab Coalition (ACC) seeking suspension of the continuation of the *C. bairdi* fishery after the March 15 closure of the area for *C. opilio*. In their petition ACC expressed "concerns over the high discard rates of both *opilio* and king crabs that will occur after the closure of the *opilio* crab fishery, during the 15 day directed *bairdi* only fishery". In response to these concerns over potential bycatch, ADF&G required additional sampling aimed at determining the extent of *C. opilio* and king crab bycatch on all catcher-processors participating in the directed *C. bairdi* fishery which occurred after March 15. Results from additional observer sampling activities did not indicate excessive bycatch of *C. opilio* or king crab and the *C. bairdi* fishery was allowed to remain open until the regulatory closure on March 31.

C. bairdi Stock Status

The 1993 NMFS survey indicated the estimated total abundance of large *C. bairdi* crabs showed a significant decrease from the prior year. According to NMFS this decrease, which is expected to continue, is a result of senescence of the crabs which constituted strong year classes hatched in 1983 and or 1984.

1993 *C. opilio* Fishery

The preseason harvest guideline was set at 207 million pounds. The guideline harvest was divided between the Eastern Subdistrict and the Western Subdistrict, 142 and 65.2 million pounds, respectively (Table 10).

As a result of a petition to the Board of Fisheries all vessels were required to have tank inspections prior to the season opening; catcher-processors were exempted from the tank inspection requirement. This action allowed all fishing gear to remain on the fishing grounds.

Tank inspections were conducted starting at 12:00 noon on January 14 at St. Paul, King Cove, Akutan and Dutch Harbor. A total of 27 catcher-processors and 226 catcher-only vessels were registered and given tank inspections. An additional 24 floating processor vessels were also registered for on-the-grounds processing.

The *C. opilio* Tanner crab fishery opened by regulation at 12:00 noon on January 15, 1993. A total of 254 vessels (including one vessel which failed to register) made 1,836 deliveries for a harvest of 230.8 million pounds. The fishery was closed by emergency order on March 15, over five weeks earlier than the 1992 season (Tables 7, 8 and 9).

Catch per unit of effort averaged 163 crab per pot in the Eastern Subdistrict and 197 crab per pot in the Western Subdistrict. This year's overall CPUE for the entire Bering Sea District was 173 crab per pot, compared to an overall average of 176 crab per pot in 1992. Crabs averaged 1.4 pounds in this year's fishery, the same as in 1992 (Table 8).

Despite the lower harvest in 1993, approximately 82 million pounds less than in 1992, the exvessel value of the 1993 fishery was estimated to be \$171 million, up from the estimated \$156.5 million in 1992. This was due to a higher average price paid to fishermen in 1993, \$0.75 per pound compared to \$0.50 per pound paid in 1992 (Table 9).

Catches from the Eastern Subdistrict, which peaked in February, totaled 151.3 million pounds. The catches came predominantly from the southwestern portion of the subdistrict, in that area immediately east of St. George Island and the area west of St. Paul Island.

Catches from the Western Subdistrict, which also peaked in February, totaled 79.4 million pounds and came primarily from an area along the 100 fathom contour. This area extends from the southeast portion of the subdistrict, northwest, to a point midway to the area's western boundary at the U.S.-Russian Convention Line of 1867 (Tables 10, 11 and 12). The fleet's fishing activities in the northern and western portions of the Western Subdistrict were limited by the presence of ice. The ice continued a southern progression throughout the fishery, and resulted in a concentration of vessels at the ice edge during the final weeks of the fishery.

C. opilio Stock Status

The National Marine Fisheries Service (NMFS) Bering Sea trawl survey conducted in the summer of 1993 indicated the total abundance of large males (over 4 inches) at 135 million crab, a 48% decrease from last year. According to survey results, small males also declined in abundance, consistent with the decline in large males observed over the last two seasons. A continued westward shift of the population was also observed, with highest sampling densities north and west of the Pribilof Islands. While the abundance of female crab showed no significant change, sublegal (male) crab showed a 92% increase in abundance. Recruitment of these sublegal crab should result in increased abundance of legal sized crab in 1995 or 1996 preceded by continued declines in the fishable stock.

Table 1. Historic Bering Sea *C. bairdi* catch statistics by season, 1968-1992/93.

Year	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Average		% New Shell	Deadloss ^b
	Vessels	Landings					Weight ^d	Width ^d		
1968	NA	7	6,400	17,900	1,400	5	2.8	-	-	NA
1969	NA	131	353,300	1,008,900	29,800	12	2.9	-	-	NA
1970	NA	66	482,300	1,014,700	16,400	29	2.1	-	-	NA
1971	NA	22	61,300	166,100	7,300	8	2.7	-	-	NA
1972	NA	14	42,061	107,761	4,260	10	2.6	-	-	NA
1973	NA	44	93,595	231,668	15,730	6	2.5	-	-	NA
1974	NA	69	2,531,825	5,044,197	22,014	115	2.0	-	-	NA
1975	28	80	2,773,770	7,284,378	38,462	72	2.5	-	-	NA
1976	66	305	8,949,886	22,341,475	141,179	63	2.5	-	-	NA
1976/77	83	541	20,251,508	51,455,221	297,171	68	2.5	-	-	NA
1977/78	120	861	26,350,688	66,648,954	516,350	51	2.5	152.8	88.0	218,099
1978/79	144	817	16,726,518	42,547,174	402,697	42	2.5	152.7	95.0	76,000
1979/80	152	804	14,685,611	36,614,315	488,434	30	2.5	151.4	90.0	56,446
1981	165	761	11,887,213	29,732,086	559,626	21	2.5	149.4	86.6	101,594
1982	125	791	4,830,980	11,008,779	490,099	10	2.3	148.8	85.4	138,159
1983	108	448	2,286,756	5,273,881	282,006	8	2.3	148.8	70.5	60,029
1984	41	134	516,877	1,208,223	61,357	8	2.3	146.5	40.0	5,025
1985	44	166	1,283,474	3,151,498	104,707	12	2.4	150.0	65.0	14,096
1986				S E A S O N	C L O S E D					
1987				S E A S O N	C L O S E D					
1988	98	248	987,059	2,210,394	112,334	8	2.5	143.5	70.2	10,724
1989	109	359	2,907,021	7,012,965	184,892	16	2.4	149.4	80.8	34,664
1990	179	1,032	10,717,924	24,549,299	711,137	15	2.3	148.1	96.5	87,475
1990/91	255	1,756	16,608,625	40,081,555	883,391	19	2.4	149.7	95.3	210,769
1991/92	285	2,339	12,924,034	31,796,381	1,244,633	10	2.5	150.4	93.2	279,741
1992/93	294	2,084	15,265,880	35,130,866	1,200,885	13	2.3	148.0	90.5	343,955

^aDeadloss included.

^bIn Pounds.

^cDefined as catch per pot pull.

^dCarapace width in millimeters.

Table 2. Historic Bering Sea *C. bairdi* Tanner crab seasons. 1968-1992/93.

Season	Date		Number of Vessels	Harvest ^{a, b}	Average Weight ^b	CPUE ^c	Price/Pound
	Opened	Closed					
1968 ^d			NA	17.9	2.8	5	NA
1969 ^d			NA	1,008.9	2.9	12	NA
1970 ^d			NA	1,410.7	2.1	29	NA
1971 ^d			NA	166.1	2.7	8	NA
1972 ^d			NA	108.8	2.6	10	NA
1973 ^d			NA	231.7	2.5	6	NA
1974 ^d			NA	5,044.2	2.0	115	NA
1974/75	07-29	06-15	28	7,284.4	2.5	72	\$ 0.20
1975/76	08-01	07-15	66	22,341.5	2.5	63	\$ 0.19
1976/77	08-01	07-07	83	51,455.2	2.5	68	\$ 0.30
1977/78	09-15	06-15	120	66,649.0	2.5	51	\$ 0.38
1978/79	11-10	05-24	144	42,547.2	2.5	42	\$ 0.52
1979/80	11-10	05-11	152	36,614.3	2.5	30	\$ 0.52
1981	01-15	04-15	165	29,732.1	2.5	21	\$ 0.58
1982	02-15	06-15	125	11,008.8	2.3	10	\$ 1.06
1983 ^e	02-15	05-22	108	5,273.9	2.3	8	\$ 1.20
		06-15					
1984	02-15	06-15	41	1,208.2	2.3	8	\$ 0.95
1985	01-15	06-15	44	3,151.5	2.4	12	\$ 1.40
1986			S E A S O N C L O S E D				
1987			S E A S O N C L O S E D				
1988	01-15	04-20	98	2,210.4	2.5	8	\$ 2.17
1989	01-15	05-07	109	7,013.0	2.4	16	\$ 2.90
1990	01-15	04-09 ^f					
		04-24 ^g	179	24,549.3	2.3	15	\$ 1.85
1990/91	11-20	03-25	225	40,081.6	2.4	19	\$ 1.12
1991/92	11-15	03-31	285	31,796.4	2.5	10	\$ 1.50
1992/93	11-15	03-31	294	35,130.9	2.3	13	\$ 1.69

^aFigures given in thousands - deadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dIncidental to the king crab fishery.

^ePartial Bering Sea closure.

^fEast of 165° West longitude.

^gWest of 165° West longitude.

Table 3. Historic Bering Sea *C. bairdi* Tanner crab economic performance, 1979/80-1992/93.

Year	GHL ^{a, b}	Season Total ^b	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)	Dates
1979/80	28-36	36.5	152	804	40,273	488,434	\$ 0.52	\$ 19.0	(189)	11/01-05/14
1981	28-36	29.6	165	761	42,910	559,626	\$ 0.58	\$ 17.2	(88)	01/15-04/18
1981/82	12-16	10.9	125	791	36,396	490,099	\$ 1.06	\$ 11.5	(118)	02/15-06/15
1983	5.6	5.2	108	448	15,255	282,006	\$ 1.20	\$ 6.2	(118)	02/15-06/15
1984	7.1	1.2	41	134	9,851	61,357	\$ 0.95	\$ 1.1	(118)	02/15-06/15
1985	3.0	3.1	44	166	15,325	104,707	\$ 1.40	\$ 4.3	(149)	01/15-06/15
1986				NO COMMERCIAL FISHERY						
1987				NO COMMERCIAL FISHERY						
1988	5.6	2.2	98	248	38,765	112,334	\$ 2.17	\$ 4.8	(93)	01/15-04/20
1989	13.5	7.0	109	359	43,607	184,892	\$ 2.90	\$ 20.3	(110)	01/15-05/07
1990 ^d	29.5	24.5	179	1,032	46,440	711,137	\$ 1.85	\$ 45.3	(89)	01/15-04/24
1990/91	42.8	39.7	255	1,756	75,356	883,391	\$ 1.12	\$ 44.5	(126)	11/20-03/25
1991/92	32.8	31.5	285	2,339	85,401	1,244,633	\$ 1.50	\$ 47.3	(137)	11/15-03/31
1992/93	39.2	35.1	294	2,084	71,481	1,200,885	\$ 1.69	\$ 58.8	(137)	11/15-03/31

^aGuideline Harvest Level

^bMillions of pounds.

^cMillions of dollars.

^dWinter fishery.

Table 4. Historic Bering Sea *C. bairdi* catch by subdistrict, 1974/75-1992/93.

Season	Subdistrict	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings						
1974/75	Southeastern Pribilofs		72	2,526,687	6,504,984	32,275	2.6	78	0
			8	247,083	523,394	3,923	2.1	63	0
	TOTAL	28	80	2,773,770	7,028,378	38,462	2.5	72	0
1975/76	Southeastern Pribilofs		230	6,682,232	16,643,194	106,445	2.5	63	0
			74	2,273,804	5,714,913	34,761	2.5	65	0
	TOTAL	66	304	8,856,036	22,358,107	141,206	2.5	63	0
1976/77	Southeastern Pribilofs		437	16,089,057	41,007,736	233,667	2.6	69	0
			104	4,162,451	10,447,485	63,804	2.5	65	0
	TOTAL	83	541	20,251,508	51,455,221	297,471	2.5	68	0
1977/78	Southeastern Pribilofs		706	21,055,527	53,278,012	408,437	2.5	52	0
			155	5,210,170	13,152,843	107,913	2.5	48	0
	TOTAL	120	861	26,350,688	66,648,954	516,350	2.5	51	218,099
1978/79	Southeastern Pribilofs		758	15,601,891	39,694,205	356,594	2.5	44	75,400
			59	1,124,627	2,852,969	46,103	2.5	24	600
	TOTAL	144	817	16,726,518	42,547,174	402,697	2.5	42	76,000

-Continued-

Table 4. (page 2 of 4)

Season	Subdistrict	Number of		Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b	
		Vessels	Landings						Crab ^a
1979/80	Southeastern		789	14,329,889	35,724,003	476,410	2.5	30	56,446
	Pribilofs		15	355,722	890,312	12,024	2.5	30	0
	TOTAL	152	804	14,685,611	36,614,315	488,434	2.5	30	56,446
1980/81	Southeastern		674	10,532,007	26,684,956	496,751	2.5	21	97,398
	Pribilofs		87	1,313,951	2,945,536	62,875	2.5	21	4,196
	TOTAL	165	761	11,845,958	29,630,492	599,626	2.5	21	101,594
1981/82	Southeastern		539	3,825,433	8,812,302	322,634	2.3	12	69,829
	Pribilofs		252	1,005,547	2,196,477	167,465	2.2	6	68,330
	TOTAL	125	791	4,830,980	11,008,779	490,099	2.3	10	138,159
1982/83	Northern		10	29,478	48,454	5,950	1.7	5	167
	Southeastern		287	1,984,673	4,633,354	192,538	2.3	10	52,879
	Pribilofs		151	272,505	592,073	83,528	2.2	3	6,983
TOTAL	108	448	2,286,756	5,273,881	282,006	2.3	8	60,029	
1983/84	Southeastern		91	470,181	1,099,142	44,546	2.3	11	4,688
	Pribilofs		43	46,759	109,081	16,811	2.3	3	337
	TOTAL	41	134	516,877	1,208,223	61,357	2.3	8	5,025

-Continued-

Table 4. (page 3 of 4)

Season	Subdistrict	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings						
1985	Southeastern	38	143	1,278,109	3,139,041	96,976	2.4	13	14,096
	Pribilofs	15	23	5,365	12,457	7,731	2.3	1	0
	TOTAL	44	166	1,283,474	3,151,498	104,707	2.4	12	14,096
1986	SEASON CLOSED	-	-	-	-	-	-	-	-
1987	SEASON CLOSED	-	-	-	-	-	-	-	-
1988	Eastern	98	248	897,059	2,210,394	112,334	2.5	8	10,724
	Western	0	0	0	0	0	0	0	0
	TOTAL	98	248	897,059	2,210,394	112,334	2.5	8	10,724
1989	Eastern	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
	Western	0	0	0	0	0	0	0	0
	TOTAL	109	359	2,907,021	7,012,965	184,892	2.4	16	34,664
1990	Eastern		1,105	10,708,996	24,529,165	701,924	2.3	15	87,475
	Western		17	8,928	20,134	9,213	2.3	<1	0
	TOTAL	179	1,032	10,717,924	24,549,299	711,137	2.3	15	87,475

-Continued-

Table 4. (page 4 of 4)

Season	Subdistrict	Number of			Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1990/91	Eastern	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
	Western	0	0	0	0	0	0	0	0
	TOTAL	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
1991/92	Eastern	285	2,339	12,924,034	31,796,381	1,244,633	2.5	10	279,741
1992/93	Eastern	293	2,011	15,074,084	34,821,043	1,150,834	2.3	13	340,955
	Western	70	96	191,796	309,823	50,051	1.6	4	3,000
	TOTAL	294	2,084	15,265,880	35,130,866	1,200,885	2.3	13	343,955

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 5. 1992/93 Bering Sea *C. bairdi* catch statistics by month.

Month	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Dead-loss ^b
	Vessels	Landings						
Nov	192	226	4,615,358	10,948,489	151,145	2.37	30	43,751
Dec	264	481	7,488,003	17,165,786	341,420	2.29	22	258,484
Jan	231	566	1,614,540	3,619,637	239,716	2.24	7	29,474
Feb	199	477	285,380	646,517	275,340	2.27	1	6,600
Mar	170	334	1,262,599	2,750,437	193,264	2.18	7	5,646
TOTAL	294	2,084	15,265,880	35,130,866	1,200,885	2.30	13	343,955

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 6. 1992/93 Bering Sea *C. bairdi* Tanner crab catch by statistical area.

Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Landings	Crab ^a					
605630	7	100,160	250,827	7,072	2.5	14	667
605700	7	113,402	277,966	3,610	2.5	31	2,100
615601	21	128,431	304,129	6,746	2.4	19	4,700
615630	134	1,356,515	3,360,132	63,633	2.5	21	11,394
615700	27	292,152	739,988	13,156	2.5	22	62,667
625600	71	724,754	1,681,113	32,396	2.3	22	5,364
625630	46	352,260	857,935	21,634	2.4	16	8,717
635504	6	15,443	35,358	1,026	2.3	15	0
635530	51	408,044	930,397	23,319	2.3	17	5,548
635600	121	1,465,462	3,394,320	59,078	2.3	25	24,640
635630	35	336,285	780,911	14,951	2.3	22	6,000
645501	49	320,925	714,741	17,642	2.2	18	1,480
645530	94	1,024,334	2,324,452	44,302	2.3	23	25,098
645600	110	1,073,158	2,450,834	56,205	2.3	19	28,244
645630	20	221,332	500,897	10,803	2.3	20	4,313
655430	43	484,780	1,084,981	16,767	2.2	29	2,375
655500	121	1,211,536	2,745,512	52,229	2.3	23	21,364
655530	86	778,893	1,779,640	33,176	2.3	23	29,698
655600	56	514,248	1,176,275	23,278	2.3	22	8,694
655630	10	60,437	139,158	4,273	2.3	14	0
665430	11	70,674	158,133	3,794	2.2	19	0
665500	51	300,204	678,239	18,619	2.3	16	11,296
665530	41	142,027	325,561	15,593	2.3	9	2,163
665600	43	83,373	182,630	16,093	2.2	5	0
665630	11	31,014	69,875	3,833	2.3	8	0
675500	4	632	1,410	1,510	2.2	1	0
675530	29	18,453	42,301	12,280	2.3	2	0
675600	98	63,269	139,978	47,406	2.2	1	0
675630	53	41,935	93,052	24,275	2.2	2	0
675700	4	6,157	13,753	1,953	2.2	3	0
685530	10	2,108	4,694	4,445	2.2	1	0
685600	170	97,619	218,748	80,525	2.2	1	1,271
685630	159	134,290	297,175	67,064	2.2	2	13,329

-Continued-

Table 6. (2 of 2)

Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Landings	Crab ^a					
685700	9	92,648	218,291	3,910	2.4	24	1,000
695600	9	7,177	15,956	2,905	2.2	3	0
695631	40	276,926	638,507	13,890	2.3	20	0
695700	15	165,049	372,862	5,009	2.3	33	19,700
705600	35	28,010	63,417	13,915	2.3	2	0
705630	153	1,235,714	2,822,048	67,689	2.3	18	11,060
705701	76	835,128	1,917,483	34,770	2.3	24	19,598
705730	8	11,471	25,612	2,558	2.2	5	0
715600	37	17,356	38,341	15,093	2.2	1	0
715630	158	68,255	154,017	69,401	2.3	1	3,875
715700	79	181,891	384,698	31,303	2.1	6	1,600
715730	10	38,180	84,969	4,252	2.2	9	0
725600	5	681	1,531	2,551	2.3	1	0
725630	74	16,806	37,342	33,594	2.2	1	1,000
725700	57	12,744	28,704	22,115	2.3	1	2,500
725730	29	1,902	4,203	11,622	2.2	1	0
725800	9	444	984	3,289	2.2	1	0
735630	7	1,789	3,969	2,829	2.2	1	0
735700	30	24,260	54,605	12,977	2.3	2	2,500
735730	22	17,834	39,981	10,736	2.2	2	500
735800	14	1,648	3,695	4,990	2.2	1	0
735830	4	862	1,942	3,900	2.3	1	0
745830	7	141,540	196,959	2,205	1.4	64	0
755830	6	420	871	2,164	2.1	1	0
755900	7	665	1,462	5,615	2.2	1	0
OTHER	46	112,174	2,637,302	14,917	2.3	8	2,000
TOTAL	2,084	15,265,880	35,130,866	1,200,885	2.3	13	343,955

^aDeadloss included.^bIn pounds.^cDefined as catch per pot pull.

Table 7. Historic Bering Sea *C. opilio* catch statistics by season, 1977/78-1993.

Year	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	% New Shell	Average		Deadloss ^b
	Vessels	Landings						Weight ^c	Width ^d	
1977/78	15	38	1,267,546	1,716,124	13,247	96	NA	1.4	NA	0
1978/79	102	490	22,118,498	32,187,039	190,746	115	83.0	1.5	113.1	759,173
1979/80	134	597	25,286,777	39,572,668	255,022	95	90.0	1.6	118.1	228,345
1981	153	867	34,415,322	52,750,034	435,742	79	79.2	1.5	117.0	2,269,979
1982	122	803	24,089,562	29,355,379	469,091	51	78.0	1.2	109.4	1,042,655
1983	109	462	23,838,149	26,128,410	287,127	83	NA	1.1	NA	1,324,466
1984 ^e	52	367	21,009,935	26,813,074	173,591	138	78.0	1.1	105.4	798,744
1985 ^f	75	718	52,903,246	65,998,875	372,045	120	80.0	1.3	108.0	1,064,184
1986 ^g	88	992	76,499,123	97,984,539	543,744	141	73.7	1.3	109.5	1,392,933
1987	103	1,038	81,307,659	101,903,388	616,113	132	84.0	1.2	108.9	978,449
1988	171	1,285	105,716,337	134,060,185	766,907	137	71.2 ^h	1.3	109.5	3,260,020
1989	168	1,341	112,618,881	149,455,848	663,442	178	85.2 ^h	1.3	111.2	1,844,682
1990	189	1,565	128,977,638	161,821,350	911,613	139	97.4 ^h	1.3	109.1	1,796,664
1991	228	2,788	265,123,960	328,647,269	1,391,583	188	95.1	1.2	110.2	3,464,036
1992	250	2,763	227,376,582	315,302,034	1,281,796	176	97.6	1.4	111.7	2,325,852
1993	254	1,836	169,558,842	230,787,000	971,046	173	92.5	1.4	111.6	1,573,952

^aDeadloss included.

^bDefined as catch per pot pull.

^cIn pounds.

^dCarapace width in millimeters.

^eNorth of 58° reopened until 12/31.

^fWest of 164° opened through 12/31.

^gOpen only west of 164° West longitude.

^hEastern and Western Districts combined.

Table 8. Historic Bering Sea *C. opilio* Tanner crab seasons, 1977/78-1993.

Season	Date		Number of Vessels	Harvest ^{a, b}	Average Weight ^d	CPUE ^c	Price/Pound
	Opened	Closed					
1977/78	09-15-77	09-23-78	15	1,716,124	1.4	96	\$ 0.38
1978/79	11-01-78	09-03-79	102	32,187,039	1.5	115	\$ 0.30
1979/80	11-01-79	08-15-80 09-03-80 ^d	134	39,572,668	1.6	99	\$ 0.21
1981	01-15-81	08-01-81 09-01-81 ^d	153	52,750,034	1.5	76	\$ 0.26
1982	02-15-82	08-01-82	122	29,355,374	1.2	51	\$ 0.73
1983	02-15-83	05-22-83 06-15-83 ^e	109	26,128,410	1.1	83	\$ 0.35
1984	02-15-84 08-01-84	08-01-84 12-31-84 ^f	52	23,940,984 2,872,090	1.1 1.1	147 125	\$ 0.30
1985	01-15-85 10-09-85	09-22-85 12-31-85 ^g	75	57,446,554 8,552,321	1.2	142	\$ 0.30
1986	01-15-86	09-24-86 ^h	88	97,984,539	1.3	141	\$ 0.60
1987	01-15-87	06-22-87	103	101,903,388	1.2	132	\$ 0.75
1988	01-15-88 05-15-88	03-29-88 06-30-88	161 <u>156</u> 171	75,695,562 <u>59,659,075</u> 135,354,637	1.3 1.3 1.3	141 <u>146</u> 144	\$ 0.75 <u>\$ 0.80</u> \$ 0.77
1989	01-15-89	03-26-89 05-07-89	168	149,455,848	1.3	178	\$ 0.75
1990	01-15-90	04-24-90 ^h 06-12-90	177 <u>152</u> 178	94,831,897 <u>66,989,453</u> 161,821,350	1.2 1.3 1.2	148 <u>130</u> 135	\$ 0.64
1991	01-15-91	05-05-91 06-23-91	218 <u>186</u> 220	240,090,666 <u>88,556,603</u> 328,647,269	1.3 1.2 1.2	206 <u>153</u> 188	\$ 0.50
1992	01-15-92	04-22-92	250	315,302,034	1.4	176	\$ 0.50
1993	01-15-93	03-15-93	254	230,787,000	1.4	173	\$ 0.75

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dVaried according to size.

^ePartial Bering Sea closure.

^fNorth of 58° only.

^gWest of 164° opened through 12-31-85.

^hOpen only west of 164° West longitude.

Table 9. Historic Bering Sea *C. opilio* Tanner crab economic performance, 1979/80-1993.

Year	GHL ^a	Season Total ^a	Number of		Number of Pots		Value		Season Length ^d
			Vessels	Landings	Registered ^b	Pulled	Exvessel	Total ^c	
1979/80	N/A	39.3	134	597	35,503	255,022	\$ 0.21	\$ 83.0	307
1981	39.5-91.0	50.5	153	867	39,789	435,742	\$ 0.26	\$ 13.1	229
1982	16.0-22.0	28.3	112	803	35,522	469,091	\$ 0.73	\$ 20.7	167
1983	15.8	24.8	109	462	15,39	287,127	\$ 0.35	\$ 8.7	120
1984 ^e	49.0	26.0	52	367	12,493	173,591	\$ 0.30	\$ 7.8	320
1985 ^e	98.0	64.9	75	718	15,325	372,045	\$ 0.30	\$ 19.5	333
1986 ^e	57.0	96.6	88	992	13,750	543,744	\$ 0.60	\$ 60.0	252
1987	56.4	100.9	103	1,038	19,386	616,113	\$ 0.75	\$ 75.7	158
1988	110.7	130.8	171	1,285	38,765	766,907	\$ 0.77	\$100.7	120
1989	132.0	147.6	168	1,341	43,607	663,442	\$ 0.75	\$110.7	112
1990	139.8	161.8	189	1,565	46,440	911,613	\$ 0.64	\$102.3	148
1991	315.0	325.2	228	2,788	76,056	1,391,583	\$ 0.50	\$162.6	159
1992	333.0	313.0	250	2,763	77,858 ^f	1,281,796	\$ 0.50	\$156.5	97
1993	207.2	230.8	254	1,836	65,081	971,046	\$ 0.75	\$171.9	59

^aMillions of pounds.

^bSame gear as *C. bairdi* fishery.

^cMillions of dollars.

^dIn days.

^ePartial closures only.

^fGear of *C. opilio* vessels only.

Table 10. Historic Bering Sea *C. opilio* catch by season and subdistrict, 1977/78-1993.

Season	Subdistrict	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings						
1977/78	Southeastern Pribilof		33	1,063,872	1,439,959	11,560	1.4	0	0
			5	203,674	276,165	1,687	1.4	121	
	TOTAL	13	38	1,267,546	1,716,124	13,247	1.4	96	0
1978/79	Southeastern Pribilof	101	476	21,279,794	31,102,832	184,491	1.5	115	659,137
		10	14	838,704	1,084,039	6,225	1.5	134	100,000
	TOTAL	102	490	22,118,498	32,187,039	190,746	1.5	115	759,137
1979/80	Southeastern Pribilof	133	561	23,199,446	36,406,391	237,375	1.6	97	187,945
		19	36	2,087,331	3,166,777	17,727	1.5	116	40,400
	TOTAL	134	597	25,286,777	39,572,668	225,102	1.6	99	228,345
1980	Southeastern Pribilof		624	24,498,642	37,866,229	309,304	1.6	76	1,475,078
			243	9,916,617	14,886,705	126,438	1.5	74	794,901
	TOTAL	153	867	34,415,322	52,753,034	435,742	1.5	76	2,269,979
1982	Southeastern Pribilof		468	10,207,174	13,079,583	257,193	1.3	40	422,979
			335	13,882,388	16,276,421	211,898	1.2	65	669,676
	TOTAL	122	803	24,089,562	29,355,374	469,091	1.2	51	1,092,655

-Continued-

Table 10. (page 2 of 4)

Season	Subdistrict	Number of			Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1983	Southeastern		153	3,553,281	94,197,304	4,470	1.2	38	165,298
	Pribilof		239	19,076,553	20,514,000	153,458	1.0	124	1,078,643
	Northern		69	1,223,813	1,417,106	39,199	1.1	31	80,525
	TOTAL	109	461	23,853,647	26,128,410	287,127	1.1	83	1,324,466
1984	Southeastern		76	3,534,370	3,990,621	33,091	1.1	106	54,678
	Pribilof		230	17,909,096	19,727,493	112,078	1.1	160	708,706
	Northern		61	2,566,469	3,094,960	28,422	1.2	91	35,411
	TOTAL	52	367	24,009,935	26,813,074	173,591	1.1	138	798,795
1985	Southeastern	55	301	21,963,882	27,373,232	158,819	1.4	95	461,001
	Pribilof	60	301	24,089,526	29,804,093	142,937	1.2	168	505,146
	Northern	24	116	6,849,838	8,821,550	70,289	1.3	97	98,037
	TOTAL	75	718	52,903,246	65,998,875	372,045	1.3	120	1,064,184
1986	Southeastern	47	112	8,491,694	10,957,578	63,889	1.3	132	44,755
	Pribilof	80	508	39,851,767	50,525,150	281,337	1.3	142	472,342
	Northern	67	372	28,155,662	36,501,811	198,518	1.3	142	861,436
	TOTAL	88	992	76,499,123	97,984,539	543,744	1.3	141	1,378,533
1987	Southeastern	28	64	4,116,778	5,106,473	24,619	1.2	167	24,619
	Pribilof	94	458	38,604,802	47,676,734	261,337	1.2	163	261,337
	Northern	99	516	38,586,079	49,120,181	330,157	1.2	117	330,157
	TOTAL	103	1,038	81,307,659	101,903,388	616,113	1.2	132	978,449

-Continued-

Table 10. (page 3 of 4)

Season	Subdistrict	Number of			Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1988	Eastern	161	770	59,838,392	75,695,562	422,719	1.3	141	775,104
	Western	156	515	47,330,314	59,689,075	323,196	1.3	146	2,484,916
	TOTAL	171	1,283	107,168,706	135,354,637	745,915	1.3	144	3,260,020
1989	Eastern	163	871	77,698,698	104,399,693	391,451	1.3	198	1,128,971
	Western	127	470	34,920,183	45,056,155	271,991	1.3	126	715,711
	TOTAL	168	1,341	112,618,881	149,455,848	663,442	1.3	178	1,844,682
1990	Eastern	177	956	76,331,829	94,831,897	512,259	1.2	148	1,010,755
	Western	152	659	52,645,809	66,989,453	399,354	1.3	130	785,909
	TOTAL	189	1,565	128,977,638	161,821,350	911,613	1.3	139	1,796,664
1991	Eastern	218	2,013	190,139,612	240,090,666	912,751	1.3	206	1,593,021
	Western	186	867	74,984,348	88,556,603	478,832	1.2	156	1,871,015
	TOTAL	220	2,788	265,123,960	328,647,269	1,391,583	1.2	188	3,464,036
1992	Eastern	250	N/A	217,375,564	302,363,005	1,228,280	1.4	177	2,268,467
	Western	55	N/A	10,001,018	12,939,029	53,516	1.3	187	57,385
	TOTAL	250	2,763	227,376,582	315,302,034	1,281,796	1.4	177	2,325,852

-Continued-

Table 10. (page 4 of 4)

Season	Subdistrict	Number of			Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1993	Eastern	251	1,384	110,760,099	151,328,721	675,996	1.4	163	1,108,520
	Western	185	633	58,798,743	79,458,279	295,050	1.4	197	465,432
	TOTAL	254	1,836	169,558,842	230,787,000	971,046	1.4	173	1,573,952

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 11. Bering Sea *C. opilio* catch by subdistrict and month, 1993.

Subdistrict	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Vessels	Landings						
January								
Eastern	231	424	37,807,347	52,558,726	185,743	1.4	202	414,441
Western	27	39	4,262,002	5,799,934	13,873	1.4	306	14,265
Total	233	439	42,069,351	58,358,660	199,616	1.4	209	428,706
February								
Eastern	235	652	55,700,049	75,554,175	338,919	1.4	163	545,992
Western	115	258	29,197,862	39,391,465	113,845	1.4	252	235,553
Total	249	833	84,897,911	114,945,640	452,764	1.4	186	784,545
March								
Eastern	175	308	17,525,701	23,215,820	151,334	1.4	113	148,087
Western	177	336	25,338,879	34,266,880	167,332	1.4	150	215,614
Total	251	564	42,591,580	57,482,700	318,666	1.4	133	363,701
Subdistrict Total								
Eastern	251	1,384	110,760,099	151,328,721	675,996	1.4	163	1,108,520
Western	185	633	58,798,743	79,458,279	295,050	1.4	197	465,432
Season Total	254	1,836	169,558,842	230,787,000	971,046	1.4	173	1,573,952

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 12. Bering Sea *C. opilio* catch by statistical area, 1992/93.

Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Landings	Crab ^a					
665500	7	321,025	476,166	2,281	1.5	141	0
665530	10	425,899	624,595	4,673	1.5	91	11,024
665600	24	1,073,623	1,679,961	10,665	1.6	101	2,732
675500	4	173,858	245,379	1,300	1.4	134	428
675530	36	1,932,826	2,709,283	13,540	1.4	143	11,573
675600	139	8,244,590	11,992,802	60,946	1.5	135	153,255
675630	58	3,289,391	4,587,107	23,716	1.4	139	14,692
685530	14	619,684	884,096	5,255	1.4	118	15,066
685600	219	13,679,603	19,046,777	94,156	1.4	145	122,533
685630	188	9,523,931	12,871,062	72,727	1.4	131	71,880
685700	9	327,229	442,523	2,742	1.4	119	1,900
695600	12	406,293	555,701	3,289	1.4	124	500
695631	16	406,187	561,627	2,490	1.4	163	4,386
705600	28	1,745,885	2,399,761	14,132	1.4	124	28,475
705630	22	1,643,018	2,187,051	10,974	1.3	150	32,034
705701	9	198,842	262,134	1,264	1.3	157	7,549
705730	4	345,894	476,407	1,769	1.4	196	0
715600	50	3,197,812	4,425,585	16,821	1.4	190	31,796
715630	216	14,493,379	19,585,509	80,129	1.4	181	149,579
715700	109	5,706,819	7,661,742	33,916	1.4	168	85,832
715730	20	704,274	926,170	3,454	1.3	204	7,725
715800	5	276,833	345,614	1,324	1.3	209	0
725600	9	815,149	1,094,430	4,548	1.3	179	10,488
725630	164	11,953,386	16,148,261	60,048	1.4	199	99,926
725700	206	13,499,415	18,026,552	69,602	1.3	194	85,835
725730	159	11,396,946	15,183,816	52,490	1.3	217	126,789
725800	41	2,647,743	3,521,223	12,938	1.3	205	17,807
725830	6	272,337	353,334	1,215	1.3	224	4,074
735600	4	75,007	109,216	942	1.5	80	865
735630	42	1,474,827	1,994,127	10,147	1.4	145	4,569
735700	139	8,283,160	11,276,573	47,078	1.4	176	89,050
735730	194	14,280,852	19,218,578	64,726	1.4	221	95,321
735800	147	9,402,429	12,558,802	45,733	1.3	206	69,738
735830	55	2,823,000	3,779,604	17,220	1.3	164	30,195
735900	4	254,875	367,414	650	1.4	392	105

-Continued-

Table 12. (page 2 of 2)

Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Landings	Crab ^a					
745800	48	3,188,195	4,290,025	12,528	1.4	255	24,546
745830	73	4,462,334	5,942,312	19,321	1.3	231	15,833
745900	11	578,979	761,286	3,258	1.3	178	6,783
755800	7	329,129	454,089	1,422	1.4	232	2,144
755830	84	5,735,766	7,941,011	30,072	1.4	191	45,446
755900	47	1,354,168	1,803,235	9,283	1.3	146	12,466
755930	5	270,354	388,429	2,491	1.4	109	5,000
765830	21	293,813	402,748	2,512	1.4	117	2,283
765900	13	416,286	569,326	2,514	1.4	166	2,629
765930	5	150,980	227,970	948	1.5	159	667
766000	4	457,565	615,246	1,306	1.4	350	0
775830	4	72,784	100,834	711	1.4	102	261
775900	9	406,586	536,002	825	1.3	493	600
775930	18	963,817	1,346,821	4,181	1.4	231	5,880
776000	10	511,857	677,013	1,245	1.3	411	4,179
785930	25	1,238,830	1,700,375	6,950	1.3	178	11,004
786000	6	539,650	710,991	2,465	1.3	219	0
OTHERS	51	2,419,387	3,405,407	19,312	1.4	125	45,510
TOTAL	1,836	169,558,842	230,787,000	971,046	1.4	173	1,573,952

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

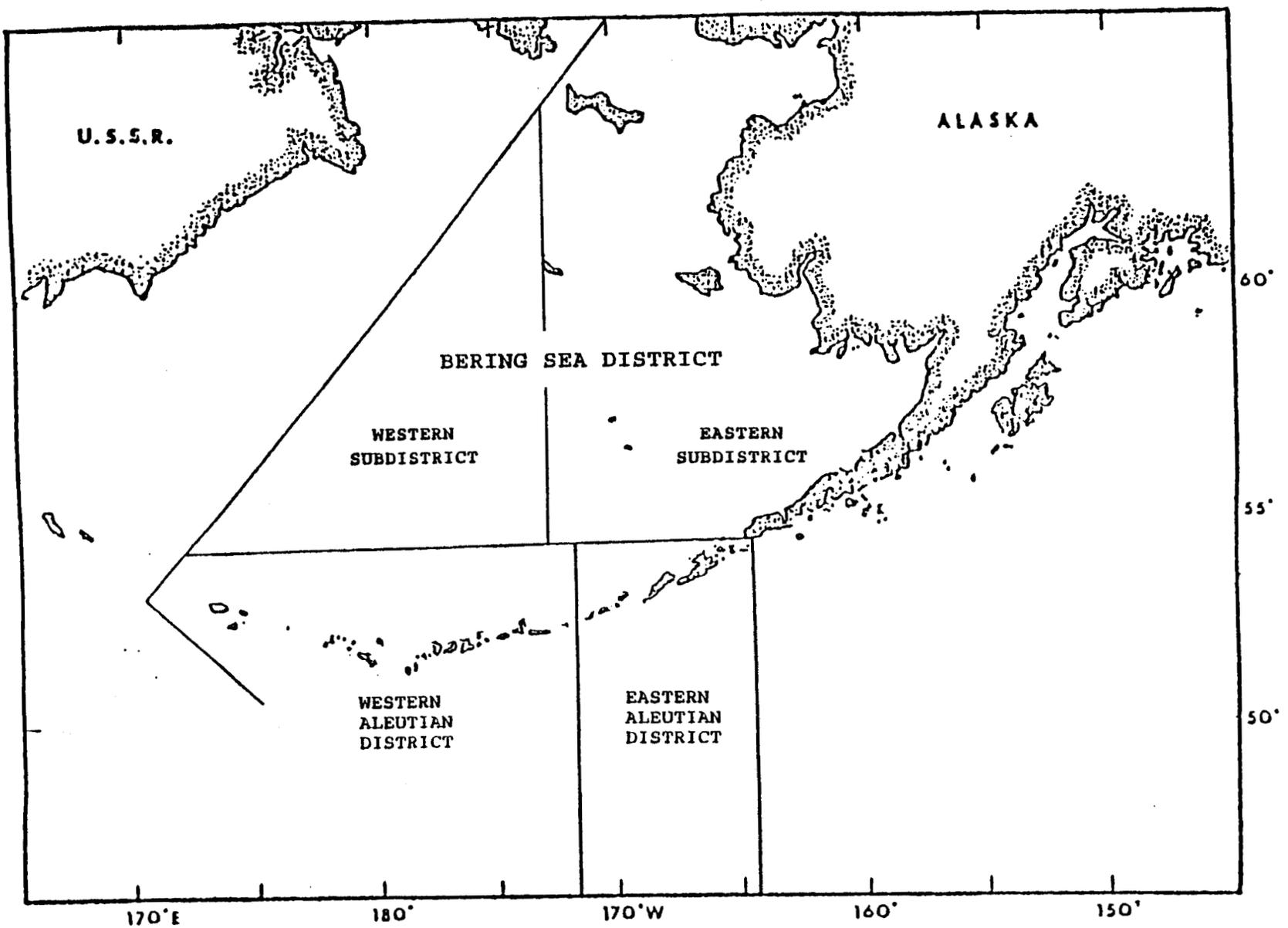


Figure 1. Bering Sea Tanner crab district and subdistricts.

KING CRAB REGISTRATION AREA T BRISTOL BAY

Introduction

The Bristol Bay king crab Area T includes all waters north of Cape Sarichef, east of 168° West longitude and south of the latitude of Cape Newenham and includes all waters of Bristol Bay (Figure 1).

Historic Background

Commercial king crab fishing in the Bering Sea began with the Japanese in 1930 and continued until 1940. They returned to the fishery in 1953 and remained until 1974. The Russian king crab fleet operated in the Eastern Bering Sea from 1959 through 1971. United States fishermen entered the Eastern Bering Sea fishery with trawl gear in 1947. Effort and catches declined in the 1950's with no catch being reported in 1959. A period of fluctuating low catches followed through 1966 before expanding to the full scale fishery of the mid to late 1970's. As in other areas of the State, the stocks crashed in the early 1980's but unlike other areas in the State, appear to be slowly recovering.

With the decline of king crab stocks in other areas of the State in 1968, U. S. effort continued to increase in the Eastern Bering Sea with a record catch of 129.9 million pounds landed during the 1980 season (Table 1). The Eastern Bering Sea king crab fishery traditionally harvested red king crab from the Bering Sea and Bristol Bay waters north of Unimak Island and the Alaska Peninsula from Cape Sarichef to Port Heiden.

In 1980 the Board of Fisheries made the Southeastern District of the Bering Sea (the major red king crab grounds) an exclusive registration area. It was named Bristol Bay, Registration Area T. Vessels registering for and fishing in this area are prohibited from fishing in any other exclusive registration area leaving only the Bering Sea (Area Q) and Adak (Area R) as alternative fishing areas.

As a result of the NMFS trawl survey, Area T remained closed during the 1983 season due to the lowest number of recorded legal males as well as the lowest total king crab population ever recorded. Small females carrying fewer eggs and high predator abundance also contributed to the closure decision.

Since the reopening of the fishery in 1984, catches have slowly increased to over 20.3 million pounds harvested during the 1990 season. Due to the large number of catcher-processors and floating processors in the fishery and the inability of the Department to monitor these catches, an Observer Program was initiated in 1988. Fishing effort has increased dramatically from 89

vessels in 1984 to over 300 vessels in 1991. With the increase in fishing effort, the amount of pots being used by the fleet has also increased, with over 90,000 registered in 1991.

In 1992, the Board of Fisheries established a 250 pot limit for the Bristol Bay red king crab fishery. This measure was to assist the manager's ability to monitor the fishery and control the harvest. These pot limits, which were to be applied through a buoy sticker program, were designed to assist inseason management of the fisheries and reduce the potential for pot loss.

Immediately following the 1992 Bristol Bay red king crab fishery, buoy sticker requirements were suspended due to a high failure rate of the stickers adhering properly to buoys. Despite suspension of the buoy sticker requirement, the 250 pot limit remained in effect until repealed by the National Marine Fisheries Service (NMFS) on November 30. This action by NMFS was due to perceived inconsistencies with provisions of the Bering Sea/Aleutian Island king and Tanner crab Federal Management Plan (FMP) which mandated application of pot limits in a nondiscriminatory manner.

In the spring of 1993 the Alaska Board of Fisheries passed new regulations which set pot limits on all vessels fishing king and Tanner crab in the Bering Sea, based on overall vessel length. For king crab in Bristol Bay, Area T, vessels in excess of 125 feet in overall length were limited to 250 pots and vessels less than 125 feet in length overall were allowed 200 pots total. These pot limits were to be applied through a buoy tag program from the Dutch Harbor and Kodiak ADF&G offices.

1993 Fishery

The 1993 National Marine Fisheries Service (NMFS) summer survey of Bristol Bay red king crab stocks indicated a mature female abundance of 14.2 million crab, well above the 8.4 million crab threshold. Biomass of legal males, which consisted mostly of old shell crab, was estimated at 45.7 million pounds compared to 32.1 million pounds in 1992. This year's abundance estimate yielded a guideline harvest level (GHL) of 16.8 million pounds.

Harvest shortfalls in both the St. Matthew blue king and Pribilof Islands red king crab fisheries in mid-September prompted a meeting in Seattle between fishermen, industry representatives and staff from ADF&G and NMFS to discuss methods to improve inseason data collection and management. At that meeting, a sales representative from MCI Communications Incorporated presented information about satellite communications software currently available for confidential communication between ADF&G and vessels at sea, which could be used for daily inseason catch reporting. As a result of this meeting, ADF&G purchased the necessary computer hardware and software for retrieval of daily satellite transmitted catch messages from vessels at sea.

Prior to and during the vessel registration and tank inspection process marine satellite (MARSAT) equipped vessels from both vessel size classes (over and under 125') were recruited to provide electronically transmitted daily catch reports to the department's newly established MCI electronic mailbox. A total of 31 vessels, 15 under 125 feet and 16 over 125 feet, signed up to send in daily catch reports via MCI. An additional 40 vessels, 31 under 125 feet and 9 over 125 feet

were also signed up to report daily catches via single-side-band radio. As a result of this expansion in the department's ability to obtain daily catch reports (via MCI) and a larger harvest guideline than in 1992, the 1993 fishery was managed inseason, based on daily CPUE information and catch projections.

The 1993 Bristol Bay red king crab fishery opened by regulation at 12:00 noon on November 1. A total of 292 vessels, including 15 catcher processors, made 361 landings for a total harvest of 14.6 million pounds (Table 1). In addition to the 12 shore-based processors, 11 floating processors also registered for on-the-grounds processing.

Of the 296 vessels that registered for this year's fishery, 294 received tank inspections and 292 actually made deliveries. A total of 112 inspections were performed in Dutch Harbor, 122 in King Cove, 57 in Akutan and 3 in St. Paul; all by ADF&G personnel stationed at those locations. Tank inspections commenced 24 hours prior to the start of the season in all locations except King Cove, which began 48 hours prior to the opening. This extended tank inspection window at King Cove, designed to allow smaller vessels time to reach the fishing grounds, was the primary reason for the unusually high numbers of vessels inspected at that location.

Regardless of an increase in the number of vessels participating in this year's fishery (292 compared to 281 in 1992), the number of pots registered for the 1993 fishery was 58,881, down from the 68,189 pots in 1992. This was due to more restrictive pot limits on those vessel in the 125 feet and under class (200 instead of 250 as in 1992).

This year's red king crab brought an average exvessel price of \$3.80 per pound, compared to the \$5.00 per pound paid for Bristol Bay red king crab in 1992. Despite the lower exvessel price, the total value of this year's 14.6 million pound harvest was \$55 million, compared to \$40 million for the 8 million pounds harvested in 1992 (Table 2).

Postrecruit crab made up 67% of this year's harvest. The remainder of this year's harvest, 33%, was made up of new shell recruit crab, identical to the age composition of the 1992 harvest (Table 3).

The majority of this year's harvest was taken from four statistical areas located in the center of the Bristol Bay Management Area between 162° and 164° West Longitude and 56° and 57° North Latitude. This is the traditional area of harvest and the same general area where the majority of the harvest occurred in 1992 (Table 4).

Vessel reports received via MCI and single side band radio indicated fishery performance declined from an overall average of 16.4 crab per pot on day two (the first full day of fishing) to 4.6 crab per pot on day ten. Catcher-processors once again out performed the catcher-only portion of the fleet, reporting an overall CPUE of ten crab per pot compared to nine crab per pot of the catcher-only fleet.

A comparison of catcher-only CPUE based on the inseason reported catch and the actual catch indicates the reported CPUE was higher than the actual CPUE as determined by a post season analysis of fish ticket data. Catcher-only vessels (both size groups combined) reported an overall

CPUE for the fishery of 10.7 crab per pot. Postseason analysis of fish tickets indicate a catcher-only CPUE for the fishery of 9.0 crab per pot (Table 5).

Based on a steady decline in CPUE and a weather forecast for storm conditions in the Bering Sea area, a closure announcement for the Area T management area was made for 12:00 noon November 10. Fishermen were given 72 hours advance notice of the closure.

Approximately 20 hours after the fishery closure, about 50 vessels began calling ADF&G on single side band radio to report their inability to reach their delivery location within the allocated 24 hour time limit due to poor weather. Information including the vessel name, location, delivery destination and estimated time of arrival was logged by ADF&G staff and turned over to the Department of Public Safety, Division of Fish and Wildlife Protection in Dutch Harbor for further action.

Fish and Wildlife enforcement activities on the fishing grounds included a 33 day patrol by the vessel P/V Woldstad beginning on October 23, in which 643 pots were inspected. Of those, 80 pots and 18 pot doors were seized for illegal fishing or storage. These activities resulted in 32 cases which required additional investigation to complete. The King Air enforcement aircraft flew 48 hours between October 26 and November 12 in search of illegal fishing and illegally placed gear.

Status of stocks

The National Marine Fisheries Service (NMFS) trawl survey of Bristol Bay indicated the majority of legal male crab encountered were old shell, skip molt crab. Size frequency information continues to suggest little recruitment has taken place in the past 4 years. This fact is somewhat mitigated by a 40% increase in the harvestable surplus between 1992 and 1993. During the 1993 fishery fishermen reported encountering large numbers of pre-recruit sized crab, an encouraging sign if borne out by the 1994 NMFS summer survey. Currently however, this fishery is well below historic levels and should be considered depressed.

Table 1. Bristol Bay, Area T of the Bering Sea, historic red king crab catch statistics, 1966-1993.

Year	Number of		Harvest ^{a,b}	Pots Pulled	Average		CPUE ^d	% Old Shell	Deadloss ^b
	Vessels	Landings			Crab ^a	Weight ^b			
1966	9	15	140,554	997,321	2,720	7.1	52		
1967	20	61	397,307	3,102,443	10,621	7.8	37		
1968	59	261	1,278,592	8,686,546	47,496	6.8	27		
1969	65	377	1,749,022	10,403,283	98,426	5.9	18		
1970	51	309	1,682,591	8,559,178	96,658	5.1	17		
1971	52	394	2,404,681	12,955,776	118,522	5.4	20		
1972	64	611	3,994,356	21,744,924	205,045	5.4	20		
1973	67	441	4,825,963	26,913,636	194,095	5.6	25		N/A
1974	104	605	7,710,317	42,266,274	212,915	5.5	36		N/A
1975	102	592	8,745,294	51,326,259	205,096	5.7	43		1,639,483
1976	141	984	10,603,367	63,919,728	321,010	6.0	147.9	33	27.4 875,327
1977	130	1,020	11,733,101	69,967,868	451,273	5.9	147.9	26	13.0 730,279
1978	162	926	14,745,709	87,618,320	406,165	5.8	147.0	36	6.9 1,273,037
1979	236	889	16,808,605	107,828,057	315,226	6.4	152.3	53	10.4 3,555,891
1980	236	1,251	20,845,350	129,948,463	567,292	6.2	151.1	37	11.0 1,858,668
1981	177	1,026	5,307,947	33,591,368	542,250	6.3	151.1	10	47.4 711,289
1982	90	255	541,006	3,001,210	141,656	5.6	145.2	4	24.6 95,834
1983			N O	C O M M E R C I A L	F I S H E R Y				
1984	89	137	794,040	4,182,406	112,556	5.2	142.4	7	26.5 35,601
1985	128	130	796,181	4,174,953	85,003	5.5	142.3	9	25.8 6,436
1986	159	230	2,099,576	11,393,934	178,370	5.4	142.2	12	25.5 284,127
1987	236	311	2,122,402	12,289,067	220,871	5.8	144.7	9	19.0 120,388
1988	200	201	1,236,131	7,387,795	153,004	6.0	146.9	8	15.1 23,537
1989	211	287	1,684,706	10,264,791	208,684	6.1	148.4	8	17.7 81,334
1990	240	331	3,120,326	20,362,342	262,131	6.5	151.6	12	14.7 116,527
1991 ^e	302	324	2,630,446	17,177,894	227,555	6.5	151.9	12	12.1 119,670
1992 ^e	281	289	1,196,958	8,043,018	205,940	6.7	152.8	6	22.3 9,000
1993 ^e	292	361	2,261,287	14,628,639	253,794	6.5	151.9	9	15.2 133,442

^aDeadloss included.

^bIn Pounds.

^cIn millimeters.

^dDefined as catch per pot pull.

^eIncludes Test Fishery.

Table 2. Historic Bristol Bay red king crab economic performance.

Year	GHL ^a	Season Total ^b	Number of		Number of Pots		Value		Season Length		
			Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)	Dates	
1980	70 - 120	128.1	236	1,251	78,352	567,292	\$ 0.90	\$115.3	(40)	09/10-10/20	
1981	70 - 100	32.9	177	1,026	75,756	542,250	\$ 1.50	\$ 49.3	(91)	09/10-12/15	
1982	10 - 20 ^d	2.9	90	255	36,166	141,656	\$ 3.05	\$ 8.8	(30)	09/10-10/10	
1983			N O C O M M E R C I A L F I S H E R Y								
1984	2.5 - 6.0	4.1	89	137	21,762	112,556	\$ 2.60	\$ 10.8	(15)	10/01-10/16	
1985	3.0 - 5.0	4.2	128	130	30,117	85,003	\$ 2.90	\$ 12.1	(8)	09/25-10/02	
1986	6.0 - 13.0	11.1	159	230	32,468	178,370	\$ 4.05	\$ 45.0	(13)	09/25-10/07	
1987	8.5 - 17.7	12.2	236	311	63,000	220,871	\$ 4.00	\$ 48.7	(12)	09/25-10/06	
1988	7.5	7.4	200	201	50,099	153,004	\$ 5.10	\$ 37.6	(8)	09/25-10/02	
1989	16.5	10.2	211	287	55,000	208,684	\$ 5.00	\$ 50.9	(12)	09/25-10/06	
1990	17.1	20.2	240	331	69,906	262,131	\$ 5.00	\$101.2	(12)	11/01-11/13	
1991	18.0	17.1 ^e	302	332	89,068	227,555	\$ 3.00	\$ 51.2	(7)	11/01-11-08	
1992	10.3	8.0 ^e	281	289	68,189	205,940	\$ 5.00	\$ 40.0	(7)	11/01-11/08	
1993	16.8	14.6 ^e	292	361	58,881	253,794	\$ 3.80	\$ 55.1	(9)	11/01-11/10	

^aGuideline Harvest Level (millions of pounds).

^bMillions of pounds.

^cMillions of dollars.

^dInseason revision to 4.7 million pounds.

^eIncludes test fishery.

Table 3. Bristol Bay red king crab harvest composition by fishing season.

Season	Date		Harvest ^a	Percent Recruit ^b	Percent Postrecruit ^b	Size Limit ^c	Price Per Pound
	Opened	Closed					
1973	06/15	09/09	28.2	63	37	6½	\$0.84
1974	07/29	10/12	41.9	60	40	6½	\$0.38
1975	08/01	11/16	51.3	21	79	6½ ^d	\$0.38
1976	08/15	12/07	63.9	56	44	6½	\$0.58
1977	09/15	12/08	70.0	67	33	6½	\$1.11
1978	09/10	10/23	87.6	75	25	6½	\$1.23
1979	09/15	10/14	107.8	47	53	6½	\$1.01
1980	09/10	10/20	129.9	44	56	6½	\$0.90
1981	09/10	10/20	32.0	-	-	6½	-
	10/25	12/15	1.5	14	86	7	\$1.50
1982	09/10	10/10	3.0	68	32	6½	\$3.05
1983			N O	C O M M E R C I A L	F I S H E R Y		
1984	10/01	10/16	4.2	59	41	6½	\$2.60
1985	09/25	10/02	4.1	66	34	6½	\$2.90
1986	09/25	10/07	11.4	65	35	6½	\$4.05
1987	09/25	10/06	12.3	77	23	6½	\$4.00
1988	09/25	10/02	7.4	59	41	6½	\$5.10
1989	09/25	10/06	10.3	58	42	6½	\$5.00
1990	11/01	11/13	20.4	49	51	6½	\$5.00
1991	11/01	11/08	17.2	44	56	6½	\$3.00
1992	11/01	11/08	8.0	33	67	6½	\$5.00
1993	11/01	11/10	14.6	33	67	6½	\$3.80

^aDeadloss included, millions of pounds.

^bRecruits figured at 149 mm - all previous years, 155 mm.

^cMinimum carapace width in inches.

^d6½ inches after 11/01.

Table 4. 1993 Bristol Bay king crab catch by Statistical Area.

Stat Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Dead-loss ^b
	Landings	Crab ^a					
615601	13	19,780	125,831	3,171	6.36	6	2169
615630	40	84,525	551,030	12,317	6.52	7	9,723
615700	13	33,549	225,189	4,632	6.71	7	2,154
625600	116	389,476	2,519,625	45,231	6.47	9	14,317
625630	163	691,465	4,549,645	75,711	6.58	9	46,842
625700	38	90,581	563,189	12,487	6.22	7	3,968
635600	72	268,351	1,517,778	26,023	5.66	10	13,732
635630	125	496,864	3,341,412	50,215	6.73	10	26,170
635700	33	109,315	732,030	14,271	6.70	8	8,913
Others	20	77,381	502,910	9,736	6.48	10	5,454
Totals	361	2,261,287	14,628,639	253,794	6.47	9	133,442

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

Table 5. Comparative average catches of catcher-processor vs catcher-only vessels from Bristol Bay king crab seasons.

	SEASONS					
	1993	1992	1991	1990	1989	1988
Number of Catcher-Processor Vessels	15	17	25	20	18	20
Number of Catcher-Only Vessels	277	264	278	219	193	180
Pounds of Catcher-Processor Harvest	1,292,314	681,784	2,333,532	2,708,805	1,334,083	994,546
Percent of Catcher-Processor Harvest ^a	8.8	8.5	13.6	13.3	13.0	13.5
Average Catcher-Processor Harvest	86,154	40,105	93,341	135,440	74,116	49,727
Average Catcher-Only Harvest ^b	48,145	27,883	53,397	80,220	46,273	35,515
Catcher-Processor Average CPUE	10	6	14	13.9	9.4	7.8
Catcher-Only Average CPUE	9	6	11	12.0	7.9	8.2
Total Harvest	14,628,639 ^c	8,043,018	17,177,894 ^c	20,276,979	10,264,791	7,387,258
Average # Pots Pulled Catcher-Processor	1,312	950	1,012	1,483	1,289	1,039
Average # Pots Pulled Catcher-Only	916	719	727	1,061	961	730
Catcher-Processor Harvest Range	10,827-169,355	9,062-61,684	41,091-170,373	41,458-265,151	21,905-185,408	19,796-98,875

^aCP total catch divided by total catch.

^bTotal catch less CP catch divided by number of catcher only vessels.

^cIncludes test fishery.

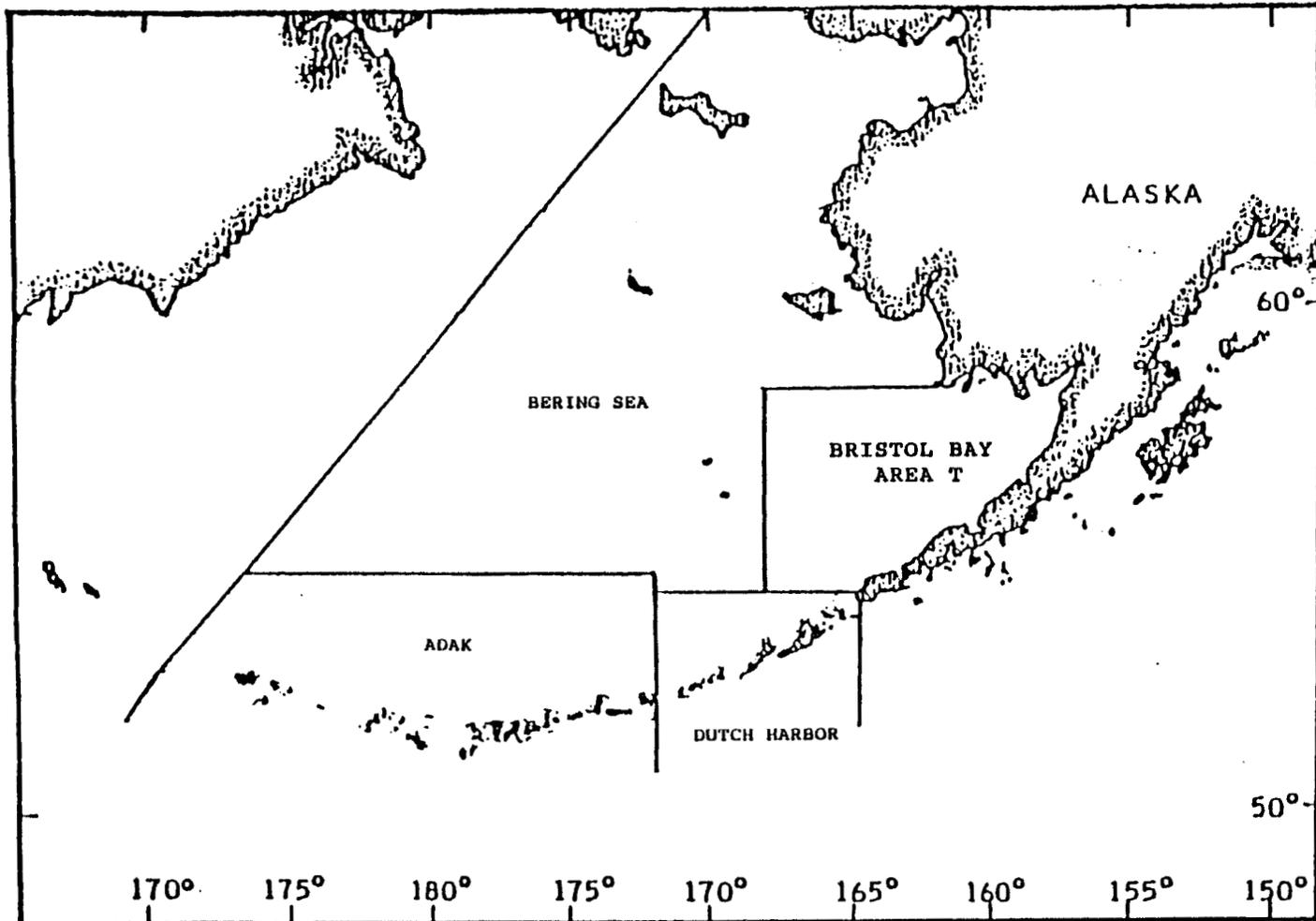


Figure 1. Bristol Bay, Area T, king crab area.

KING CRAB STATISTICAL AREA Q BERING SEA

Description

The Bering Sea king crab registration area, Statistical Area Q, includes all waters north of Cape Sarichef, south of Point Hope, and east of the U.S.-Russian Convention Line of 1867; it excludes those waters of Bristol Bay, and south of 55°30' North Latitude and west of 171° West Longitude. Area Q is separated into the Pribilof and Northern Districts. The Pribilof District includes the waters south of Cape Newenham. The Northern District incorporates all of the waters north of Cape Newenham, and is further divided into three sections. The Saint Matthew Island Section includes the waters north of Cape Newenham and south of Cape Romanzof. Norton Sound Section includes all waters north of Cape Romanzof, south of Cape Prince of Wales, and east of 168° West Longitude. The Saint Lawrence Island Section encompasses all remaining waters of the district (Figure 1).

Historic Background

The blue king crab fishery in the Pribilofs started in 1973 when vessels targeted on blue king crab stocks between St. George and St. Paul Islands during the summer months. The first reported catch was 1.2 million pounds taken by eight vessels between July and October. The crab averaged 7.3 pounds, and the catch per unit effort (CPUE) was 26 crabs per pot. The average weight remained relatively constant through to the 1987/88 season. The CPUE of 26 crabs per pot has never again been attained by the fleet; an average of 17 crabs per pot for the following three seasons dropped to less than eight crabs per pot for the 1977/78 through 1982/83 seasons. Three crabs or less per pot were observed from the 1983/84 season for the subsequent five seasons (Table 1). Due to low population estimates in this district, the red and blue king crab fishery has been closed since the 1987/88 season.

1993 Fishery - Pribilof District

The 1993 National Marine Fisheries Service (NMFS) summer trawl survey of the Pribilof Islands king crab stocks indicated the abundance of legal blue king crab was slightly above threshold levels, similar to levels observed in 1991 and 1992. Abundance of small males was the lowest on record, indicating a continuing trend of little or no recruitment.

However, survey abundance of red king crab, normally rare relative to blue king crab, showed a marked increase in abundance. This apparent increase in abundance is consistent with reports of high incidental catches of red king crab in the Tanner crab fishery around the Pribilof Islands

in recent years. While no threshold level has been established for Pribilof red king crab, survey results indicated a harvestable surplus of 3.4 million pounds.

Based on the 1993 survey estimates of abundance, and the potential for an excessive harvest on blue king crab in a mixed species fishery, the area remained closed to the harvest of blue king crab for the 1993 season. A harvest guideline of 3.4 million pounds was established for red king crab.

During the spring of 1993 meeting, the Alaska Board of Fisheries passed regulations which set pot limits on all vessels fishing king crab in the Bering Sea based on vessel overall size. In the Pribilof District, vessels over 125 feet were limited to 50 pots and vessels under 125 feet were allowed 40 pots total. These pot limits were designed to assist management by reducing the number of pots in the fishery, thereby slowing the harvest rate to allow sufficient time for inseason management.

The 1993 Pribilof red king crab season opened at 12:00 noon on September 15 concurrent with the blue king crab season in the St. Matthew Island Section of the Northern District of the Bering Sea. For the six day fishery, 112 vessels made 135 deliveries for a total harvest of 2.6 million pounds (Table 2).

Of the 115 vessels registered, 113 received tank inspections by ADF&G personnel stationed in Akutan, Dutch Harbor and St. Paul. The number of vessels registered for this year's fishery approached the historic high of 126 recorded for the 1983/84 fishery, however the 4,860 pots registered for the 1993 fishery was among the lowest on record. Despite the low number of pots registered, 35,942 pot lifts were reported. Although fewer pots were registered, each pot was pulled more frequently. This resulted in a reduction of average soak time per pot.

The fishery was monitored inseason by daily radio catch reports from observers aboard the two catcher-processors registered for the fishery. Catch information was also obtained from the 16 catcher-only vessels which had volunteered to report via prearranged individual reporting codes.

This year's 2.6 million pound harvest was less than the 3.4 million pound preseason harvest guideline. This shortfall can be attributed to several factors. First, the catch projection for the fishery closure was based on a disproportionately high average daily catch rates of the reporting vessels used to monitor fishery performance. Average catch per unit of effort (CPUE) of reporting vessels, which were thought to be representative of the entire fleet, was 11.6 crab per pot, while a post season analysis of fish ticket data indicated the true fleet average CPUE was 10.6 crab per pot. Also, information on the actual number of vessels fishing was unavailable, (some did not fish, others fished only a portion of the season due to mechanical difficulties). Consequently, the total number of vessels registered was used to project the fleet's fishing power. This resulted in an overestimation of the number of pots pulled during the course of the fishery (43,000 estimated compared to 35,942 pots reported based on a post season fish ticket summary).

The majority of the red king crab harvest came from the four statistical areas immediately surrounding the Pribilof Islands. The majority of harvest was processed by shore-based

processors in Saint Paul and Dutch Harbor, and the four floating processors registered for on-the-grounds processing in the Pribilof District. One of the vessels was in the district for only part of the fishery. These vessels also processed blue king crab harvested in the St. Matthew Island Section of the Northern District, a fishery which was ongoing simultaneously.

Stock Status

Blue king crab stocks in the Pribilof District appear to be above threshold and stable, showing no increase in the legal population estimate of one million crab since the 1991 survey. Red king crab stocks have no established threshold level and have increased over the last three years to an abundance level three to four times that of blue king crab in the area.

1993 Fishery - St. Matthew Island District

At the spring 1993 meeting the Alaska Board of Fisheries changed the opening date of the St. Matthew king crab fishery from September 1 to September 15, concurrent with the king crab fishery in the Pribilof District. This action was taken to improve fleet distribution between the Pribilof and St. Matthew fisheries, thereby reducing the number of vessels participating in each fishery. Also at this meeting the Board of Fisheries passed regulations which set pot limits on all vessels fishing king crab in the Bering Sea based on vessel overall length. In the St. Matthew Island Section, vessels over 125 feet were limited to 75 pots and those under 125 feet were allowed 60 pots total. These pot limits were applied through a buoy tag program. They were designed to assist management by reducing the number of pots in the fishery, thereby slowing the harvest rate to allow sufficient time for inseason management.

During the 1993 fishery, which opened at 12:00 noon on September 15 and closed by emergency order at 3:00 p.m. on September 21, a total of 136 landings were made for a harvest of 2,999,921 pounds. Average weight of crab was 4.8 pounds, compared to a 4.6 pound average for the 1991 and 1992 fisheries. This year's catch per unit of effort (CPUE) was 11 crab per pot compared to a 10 and 20 crab per pot average during the 1991 and 1992 fisheries respectively (Tables 3, 4 and 6).

A total of 92 vessels, including three catcher-processors, purchased buoy tags from the ADF&G office in Dutch Harbor and received tank inspections by ADF&G personnel stationed at Akutan Dutch Harbor and St. Paul. This was well below the 174 vessels which registered for the 1992 fishery and is the direct result of the concurrent opening of the red king crab fishery in the Pribilof Islands. A total of 5,895 pots were registered for the 1993 St. Matthew fishery, down considerably from the 17,400 pots registered in 1992 (Table 5). In addition to the six shore based processors, six floating processors also purchased crab from the 1993 St. Matthew fishery. Two of these vessels were registered for the Saint Matthew Island District prior to the season.

One additional vessel was in the district for part of the fishery. The floating processors in the Pribilof District purchased crab from this fishery at the close of the season.

Based on the 1993 NMFS summer trawl survey of the Bering Sea, the legal male blue king crab abundance for the St. Matthew area was estimated at 3.6 million crabs, up from the 2.3 million crab estimate from the summer 1992 survey. From the 1993 abundance estimate a guideline harvest level (GHL) for St. Matthew blue king crab was set at 4.4 million pounds (Table 5).

This year's catch, which resulted from over 58,500 pot lifts, came predominantly from two statistical areas south of St. Matthew Island (Table 6), similar to the location of the 1992 harvest. The 1993 fishery was monitored inseason by daily radio catch reports from observers aboard the three catcher-processors registered for the fishery, and from seven catcher-only vessels which volunteered to report via prearranged individual reporting codes.

Catcher-processors once again outperformed the catcher-only portion of the fleet. This year's CPUE for catcher-processors was 14 crab per pot compared to 11.6 for catcher-only vessels. The magnitude of difference in CPUE between the two vessel groups in 1993 was similar to differences observed in the past 5 years, with the exception of 1990 when both vessel groups averaged 15 crab per pot (Table 7).

The three million pound harvest in this year's fishery fell short of the 4.4 million pound preseason harvest guideline (Table 8). As in the Pribilof red king crab fishery, this year's harvest shortfall in the St. Matthew blue crab fishery was due primarily to the disproportionately high average daily catch rates of the reporting vessels used to monitor fishery performance. It was this information upon which the catch projection for the fishery closure was based. Average catch per unit of effort (CPUE) of the seven reporting vessels, which were thought to be representative of the entire fleet, was in excess of 13 crab per pot, while a post season analysis of fish ticket data indicated the true fleet average CPUE was less than 11 crab per pot. Also, information on the actual number of vessel fishing was unavailable (some fished only a portion of the season due to mechanical difficulties). Therefore, the total number of vessels registered was used to project the fleet's fishing power. This resulted in an overestimation of the number of pots pulled during the course of the fishery. Based on a post season fish ticket summary, 58,647 pots were reported to have fished, compared to the estimated 64,768 pots.

This year's exvessel price averaged \$3.23 per pound for a total exvessel value of \$9.7 million. This is slightly higher than the \$3.00 per pound average paid for the 2.5 million pounds harvested in 1992 (Table 5).

Fish and Wildlife enforcement activities for the St. Matthew fishery included vessel patrols by the Department of Public Safety vessel P/V Woldstad, which inspected 219 pots, seized pots from two vessels and boarded and checked gear and crew licenses on three additional vessels. In addition, King Air, the Fish and Wildlife observation aircraft, flew 46 hours between September 11 and September 22. Activities included enforcing the fair start of the St. Matthew fishery on September 15, and directing the enforcement vessel's gear search activities.

Stock Status

Blue king crab stocks in St. Matthew are above threshold. Based on the 1993 survey, legal male abundance increased from 2.3 million in 1992 to 3.6 million in 1993. Despite moderate improvement, this stock is still below historic levels and must be managed as a depressed fishery.

Table 1. Bering Sea, Area Q, Pribilof District historic king crab catch statistics, 1973/74-1993.

Year ^a	Vessels	Number of		Harvest ^{b, c}	Pots Pulled	CPUE ^d	Average		Deadloss ^c
		Landings	Crab ^b				Weight ^c	Length ^e	
1973/74	8	13	174,420	1,276,533	6,814	26	7.3	N/A	0
1974/75	70	101	908,072	7,107,294	45,518	20	7.8	157.8	0
1975/76	20	54	314,931	2,433,714	16,297	19	7.7	159.1	0
1976/77	47	113	855,505	6,611,084	71,738	12	7.7	158.1	0
1977/78	34	104	807,092	6,456,738	106,983	8	7.9	158.9	159,269
1978/79	58	154	797,364	6,395,512	101,117	8	8.1	159.3	63,140
1979/80	46	115	815,557	5,995,231	83,527	9	7.7	155.9	284,555
1980/81	110	258	1,497,101	10,970,346	167,684	9	7.3	155.7	287,285
1981/82	99	312	1,202,499	9,080,729	176,168	7	7.6	158.2	250,699
1982/83	122	281	587,908	4,405,353	127,728	5	7.5	159.8	51,703
1983/84	126	221	276,364	2,193,395	86,428	3	7.9	159.9	4,562
1984/85	16	25	40,427	306,699	15,147	3	7.6	155.5	0
1985/86	26	49	77,607	532,735	23,483	3	6.9	146.5	7,500
1986/87	16	25	36,988	258,939	15,800	2	7.0	N/A	5,450
1987/88	38	68	95,131	701,337	40,507	2	7.4	152.7	9,910
1988/89				S E A S O N	C L O S E D				
1989/90				S E A S O N	C L O S E D				
1990/91				S E A S O N	C L O S E D				
1991/92 ^f				S E A S O N	C L O S E D				
1992/93				S E A S O N	C L O S E D				
1993 ^g	112	135	380,217	2,607,634	35,942	11	6.9	N/A	0

^aBlue king crab, 1973 - 1988.

^bDeadloss included.

^cIn pounds.

^dDefined as catch per pot pull.

^eIn millimeters.

^f10,869 pounds illegal red king crab.

^gRed king crab.

Table 2. Historic Bering Sea, Pribilof District king crab economic performance, 1980/81-1993.

Year	GHL ^a	Season Total ^b	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)	Dates
1980/81	5.0-8.0	10.7	110	258	31,636	167,681	\$.90	\$ 9.6	(60)	9/15-11/15
1981/82	5.0-8.0	9.1	99	312	25,408	176,168	\$ 1.50	\$13.6	(47)	9/10-10/28
1982/83	5.0-8.0	4.4	122	281	34,429	127,728	\$ 3.05	\$13.4	(15)	9/10-9/25
1983/84	4.0 ^e	2.2	126	221	36,439	86,428	\$ 3.00	\$ 6.6	(10)	9/01-09/11
1984/85	0.5-1.0	0.3	16	25	3,122	15,147	\$ 2.50	\$ 0.1	(15)	9/01-09/16
19985/86	0.3-0.8	0.5	26	49	6,038	23,483	\$ 2.90	\$ 1.4	(26)	9/25-10/21
1986/87	0.3-0.8	0.3	16	25	4,376	15,800	\$ 4.05	\$ 1.2	(55)	9/25-11/20
1987/88	0.3-1.7	0.7	38	68	9,594	40,507	\$ 4.00	\$ 2.8	(86)	9/25-12/20
1988/89										
1989/90										
1990/91										
1991/92										
1992/93										
1993 ^f	3.4	2.6	112	135	4,860	35,942	\$ 4.98	\$13.0	(6)	9/15-09/21

^aBlue king crab, 1980 - 1988.

^bGuideline Harvest Level.

^cMillions of pounds.

^dMillions of dollars.

^eSet not to exceed 4,000,000 pounds.

^fRed king crab.

Table 3. Historic blue king crab catch in the Northern District of statistical Area Q (St. Matthew and St. Lawrence Islands).

Season	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUR ^c	Percent Recruits	Average		Deadloss ^b
	Vessels	Landings						Weight ^b	Length ^d	
1977	10	24	281,665	1,202,066	17,370	16	7.0	4.3	130.4	129,148
1978	22	70	436,126	1,984,251	43,754	9	N/A	4.5	132.2	116,037
1979	18	25	52,966	210,819	9,877	5	80.8	4.0	128.8	56,147
1980	Confidential							N/A	4.7	N/A
1981	31	119	1,045,619	4,627,761	58,550	18	N/A	4.4	N/A	53,355
1982	96	269	1,935,886	8,844,789	165,618	12	19.6	4.6	135.1	142,973
1983 ^e	164	235	1,931,990	9,454,323	133,944	14	26.7	4.8	137.2	828,994
1983 ^f	13	13	11,264	52,557	3,975	3	-	4.7	-	3,500
1984 ^e	90	169	841,017	3,764,592	73,320	11	34.0	4.5	135.5	31,983
1984 ^f	No Reported Landings									
1985 ^e	79	103	484,836	2,427,110	51,606	9	9.0	5.0	139.0	2,613
1985 ^f	No Reported Landings									
1986 ^e	38	43	219,548	1,003,162	22,093	10	10.0	4.6	134.3	32,560
1986 ^f	No Reported Landings									

- Continued -

Table 3. (page 2 of 2)

Season	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Percent Recruits	Average		Deadloss ^b
	Vessels	Landings						Weight ^b	Length ^d	
1987 ^e	61	62	234,521	1,075,179	28,440	8	5.0	4.6	134.13	400
1987 ^f			No	Reported	Landings					
1988 ^e	46	46	302,053	1,325,185	10,160	13	65.0	4.4	133.29	22,358
1988 ^f			No	Reported	Landings					
1989 ^e	69	69	247,641	1,166,258	30,853	8	9.0	4.7	134.55	3,754
1989 ^f	5	9	1,652	4,518	2,402	-	-	-	-	0
1990 ^e	31	38	391,405	1,725,349	26,264	15	4.0	4.4	134.28	17,416
1990 ^f			No	Reported	Landings					
1991 ^e	68	69	726,519	3,372,066	37,104	20	12.0	4.6	134.1	216,459
1991 ^f			No	Reported	Landings					
1992 ^e	174	179	544,956	2,474,080	56,630	10	9.0	4.6	134.1	0
1992 ^f			No	Reported	Landings					
1993 ^e	92	136	629,874	2,999,921	58,647	11	6.0	4.8	135.4	0
1993 ^f			No	Reported	Landings					

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

^eSt. Matthew.

^fSt. Lawrence - red and blue.

Table 4. Northern District, Area Q, king crab harvest composition by fishing season.

Season	Date		Species	Harvest ^a	Minimum Size ^b	Price per Pound
	Opened	Closed				
1977	June 7	Aug. 16	Blue	1,202,066	5 1/2	\$ 1.00
			Red	543,041	5	
1978	July 15	Sept. 3	Blue	1,984,251	5 1/2	\$ 0.95
	July 15	Aug. 16	Red	2,007,910	4 3/4	
1979	July 15	Aug. 24	Blue	210,819	5 1/2	\$ 0.70
	July 15	Aug. 16	Red	3,024,228	4 3/4	
1980	July 15	Sept. 3	Blue			\$ 0.75
	July 15	July 31	Red ^c	353,683	4 3/4	
1981	July 15	Aug. 21	Blue	4,627,761	5 1/2	\$ 0.90
	July 15	Sept. 3	Red ^c	63,983	4 3/4	
1982	Aug. 1	Aug. 16	Blue	8,844,789	5 1/2	\$ 2.00
	Aug. 1	Aug. 16	Red ^c	3,690	4 3/4	\$ 2.00
1983 ^d	May 1	Aug. 1	Brown	193,507	5 1/2	\$ 2.00
	Aug. 20	Sept. 6	Blue	9,506,880	5 1/2	\$ 3.00
	Aug. 20	Sept. 6	Red	1,635	4 3/4	\$ 2.50
	May 1	Aug. 1	Brown		5 1/2	-
1984	Aug. 1	Sept. 8	Blue	3,764,592	5 1/2	\$ 1.75
	Aug. 1	Sept. 8	Red ^c	-	4 3/4	-
	May 1	Dec. 31	Brown ^d	-	5 1/2	-
1985	Sept. 1	Sept. 6	Blue	2,427,110	5 1/2	\$ 1.60
	Aug. 1	Sept. 6	NO CATCH REPORTED		4 3/4	-
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2	-
1986	Sept. 1	Sept. 6	Blue	1,003,162	5 1/2	\$ 3.20
	Aug. 1	Sept. 6	NO CATCH REPORTED		4 3/4	-
	Jan. 1	Dec. 31	NO CATCH REPORTED		5 1/2	-
1987	Sept. 1	Sept. 5	Blue	1,075,179	5 1/2	\$ 2.85
	Aug. 1	Sept. 5	NO CATCH REPORTED		4 3/4	-
	Jan. 1	Dec. 31	Brown	424,394	5 1/2	\$ 2.60

- Continued -

Table 4. (page 2 of 2)

Season	Date		Species	Harvest ^a	Minimum Size ^b	Price per Pound
	Opened	Closed				
1988	Sept. 1	Sept. 5	Blue	1,325,185	5 1/2	\$ 3.10
	Aug. 1	Sept. 5	NO CATCH	REPORTED	4 3/4	
	Jan. 1	Dec. 31	Brown	160,441	5 1/2	\$ 3.10
1989	Sept. 1	Sept. 4	Blue	1,166,258	5 1/2	\$ 2.90
			Blue	0 ^e	5 1/2	NA
	Aug. 1	Sept. 4	Red ^c	4,518	4 3/4	NA
	Jan. 1	Dec. 31	Brown	4,407	5 1/2	NA
1990	Sept. 1	Sept. 7	Blue	1,725,349	5 1/2	\$ 3.35
1991	Sept. 16	Sept. 20	Blue	3,372,066	5 1/2	\$ 2.80
1992	Sept. 4	Sept. 7	Blue	2,474,080	5 1/2	\$ 3.00
1993	Sept. 15	Sept. 21	Blue	2,999,921	5 1/2	\$ 3.23

^aIn pounds, deadloss included.

^bCarapace width in inches.

^cDoes not include Norton Sound.

^dSome of Northern District open until September 20.

^eCombined with red king crab to total 4,518 pounds.

Table 5. Historic Bering Sea, Northern District (St. Matthew Island Section) blue king crab economic performance.

Year	GHL ^{a, b}	Season Total ^b	Number of		Number of Pots		Value		Season Length	
			Vessels	Landings	Registered	Pulled	Exvessel	Total ^c	(Days)	Dates
1981	1.5-3.0	4.6	31	119	2,960	58,550	\$ 0.90	\$ 4.1	(38)	7/15-8/21
1982	5.6	8.7	96	296	21,894	165,618	\$ 2.00	\$ 17.4	(15)	8/01-8/16
1983	8.0	8.6	164	235	38,000	133,944	\$ 3.00	\$ 25.8	(17)	8/20-9/06
1984	2.0-4.0	3.7	90	169	14,800	73,320	\$ 1.75	\$ 6.5	(7)	9/01-9/08
1985	0.9-1.9	2.4	79	103	13,000	51,606	\$ 1.60	\$ 3.8	(5)	9/01-9/06
1986	0.2-0.5	1.0	38	43	5,600	22,093	\$ 3.20	\$ 3.2	(5)	9/01-9/06
1987	0.6-1.3	1.1	61	62	9,370	28,440	\$ 2.85	\$ 3.1	(4)	9/01-9/05
1988	0.7-1.5	1.3	46	46	7,780	10,160	\$ 3.10	\$ 4.0	(4)	9/01-9/05
1989	1.7	1.2	69	69	11,983	30,853	\$ 2.90	\$ 3.5	(3) ^d	9/01-9/04
1990	1.9	1.7	31	38	6,000	26,264	\$ 3.35	\$ 5.7	(6)	9/01-9/07
1991	3.2	3.2	68	69	13,100	37,104	\$ 2.80	\$ 9.0	(4)	9/16-9/20
1992	3.1	2.5	174	179	17,400	56,630	\$ 3.00	\$ 7.4	(3) ^d	9/04-9/07
1993	4.4	3.0	92	136	5,895	58,647	\$ 3.23	\$ 9.7	(6)	9/15-9/21

^aGuideline Harvest Level.

^bMillions of pounds.

^cMillions of dollars.

^dActual length - 60 hours.

Table 6. Bering Sea (Northern District) blue king crab catch by statistical area, for St. Matthew Island, 1993.

Stat Area	Number of		Harvest ^{a, b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
	Landings	Crab ^a					
726001	44	160,641	783,241	14,940	4.9	11	0
735930	6	13,951	70,784	1,283	5.1	11	0
736001	99	386,528	1,820,701	36,767	4.7	11	0
Other	14	68,754	325,195	5,657	4.8	12	0
TOTAL	136	629,874	2,999,921	58,647	4.8	11	0

^aDeadloss included.

^bIn Pounds.

^cDefined as catch per pot pull.

Table 7. St. Matthew Blue King crab comparative average catches of catcher-processor vs. catcher-only vessels.

	SEASON				
	1993	1992	1991	1990	1989
Number of Catcher-Processor Vessels	3	8	9	7	15
Number of Catcher-Only Vessels	89	166	59	24	54
Pounds of Catcher-Processor Harvest	165,625	191,801	740,687	447,320	462,034
Percent of Catcher-Processor Harvest	5.5	7.7	22.0	25.9	39.6
Average Catcher-Processor Harvest	55,208	23,975	82,298	63,903	30,802
Average Catcher-Only Harvest	31,846	13,749	44,600	53,251	13,041
Catcher-Processor Average CPUE	14	16	26	15	11
Catcher-Only Average CPUE	11	9	18	15	7
Total Harvest	2,999,921	2,474,080	3,372,066	1,725,349	1,166,258
Average # Pots Pulled Catcher-Processor	811	327	682	983	618
Average # Pots Pulled Catcher-Only	632	325	525	807	399
Catcher-Processor Harvest Range	45,060-63,914	5,573-51,943	41,812-129,038	27,403-111,507	16,744-43,650

Table 8. St. Matthew comparative mid-point and emergency order projections and actual harvests.

Year	Guideline Harvest Levels ^a	GHL Mid-Point ^a	Actual Harvest	Projected Harvest
1983	8.0	-	9,454,000	8.0
1984	2.0 - 4.0	3.00	3,764,000	4.0
1985	0.9 - 1.9	1.40	2,427,000	2.0
1986	0.2 - 0.5	0.30	1,003,000	1.0
1987	0.6 - 1.3	.95	1,075,000	1.3
1988	0.7 - 1.5	-	1,325,000	1.5
1989	1.7	-	1,166,000	1.7
1990	1.9	-	1,725,000	1.9
1991	3.2	-	3,372,000	3.2
1992	3.1	-	2,474,080	3.1
1993	4.4	-	2,999,921	4.4

^aMillions of pounds.

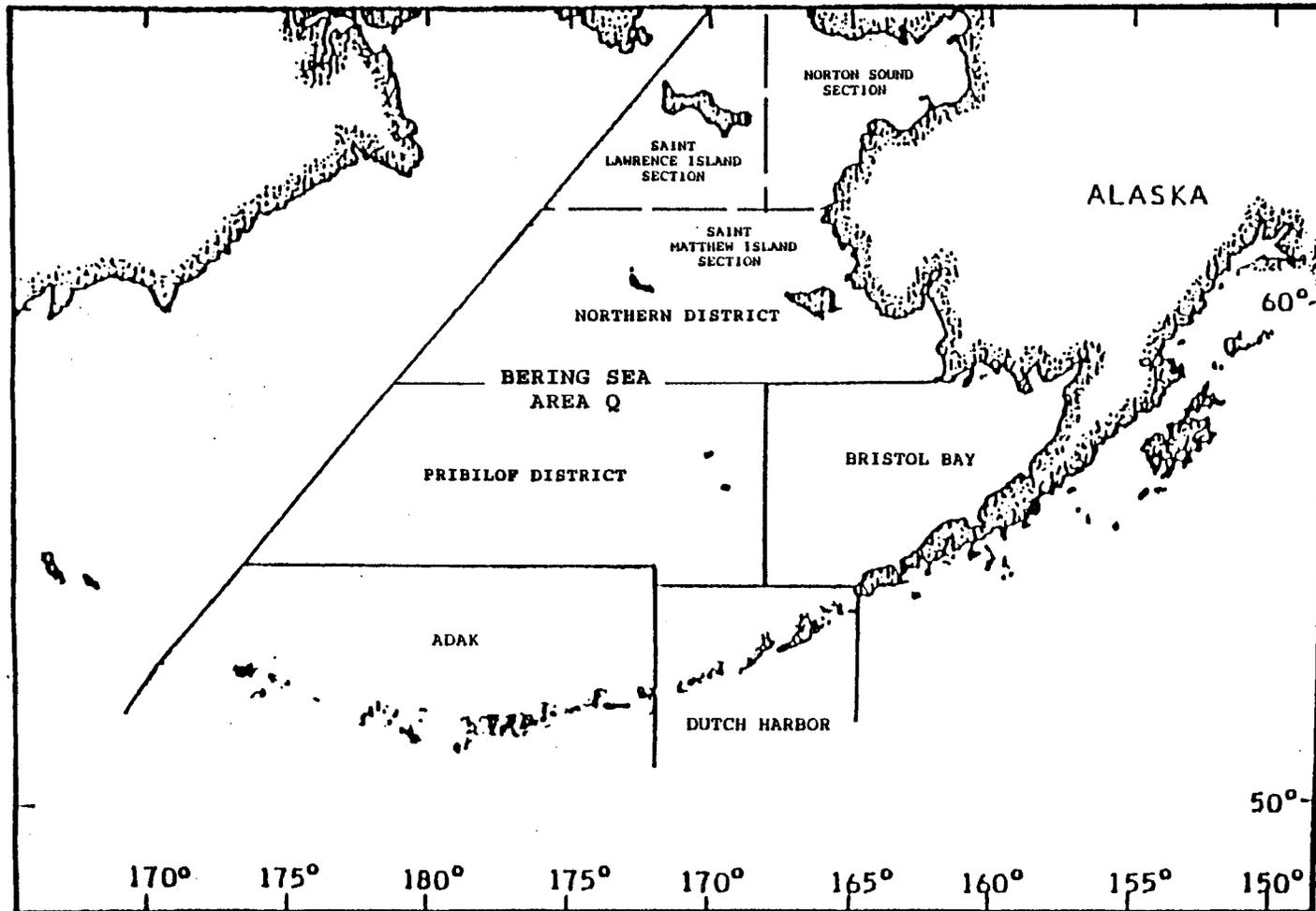


Figure 1. Bering Sea, Area Q, king crab registration area, with districts and sections.

BERING SEA BROWN KING CRAB

1993 Permit Fishery - Pribilof and Northern Districts

Seven vessels registered for the Pribilof District in 1993. Five vessels participated in the fishery, and made 15 landings for a total of 67,458 pounds (Table 1). This represents a significant increase in effort and poundage over the past eight years, but is well below the high established during the 1983/84 season when the legal size was lowered to 5.5 inches. The catch rate has decreased in recent years to one crab per pot; the average weight was 3.8 pounds.

There were no vessels registered for the Northern District in 1993, nor were there any reported landings (Table 2).

Stock Status

There are no population estimates made for Bering Sea brown king crab stocks. High catches in the early years of the fishery disappeared as the virgin stock was exploited and recruitment has been unable to sustain the fishery.

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

Year	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Average		Deadloss ^b
	Vessels	Landings					Weight ^d	Length ^d	
1981/82				C o n f i d e n t i a l					
1982/83 ^e	10	19	15,330	69,970	5,252	3	4.6	150.5	570
1983/84 ^f	50	115	253,162	856,475	26,035	10	3.4	127.3	20,041
1984 ^g			N O R E P O R T E D L A N D I N G S						
1985				C o n f i d e n t i a l					
1986				C o n f i d e n t i a l					
1987				C o n f i d e n t i a l					
1988				C o n f i d e n t i a l					
1989				C o n f i d e n t i a l					
1990			N O R E P O R T E D L A N D I N G S						
1991				C o n f i d e n t i a l					
1992				C o n f i d e n t i a l					
1993	5	15	17,643	67,458	15,395	1	3.8	N/A	0

^aDeadloss included

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

^eSix and one-half inch season.

^fFive and one-half inch season.

^gPermit fishery July through December.

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

Year	Number of		Crab ^a	Harvest ^{a, b}	Pots Pulled	CPUE ^c	Average		Deadloss ^b
	Vessels	Landings					Weight ^d	Length ^d	
1982/83	22	30	51,714	193,507	7,825	6	3.7	138.2	957
1983/84			N O	R E P O R T E D	L A N D I N G S				
1985			N O	R E P O R T E D	L A N D I N G S				
1986			N O	R E P O R T E D	L A N D I N G S				
1987	11	29	101,618	424,394	14,525	7	4.2	142.2	11,750
1988	11	23	36,270	160,441	11,672	3	4.4	150.2	14,000
1989			C o n f i d e n t i a l						
1990			N O	R E P O R T E D	L A N D I N G S				
1991			N O	R E P O R T E D	L A N D I N G S				
1992			C o n f i d e n t i a l						
1993			N O	R E P O R T E D	L A N D I N G S				

^aDeadloss included.

^bIn pounds.

^cDefined as catch per pot pull.

^dIn millimeters.

BERING SEA KOREAN HAIR CRAB

Introduction

The Bering Sea hair crab registration area includes all Bering Sea waters north of 54° 36' North latitude, south of 58° 39' North latitude, and east of the U.S.-Russian Convention Line of 1867 (Figure 1). The area is divided into the Pribilof District (west of 168° West longitude), and the Bristol Bay District (east of 168° West longitude).

Historic Background

Korean hair crab, *Erimacrus isenbeckii*, sold commercially as "kegani" by the Japanese, was fished commercially for the first time by the U.S. fleet in 1978/79. Most of the fishing effort has been concentrated in the waters adjacent to the Pribilof Islands. When interest was first expressed by fishermen and processors in this species the season was opened by emergency order and ran concurrently with the Tanner crab fishery. During the 1980 Board of Fisheries meeting, a year long season was established under the terms of a permit issued by the Alaska Department of Fish and Game. Between 1979 and 1991, the majority of hair crab landed were reported as incidental catch in the Bering Sea Tanner crab fisheries.

1993 Fishery (Spring)

In the spring of 1993, many fishermen who participated in the fall 1992 hair crab fishery around the Pribilof Islands expressed interest in fishing the area east of 168° West longitude. According to the 1992 NMFS summer survey the Area T king crab management area contained a harvestable surplus of 1 million pounds of hair crab. However, the longlining of pots, the standard method to fish the high numbers of small pots traditionally used, was not legal in the Area T management area.

On March 22 an emergency order was issued opening the Area T management area to hair crab fishing from April 1 to May 15 under conditions of a permit. Then on March 26 another emergency regulation was issued allowing the longlining of pots in Area T. Once again, only small, light weight, hair crab pots were permitted. Due to concerns over king crab bycatch, 100 percent observer coverage was also required. A total of seven vessels obtained observers and were registered for the Spring hair crab fishery in Area T.

Possibly due to inaccuracies in the survey, or a dramatic shift in crab distribution from when the survey was conducted, few vessels found much evidence of the one million pounds of hair crab reported by the survey to be available east of 168° West longitude. Four vessels delivered a total of 3,038 pounds of hair crab over a two week period. By the third week of

April all vessels had quit fishing due to extremely low catch rates. CPUE for this fishery was 0.25 crab per pot.

Results of observer sampling confirmed inseason reports indicating negligible concentrations of hair crab in the area. During their relatively brief vessel deployments, observers recorded fishing statistics from 249 randomly selected pots. Soak time of sampled pots averaged 3 days and average catch of retainable hair crabs was 0.04 per pot. This was lower than the 0.25 crab per pot reported on commercial fish tickets. A small number of red king crabs, *C. bairdi* and *C. opilio* were also documented in the samples, but overall the CPUE for each species was below 0.1 (Table 1 and Table 2).

1993/94 Fishery

Results of the 1993 NMFS summer trawl survey of the Bering Sea indicated a harvestable surplus of approximately 3 million pounds of hair crab; 0.5 million and 2.5 million pounds east and west of 168° West longitude, respectively. In an attempt to reduce bycatch handling mortality, the Department announced hair crab bycatch retention would be allowed in the Bristol Bay red king and Bering Sea *C. bairdi* fisheries under the terms of a special hair crab bycatch permit. This was consistent with the "keep what you catch" philosophy stressed by the Board of Fisheries when that body ruled to allow *C. bairdi* retention during the red king crab fishery in Bristol Bay.

The directed fishery on hair crab in the Bering Sea, west of 168° West longitude, was originally scheduled to open concurrently with the *C. bairdi* Tanner crab fishery scheduled 10 days following closure of the Bristol Bay red king crab fishery. Input from fishermen and industry wanting an earlier opening for the directed hair crab fishery however, prompted ADF&G to open that portion of the Bering Sea west of 168° West longitude to directed hair crab fishing on November 1, concurrent with the opening of the Bristol Bay red king crab fishery.

The directed hair crab fishery was also allowed under conditions of a special permit issued by the commissioner of ADF&G. Conditions of the permit included size and sex restrictions as well as area, time and gear restrictions. Due to concerns over potential bycatch of red and blue king crab around the Pribilof Islands, where the majority of the hair crab biomass was located, 100 percent observer coverage was required on all vessels targeting hair crab.

After the Tanner crab fishery reopened west of 163° West longitude, traditional Tanner pots were allowed in the directed hair crab fishery. The larger gear was permitted to allow comparison of bycatch retention rates of Tanner crab pots with the smaller top loading hair crab pots. The larger gear was, however, limited to the legal aggregate of pots allowed for the Tanner crab fishery, and could not be longlined. Longlining of the smaller hair crab pots was allowed and no pot limits were placed on smaller pots being fished in the directed hair crab fishery west of 168° West longitude.

A total of six vessels elected to forgo fishing red king crab in Bristol Bay and entered the directed hair crab fishery on November 1. Following the closure of the Bristol Bay red king crab fishery, an additional five vessels obtained observers and permits to enter the hair crab fishery. During the month of December one additional vessel using traditional Tanner crab pots, entered the directed hair crab fishery, bringing the total number of vessels participating in this fishery to 12. An additional seven vessels delivered hair crab incidental to *C. bairdi* Tanner crab.

Due to regulations preventing vessels operating pot gear in the Bering Sea during the 14 days prior to the commercial *C. opilio* Tanner crab fishery from participating in the *C. opilio* fishery, all but one hair crab vessel ceased participation in the directed hair crab fishery by January 1, 1994. At that time the total harvest was 1.5 million pounds and the average catch was 3.5 hair crab per pot. A total of 89 landings, including six incidental to other fisheries, have been made since the November 1 opening (Table 1).

Observer bycatch data was compiled from 11 of the 12 vessels that participated in the directed fishery. Results were derived from a total of 5,038 pots examined prior to January 1st. From these samples, the mean soak time was calculated at 2 days, twice the average obtained from observer data collected during the 1992 fall fishery. The typical fishing depth of sampled pots was 33 fathoms.

Comparison of the two separate gear types utilized in the fall 1993 fishery revealed relatively little difference in catch rates of both target and incidental species. A total of 441 pots were sampled for contents on the lone vessel utilizing regulation Tanner crab gear. Catch per pot of legal sized hair crab in the larger pots was 3.9 compared to an average catch of 3.7 crabs per pot in the smaller hair crab pots (Figure 2).

Observations of incidental legal sized red and blue king crabs were rare in both the large and small pot configurations. Average catches of these species were at or below 0.1 animal per pot in samples collected from either gear type (Figure 2). Cumulative numbers of all commercially important species recorded in shellfish observer bycatch are summarized in Table 3.

With the close of the *C. opilio* fishery on March 1, nine vessels reentered the hair crab fishery, which was concentrated in the area around St. Paul Island. There were 41 landings during the 1994 portion of the fishery for a preliminary total of 870,994 pounds. The catch rate averaged three crabs per pot and the average weight was 1.2 pounds.

By the first week of April the percentage of soft-shell crab in the catch was increasing. A daily radio report was initiated with the observers to obtain more information regarding this shell condition. By April 15 the percentage of soft-shell crab in the catch had increased to 20.7 percent, and a fishery closure was announced for April 20.

There were 130 landings made by ten vessels during the 1993/94 fishery. Preliminary results show a total of 1.8 million crabs and 2.2 million pounds for a 1.2 pound average weight. The CPUE was three legal hair crab per pot.

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

Year	Vessels	Number of		Harvest ^{a, b}	Pots Pulled	CPUE ^c	Average		Deadloss ^b
		Landings	Crab ^a				Weight ^d	Length	
1978-79	11	16	2,457	5,213	9,908	1	2.1	111.8	0
1979-80	9	17	25,417	53,914	14,506	2	2.1	114.5	0
1980-81	67	192	1,127,309	2,439,483	172,695	7	2.2	104.8	265,369
1981-82	48	159	466,560	932,584	117,518	4	2.0	103.1	29,749
1982-83	52	161	575,453	1,211,420	84,346	7	2.1	103.2	122,456
1983-84	19	48	200,670	406,538	20,414	10	2.0	-	28,062
1984 ^e	7	26	197,209	396,630	22,392	9	2.0	-	19,436
1985 ^e				C O N F I D E N T I A L					
1986 ^e				C O N F I D E N T I A L					
1987 ^e				C O N F I D E N T I A L					
1988 ^e				N O F I S H I N G					
1989 ^e				N O F I S H I N G					
1990 ^e				N O F I S H I N G					
1991 ^e	7	42	441,533	377,708	44,444	10	0.9	-	0
1992 ^f	9	20	203,758	240,767	38,808	5	1.2	-	11,495
1992 ^g	10	47	1,127,948	1,198,590	125,943	9	1.1	83.1	65,674
1993 ^f	4	5	2,347	3,038	9,345	0.25	1.3	84.4	0
1993 ^{g, h, k}	20	89	1,272,107	1,537,207	372,333	3	1.2	N/A	105,582

^aDeadloss included.

^bDefined as catch per pot pull.

^cIn pounds.

^dIn millimeters.

^ePermit fishery.

^fSpring fishery.

^gFall fishery.

^hFishery ongoing.

^kIncludes 7 vessels which landed hair crab incidental to *C. bairdi*.

Table 2. Catch per unit effort (CPUE) of selected commercially important species during the spring 1993 Bristol Bay Korean hair crab fishery including total sample catches and estimated total catch in the fishery.

Species total ^b	Total pot ^a sample catch	Catch per unit effort	Estimated fishery catch
Korean hair crab			
retained male ^c	11	.04	413
non-retained male	14	.06	525
female	5	.02	188
C. bairdi			
legal male	33	.13	1,238
sub-legal male	164	.66	6,154
female	23	.09	863
red king crab			
legal male	3	.01	113
sub-legal male	30	.12	1,125
female	33	.13	1,238
C. opilio			
legal male	12	.05	450
sub-legal male	20	.08	750
female	1	.004	38
yellowfin sole	200	.80	7,506
pacific cod	44	.2	1,651

^aTotal pot contents derived from 249 random samples taken on fishing vessels during the fishery.

^bEstimated catch derived from pot sample CPUE x 9,345 total reported pot pulls during the fishery.

^cAt the time of the fishery, no size limit had been established in regulation for this species.

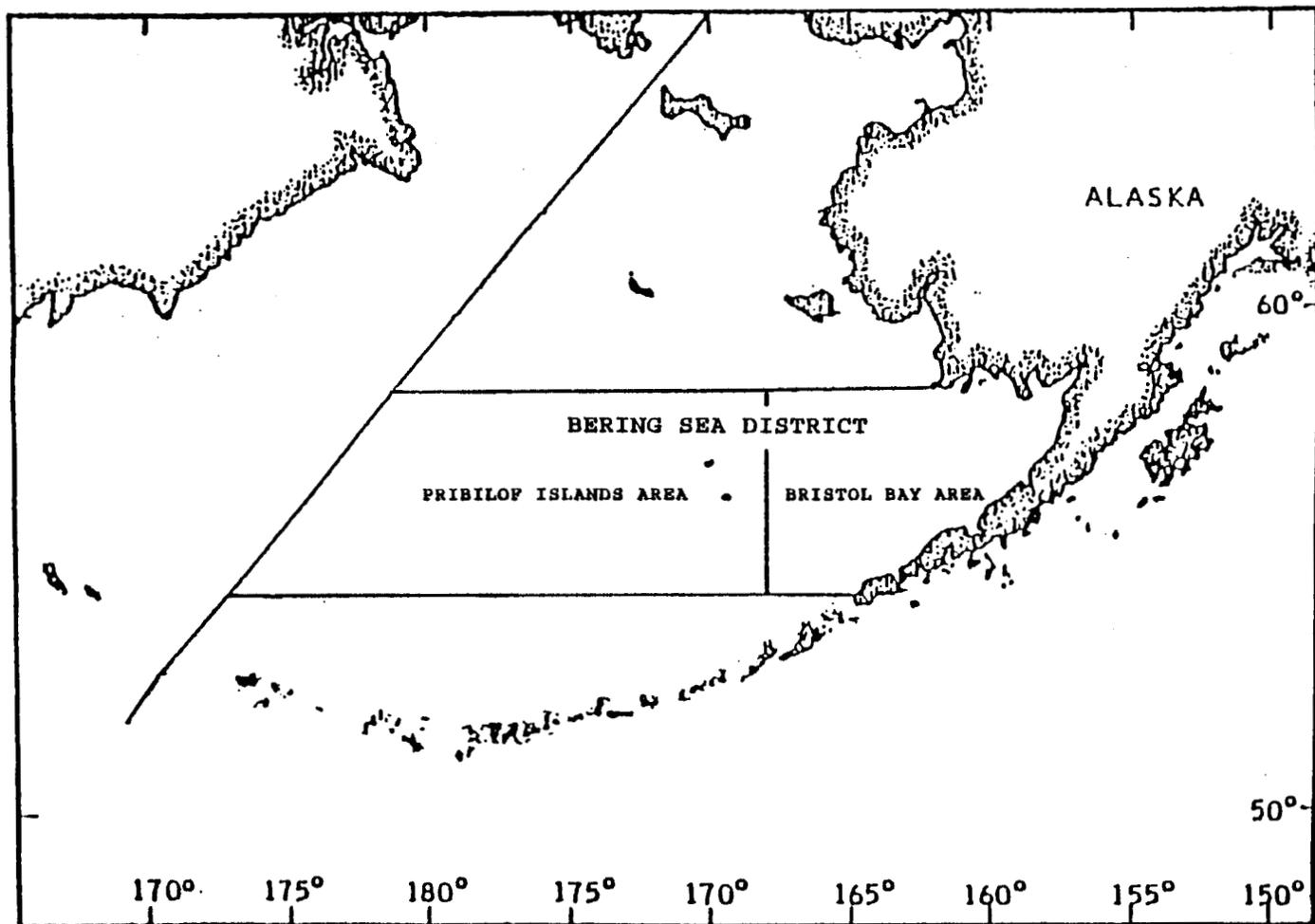


Figure 1. Bering Sea Korean hair crab district and areas.

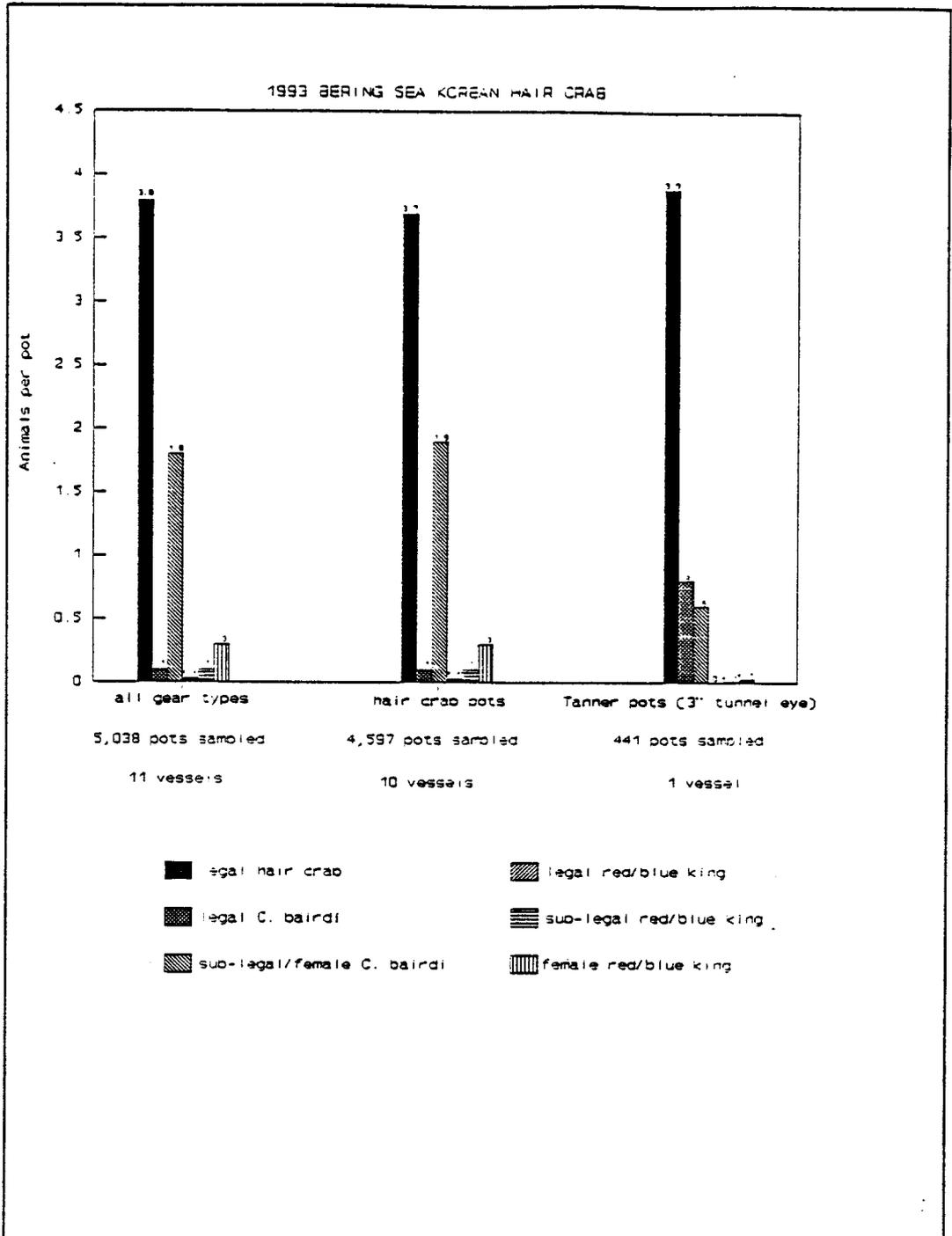


Figure 2. Catches per pot of commercially important species by gear type from the Fall 1993 Bering Sea Korean hair crab fishery.

BERING SEA / ALEUTIAN ISLANDS SCALLOPS

Introduction

The Bering Sea/Aleutian Islands Scallop Management Area includes all Bering Sea and Pacific Ocean waters east of the U.S. - Russian Convention Line of 1867, except the waters south of 54° 36' North latitude and east of 171° West longitude. This area corresponds to the king crab registration areas R, T, and Q (Figure 1).

Historic Background

Department of Fish and Game commercial catch records indicate scallops were first harvested from the Bering Sea/Aleutian Islands Management Area in 1987, and then again in 1991. During those years fewer than three vessels participated, consequently catch and effort information is confidential. No additional landings were made from this area until the 1993 fishing year (Table 1).

1993 Fishery

The first scallop harvest from the Bering Sea/Aleutian Islands Management Area occurred in April when three vessels landed 92,662 pounds of shucked meats (Table 2). On May 24 the entire Westward Region was closed to scallop fishing in anticipation of the May 26 announcement by the Commissioner of Fish and Game declaring the state's scallop fisheries a "High Impact Emerging Fishery". New regulations concerning crab bycatch limits, area specific harvest guidelines, fishing seasons and observer requirements were implemented effective July 1, 1993.

As an interim measure, the Bering Sea/Aleutian Islands Management Area reopened on June 1 with 100% observer coverage and with bycatch caps of one king crab and 15 *C. bairdi* per tow. During the month of June less than three vessels landed scallops from the Bering Sea/Aleutian Islands Management Area, consequently catch and effort information for the month of June is confidential. The total harvest for May and June was 228,887 pounds taken by six boats. All vessels departed the area in late June to fish other areas of the state which reopened along with implementation of new regulations on July 1.

Landings from this area resumed in August when five vessels landed 153,659 pounds of shucked scallops. During this time onboard observers closely monitored crab bycatch, which for the month of August totaled six king crab and 204,713 *C. bairdi* Tanner crab. Throughout August

weekly bycatch of *C. bairdi* Tanner crab ranged from 28,865 to over 64,000 individual animals.

A total of ten vessels were at one time registered to fish the Bering Sea/Aleutian Islands Scallop Management Area. By the beginning of September, however, all but five had discharged their observers and departed the area. During the first week of September the five vessels which remained landed a total of 130,755 pounds of shucked scallops. An additional 70,160 *C. bairdi* Tanner crab were captured as bycatch during this period, bringing the cumulative total to almost 275,000 animals or approximately 15,000 in excess of the 260,000 cap for the 1993 season. As a result the Bering Sea/Aleutian Islands area was closed on September 5, 1993.

For the entire 1993 season the fishing effort was concentrated in 5 statistical areas northwest of Unimak Island in Bristol Bay as indicated in Figure 1.

Table 1. Commercial harvest of weathervane scallops from the Bering Sea/Aleutian Islands Scallop Management Area by year, 1987-1993.

Season	Number of		Pounds	
	Vessels	Landings	Drags	Scallops per Drag
1987	C O N F I D E N T I A L			
1988	N O R E P O R T E D C A T C H			
1989	N O R E P O R T E D C A T C H			
1990	N O R E P O R T E D C A T C H			
1991	N O R E P O R T E D C A T C H			
1992	N O R E P O R T E D C A T C H			
1993	10	38	7,289	605,953 83

Table 2. Commercial harvest of weathervane scallops and bycatch of king and *C. bairdi* Tanner crab from the Bering Sea/Aleutian Islands Scallop Management Area by month, 1993.

Month	Vessels	Number of Landings	Drags	Pounds		Number of	
				of Scallops	per Drag	Kings	Tanner
Apr	3	4	881	92,662	105.18	N/A	N/A
May	6	18	2,830	228,877	80.88	N/A	N/A
June*			C O N F I D E N T I A L			N/A	N/A
July			N O R E P O R T E D C A T C H				
Aug	5	10	1,928	153,659	79.70	6	204,713
Sept	5	6	1,650	130,755	79.25	0	70,160
TOTAL	10	38	7,289	605,953	83.13	6	274,873

*Catches for May and June combined to protect vessel confidentiality.

10

11

12

13

14

15

16

17

18

BERING SEA MISCELLANEOUS SHELLFISH

Dungeness

Two vessels registered to fish Dungeness crab this year. They were in operation during the months of July, August and September, making eight deliveries. Catch data is confidential.

Tanneri

Six vessels participated in this permit fishery in 1993 which was prosecuted mainly during the summer months. There were 19 landings for a total of 715,786 pounds. The catch rate was less than nine crab per pot pull; the average weight of *C. tanneri* was 1.9 pounds.

All fish tickets to date show only *C. tanneri* as being delivered to processors. However, vessel operators have verbally reported the retention of *C. angulatus*. Examination of data collected by third party observers during the 1994 fishery should help clarify this discrepancy.

Snails

Four vessels participated in the 1993 fishery with a total of 312,876 pounds landed. The average weight was 0.28 pounds; the catch rate averaged 81 animals per pot, but varied greatly from 20 to 415 per pot. Most of the fishing activity took place around the Pribilof Islands.

200

201

202

203

204

ANNUAL MANAGEMENT REPORT FOR THE BERING SEA
KING AND TANNER CRAB
BUOY IDENTIFICATION TAG PROGRAM, 1993

By

Mary C. Schwenzfeier
Buoy Identification Tag Program Administrator

Dutch Harbor Area Office
P. O. Box 308
Dutch Harbor, Alaska 99692
(907) 581-1239

July 1994

**BRISTOL BAY AND BERING SEA KING AND TANNER CRAB
BUOY IDENTIFICATION TAGS
ANNUAL REPORT**

INTRODUCTION AND BACKGROUND

The Alaska Board of Fisheries 1992 Spring meeting discussed gear limitations for Bering Sea/Aleutian Islands king and Tanner crab fisheries. The Board had generated an agenda change request on March 20, 1991 to hear this issue out of cycle and in response to a request submitted by the industry. This request was supported with preliminary Alaska Department of Fish and Game data that indicated the high levels of gear deployed in these fisheries were creating conservation and management difficulties.

During this shellfish meeting, the Board limited the number of pots that a vessel may use when harvesting king and Tanner crab in the Bering Sea fisheries. The new regulations became effective on August 1, 1992. According to State statute the entire program is to be self supporting through sales of the buoy identification stickers.

On November 10, 1992 a temporary suspension of Buoy ID sticker requirements was issued due to the high failure rate of the stickers in adhering to buoys after extended exposure to water and weather. The pot limits, however, remained in effect for the Bering Sea Tanner crab fisheries.

On November 30, 1992 National Marine Fisheries Service officially repealed the Bering Sea pot limits due to inconsistencies with the Bering Sea/Aleutian Island king and Tanner crab Federal Management Plan.

At their February 1993 meeting the Board of Fisheries passed differential pot limit regulations which are dependent upon overall vessel length. According to the new regulations, vessels in excess of 125 feet in length overall are entitled to the maximum number of pots allowed for a fishery, while vessels 125 feet and under in length overall are allowed a lesser number. The actual number of pots allowed is different for each fishery (Table 1).

IMPLEMENTATION

According to AS 16.05.050 **POWERS AND DUTIES OF THE COMMISSIONER.**

The commissioner has. . . The following powers and duties: (16) . . . to establish and charge fees equal to the cost of services provided by the department . . .

and AS 16.05.632 **IDENTIFICATION OF SHELLFISH POTS OR BUOYS, OR BOTH, USED IN THE TAKING OF KING CRAB AND REQUIREMENTS FOR BUOYS.**

(a) Registration tags for the identification of shellfish pots or buoys, or both, used in the taking of king crab are required in areas in which the board has regulations limiting the total amount of shellfish pots allowed per vessel. Registration tags shall (6) be issued and renewed for a fee equal to the cost of obtaining the registration tags plus reasonable administrative costs, under procedures determined to be appropriate by the Department of Fish and Game.

At the beginning of the 1992/1993 Bristol Bay and Bering Sea crab season the Department leased additional office space and employed a Fish and Wildlife Technician III to administer the pot limit program.

In May 1993 a decision was made about the type of buoy identification tag that would be available to fishermen this season. The Department sold a heavy duty zip tie with a tag surface. Each tag is printed with a unique number. Because of the size and bulk of the new tags, provisions for warehouse space had to be allotted and partitioned off for the storage of up to 117 boxes of identification tags at the beginning of the 1993/1994 season.

State purchasing delayed the arrival of tags in Dutch Harbor. As a result, buoy identification tags for the St. Matthew and Pribilof king crab fisheries were not available for sale until five days before these fisheries opened.

Replacement Tags

The Board considered non-replacement of lost pots and double tag requirements and found that the hardship to the industry by not providing some replacement program would be unnecessarily burdensome. The Division of Fish and Wildlife Protection stated that they may experience difficulty proving cases if replacement pots were allowed. Special conditions regarding replacement were included in the regulations to accommodate the concerns of Fish and Wildlife Protection, but the Board rejected a double sticker requirement.

The replacement of lost tags is permitted by 5 AAC 34.825. (f), 5 AAC 34.925. (j), and 5 AAC 35.525. (i)

(4) . . . replacement of lost identification tags is permitted if the vessel operator and three crewmembers, in person, submit to the ADF&G office in Dutch Harbor, a sworn statement or affidavit, describing how the tags were lost and listing the numbers of the lost tags.

An official AFFIDAVIT TO OBTAIN REPLACEMENT BUOY IDENTIFICATION STICKERS has been reviewed and approved by Fish and Wildlife Protection. The affidavit is available in the Dutch Harbor office (Figure 1).

Numerous complaints were received in the Dutch Harbor office regarding the problems that vessels delivering to remote areas such as King Cove and St. Paul would have in replacing tags under the current regulations. Most felt the cost in time and/or money used to transport the permit holder and three crew members to Dutch Harbor to fill out the required affidavit and purchase the replacement tags is prohibitive. Some expressed feelings that the present requirement would force them to fish illegally rather than conform to the regulations. Selling a new set of tags coded and colored just for the *C. opilio* season was a common suggestion since tags can be purchased through the mail or by an agent.

Just prior to the Bristol Bay red king crab season ten replacement tags were issued to vessels because of defective tags. The zip strap snapped while attaching five of these tags to buoys. Another problem was the tag surface (bearing the identification number) breaking loose from the strap (Table 2 and Table 3).

During the ten day period following the closure of the Bristol Bay red king crab/Bering Sea *C. bairdi* season east of 168° and the opening of the Bering Sea *C. bairdi* season between 163° and 173°, there were 768 replacement tags sold to 101 vessels. That is an average of 8 missing pots and/or tags per vessel. A total of 46 replacement tags were applied for and purchased in season during the second *C. bairdi* fishing period. A total of 2,566 replacement tags were sold to vessels that had finished their *C. bairdi* season, before going out to fish *C. opilio* in January. A good percentage of the replacement tags were issued to replace broken or missing tags rather than lost pots (Table 2 and Table 3).

Vessel Length Verification

All vessels in excess of 125 feet in length overall wishing to obtain the maximum number of buoy identification tags for crab fisheries with imposed pot limits must present an original or notarized copy of valid documentation from the U.S. Coast Guard or certified marine surveyor showing the vessel to be in excess of 125 feet overall. Overall length is defined as the horizontal distance, rounded to the nearest foot, between the foremost part of the stem and the aftermost part of the stern, excluding bowsprits, rudders, outboard motor brackets and similar fittings or attachments. This definition of length overall is found in the U.S. Code of Federal Regulations, Shipping, 46 CFR 69.9 and Fishery Conservation and Management, 50 CFR 672.2.

The vessel operator/permit holder is required to show documentation of vessel length the first time buoy tags are purchased and any time a change to the vessel's overall length occurs. The vessel operator/permit holder or their agent presenting documentation on vessel length in excess of 125 feet overall is also required to sign an affidavit attesting to the authenticity of the documents presented. The Department's Dutch Harbor office has established a qualifying list of vessels whose length is documented in excess of 125 feet. A total of 93 vessels are on the Department's qualifying list of vessels in excess of 125 feet in length overall.

ADMINISTRATION OF THE 1993/94 BUOY IDENTIFICATION PROGRAM

The Bering Sea buoy identification tags are issued from the Dutch Harbor ADF&G office and in limited amounts out of the Kodiak office. An administrative fee of \$2.00 per buoy tag is charged. Tags are issued only if a valid permit card for the specified fishery has been issued to the person purchasing tags. Each uniquely numbered package of tags is assigned to a vessel ADF&G number which guarantees only one set of tags is issued per vessel. Issuing tags entails receiving and depositing tag sale revenues in the form of checks, money orders, and cash, then entering registration data and buoy ID tag assignments into a computer database. The database program prints out a completed registration form in triplicate, two copies of which are given to the permit holder and must be available on the vessel at the time of tank inspection. The third copy of each registration form is kept on file in the Department office for reference. A triplicate receipt for monies received is also printed out at the same time as the registration form, a copy of which is kept on file in the tag office.

In cases where the permit holder wants his/her tags sent through the mail or an agent to receive the tags, an AFFIDAVIT FOR AGENT TO OBTAIN POT LIMIT BUOY IDENTIFICATION TAGS (Figures 2 & 3) is available in the Dutch Harbor and Kodiak offices. These affidavits are sent out through FAX transmission or U.S. mail to the permit holder who then may complete and return it to the office. Upon receipt, tags, along with a pre-registration form, buoy tag logs and pertinent Department news releases are sent out daily by U.S. mail, insured, return receipt. A return receipt provides the Department with a signature of the person delivered to, and date of delivery.

If a permit holder wishes to have tags expedited beyond normal mailing they provide postage and a self addressed express mail label. Issuing tags through the mail is discontinued two weeks prior to season openings in order to allow ample time for the vessel to receive tags and compensate for delays caused by Dutch Harbor's location and weather.

No tags were mailed out before the St. Matthew and Pribilof king crab seasons this year because of the delay in the state purchasing of tags. A total of 43 mailings of tags for the Bristol Bay king/Bering Sea *C. bairdi* season were sent out from the Dutch Harbor office. Some of the packages contained more than one set of tags. Many of the tags were picked up in the Dutch Harbor office by expeditors who then sent them out via express mail or other express means.

Fishery Sales and Preregistrations

The Norton Sound red king crab fishery was the first Bering Sea season conducted under the differential pot limit regulations. A total of 14 vessels 125 feet and under in length overall registered for the Norton Sound season. There were no vessels in excess of 125 feet LOA (Overall Length) registered. This year as with last, stickers left over from previous Kodiak pot limit seasons were issued for the Norton Sound king crab season. The sticker sales and registrations for this crab season are handled out of the Department's office in Nome.

Due to state purchasing of the 1993/94 tags being delayed the tags designated for the St. Matthew blue king crab and Pribilof red king crab fisheries did not arrive in Dutch Harbor until late afternoon on the 10th of September. A total of 232 sets of tags were sold during marathon sessions on September 11 and 12, with a few vessels buying tags on September 13, 14, and 15. Tags were not sold in Kodiak for these fisheries. Because more vessels registered for the Pribilof red king crab season than was expected, 15 extra sets of tags had to be made up in the office by applying old stickers to blank tags (Table 4). This was an acceptable solution for the short season. Some of the stickers had started peeling off of the tags by the end of the six day season.

Bristol Bay red king crab/Bering Sea *C. bairdi* tag sales and preregistrations totaled 296. Most vessels preregistered to retain both red king and *C. bairdi* crab. Of the total vessels registered for the Bristol Bay season, 63 of them purchased their tags from the Kodiak department office. All others were picked up or mailed out of the Dutch Harbor office (Table 4).

The Department's tag program database contains several reports that may be printed out for specific purposes. A complete inventory of tags purchased, and tags claimed lost, with respect to vessels, and their ADF&G numbers, operator names, and permit numbers is available for fisheries management, and Fish and Wildlife Protection purposes.

Table 1. Buoy tag ID designations and pot limits for the Bering Sea and Aleutian Islands fisheries with pot limits, 1993/94.

Fishery	Buoy Tag Designation	Pot Limits	
		≤125 feet	>125 feet
Pribilof King CrabKQ1	40	50	
St. Matthew King CrabKQ2	60	75	
Norton Sound King CrabKQ3	40	50	
St. Lawrence King CrabKQ4	40	50	
Bristol Bay ^a King CrabKTTQ	200	250	
Bering Sea Bairdi Tanner ^a KTTQ	200	250	
Bering Sea Opilio Tanner ^a KTTQ	200	250	

^aBuoy tags valid for both Bristol Bay king crab and Bering Sea Tanner crab fisheries.

Table 2. Survey of Reasons For Tag Replacement.

Fishery	Broken Tags ^a	Lost Pots ^b	Other ^c
St. Matthew Blue King Crab	0	0	0
Pribilof Red King Crab	1	0	0
Bristol Bay Red King Crab	169	519	55
Bering Sea Bairdi Crab	1,134	1,511	205
Bering Sea Opilio Crab	74	39	0
Total ^d	1,378	2,069	260

^aTag surface broken off or strap snapped.

^bBuoys run over by other boats in crowded fishing conditions, buoy lines frayed, stormy seas, stacked pots with buoys inside falling overboard in rough seas, road kill, drive-by, missing-in-action, and suitcased.

^cFlat bags, misplaced tags, zip tag put on buoy incorrectly, tags broke going through the block, tags lost in transit.

^dCurrent to February 7, 1994.

Table 3. Number of replacement buoy tags printed and issued by tag type, 1993/94.

Fishery, Pot Limits, and Tag Type	Number of Tags Printed		Number of Tags Issued	
	Number	Color	<or=125 ^a	>125 ^a
Norton Sound King Crab 40/50 KQ3 ^b NoneNone00				
St. Matthew King Crab 60/75 KQ2NoneNone00				
Pribilof King Crab 40/50 KQ1None ^c None1 ^c 0				
Bristol Bay King Crab Bering Sea Tanner Crab 200/250 KTTQ20,000Green2,1351,374				
Totals	20,000	2,136	1,374	
Totals for Vessels in Both Size Categories	20,000	3,510		

^aVessel length in feet.

^bOutdated stickers from Kodiak issued for this fishery.

^cApplied an old sticker to a blank tag and issued as a replacement.

Table 4. Number of buoy tags printed and issued by tag type, 1993/94.

Fishery, Pot Limits, and Tag Code	Number of Tags Printed			Number of Tag Sets Issued		Number of Tags Issued	
	≤125 ^a	>125 ^a	Color	≤125 ^a	>125 ^a	≤125 ^a	>125 ^a
Norton Sound King Crab 40/50 KQ3 ^b	None	None	Silver	14	0	560	0
St. Matthew King Crab 60/75 KQ2	7,500	4,500	White	67	25	4,020	1,875
Pribilof King Crab 40/50 KQ1	None ^c	5,000	Yellow	89	26	3,560	1,300 ^d
Bristol Bay King Crab Bering Sea Tanner Crab 200/250 KTTQ	40,000	37,500	Red	225 ^e	95	45,000	23,750
Totals	47,500	47,000		395	146	53,140	26,925
Totals for Vessels of Both Size Categories	94,500			541		80,065	

^aVessel length in feet.

^bOutdated stickers from Kodiak issued.

^cFor vessels less than 125 feet, 40 tags were sold out of sets of 50 and the remaining 10 were voided.

^dApplied old stickers to 15 sets of tags for vessels 125 feet or less.

^eBroke down sets of 250 tags to make sets for vessels 125 feet or less.

AFFIDAVIT TO OBTAIN REPLACEMENT BUOY IDENTIFICATION TAGS

NAME _____

CURRENT MAILING ADDRESS _____

VESSEL _____ ADF&G# _____

NUMBER OF REPLACEMENT TAGS YOU ARE REQUESTING _____

LIST OF TAG #S FROM TAGS BEING REPLACED: _____

STATEMENT EXPLAINING HOW TAGS WERE LOST: _____

AREA WHERE POTS WERE LOST: _____

WE HEREBY SWEAR THAT ALL THE ABOVE INFORMATION IS TRUE AND CORRECT AND WE UNDERSTAND THAT MAKING A FALSE SWORN STATEMENT OR AFFIDAVIT IS A CLASS B FELONY PUNISHABLE BY A FINE OF NO MORE THAT \$50,000.00 AND TEN YEARS IN PRISON.

SIGNATURE OF PERMITTEE PRINTED NAME PERMIT NUMBER

SIGNATURE OF CREW MEMBER PRINTED NAME SS# & DOB

SIGNATURE OF CREW MEMBER PRINTED NAME SS# & DOB

SIGNATURE OF CREW MEMBER PRINTED NAME SS# & DOB

REPLACEMENT TAG NUMBERS: _____

\$ _____ HOW PAID: _____

NOTARY PUBLIC COMMISSION EXPIRES

DATE AND LOCATION

Figure 1. Affidavit to Obtain Replacement Buoy Identification Tags.

ALASKA DEPARTMENT OF FISH AND GAME
AFFIDAVIT FOR AGENT TO OBTAIN
ST. MATTHEW BLUE KING CRAB
OR
PRIBILOF RED KING CRAB
POT LIMIT BUOY IDENTIFICATION TAGS

NAME OF PERMIT HOLDER _____

CURRENT MAILING ADDRESS _____

VESSEL NAME _____ ADF&G# _____

1993 AREA Q KING CRAB PERMIT CARD # K _ _ Q _ _ _ _ _

I HEREBY SWEAR THAT ALL THE ABOVE INFORMATION IS TRUE AND CORRECT AND I UNDERSTAND THAT MAKING A FALSE SWORN STATEMENT OR AFFIDAVIT IS A CLASS B FELONY PUNISHABLE BY A FINE OF NO MORE THAN \$50,000.00 AND TEN YEARS IN PRISON.

Signature of Permit Holder Date

Agent I have authorized to pick up tags from Fish and Game

Number of St. Matthew buoy tags requested (60 maximum) = _____.

OR

Number of Pribilof buoy tags requested (40 maximum) = _____.

An administrative fee of \$2.00 per buoy tag will be charged. Buoy tags will be issued only if a valid permit card for the specified fishery has been issued.

Checks or money orders must be payable to: **STATE OF ALASKA**

VESSELS IN EXCESS OF 125' WISHING TO OBTAIN MORE THAN 60 BUOY ID TAGS FOR ST. MATTHEW BLUE KING CRAB OR MORE THAN 40 FOR PRIBILOF RED KING CRAB MUST PRESENT ORIGINAL OR CERTIFIED COPIES OF VALID DOCUMENTATION FROM THE U.S. COAST GUARD OR A CERTIFIED MARINE SURVEYOR SHOWING THE VESSEL TO BE IN EXCESS OF 125' OVERALL. THE VESSEL OPERATOR/PERMIT HOLDER WILL BE REQUIRED TO SHOW DOCUMENTATION OF VESSEL LENGTH THE FIRST TIME BUOY TAGS ARE PURCHASED AND ANY TIME A CHANGE TO THE VESSEL'S OVERALL LENGTH OCCURS. THE DEPARTMENT'S DUTCH HARBOR OFFICE WILL ESTABLISH A QUALIFYING LIST OF VESSELS WHOSE LENGTH IS DOCUMENTED IN EXCESS OF 125'.

Figure 2. Affidavit For Agent to Obtain St. Matthew Blue King Crab or Pribilof Red King Crab Pot Limit Buoy Identification Tags.

ALASKA DEPARTMENT OF FISH AND GAME
AFFIDAVIT FOR AGENT TO OBTAIN
BRISTOL BAY KING CRAB AND BERING SEA TANNER CRAB
POT LIMIT BUOY IDENTIFICATION TAGS

NAME OF PERMIT HOLDER _____

CURRENT MAILING ADDRESS _____

VESSEL NAME _____ ADF&G# _____

CURRENT BRISTOL BAY KING CRAB PERMIT CARD # K _ _ T _ _ _ _ _

CURRENT BERING SEA TANNER CRAB PERMIT CARD # T _ _ Q _ _ _ _ _

I HEREBY SWEAR THAT ALL THE ABOVE INFORMATION IS TRUE AND CORRECT AND I UNDERSTAND THAT MAKING A FALSE SWORN STATEMENT OR AFFIDAVIT IS A CLASS B FELONY PUNISHABLE BY A FINE OF NO MORE THAN \$50,000.00 AND TEN YEARS IN PRISON.

Signature of Permit Holder Date

Agent I have authorized to pick up tags from Fish and Game

Number of Bristol Bay King/Bering Sea Tanner buoy tags requested (200 maximum for vessels 125' or less, 250 maximum for vessels in excess of 125') _____.

An administrative fee of \$2.00 per buoy tag will be charged. Buoy tags will be issued only if a valid permit card for the specified fishery has been issued.

Checks or money orders must be payable to: STATE OF ALASKA and may be mailed to ADF&G, P.O. Box 308, Dutch Harbor, AK 99692. Cash will be accepted if it is brought to the Dutch Harbor office in person.

Tags will be shipped by U.S. Mail, priority and insured with a return receipt requested. ADDRESS YOU WANT TAGS MAILED TO: _____

VESSELS IN EXCESS OF 125' WISHING TO OBTAIN MORE THAN 200 BUOY ID TAGS FOR BRISTOL BAY RED KING CRAB OR BERING SEA TANNER CRAB MUST PRESENT ORIGINAL OR CERTIFIED COPIES OF VALID DOCUMENTATION FROM THE U.S. COAST GUARD OR A CERTIFIED MARINE SURVEYOR SHOWING THE VESSEL TO BE IN EXCESS OF 125' OVERALL. THE VESSEL OPERATOR/PERMIT HOLDER WILL BE REQUIRED TO SHOW DOCUMENTATION OF VESSEL LENGTH THE FIRST TIME BUOY TAGS ARE PURCHASED AND ANY TIME A CHANGE TO THE VESSEL'S OVERALL LENGTH OCCURS. THE DEPARTMENT'S DUTCH HARBOR OFFICE WILL ESTABLISH A QUALIFYING LIST OF VESSELS WHOSE LENGTH IS DOCUMENTED IN EXCESS OF 125'.

ANNUAL MANAGEMENT REPORT FOR THE
MANDATORY SHELLFISH OBSERVER PROGRAM, 1993

By

Michael L. Ward - Shellfish Observer Program Coordinator

Ben Kirkpatrick - Shellfish Observer Program Staff Biologist

Lawrence R. Boyle - Shellfish Observer Program Staff Biologist

Dutch Harbor Area Office
P. O. Box 308
Dutch Harbor, Alaska 99692
(907) 581-1239

July 1994

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

0.01

INTRODUCTION

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

Although Observer Program regulations apply statewide, activity has focused on the Bering Sea and Aleutian Islands crab fisheries where all at sea processing of crab occurs. The policy of ADF&G is for all observer activity for a fishery be handled in the management office for that fishery, consequently most observer activity is handled by the ADF&G Observer Program staff in Dutch Harbor.

In the spring of 1990 the Alaska Board of Fisheries adopted regulations which broadened mandatory observer coverage to include those vessels processing *C. opilio* Tanner crab. These changes were made due to reports of undersized *C. bairdi* being processed as *C. opilio*. At that time the Board also more narrowly defined observer qualification standards, observer and contractor conflict of interest standards and observer duties and responsibilities. In the fall of 1991 the Board adopted new regulations concerning observer certification and decertification.

During the spring 1993 Alaska Board of Fisheries meeting the Board found that the scallop fishery is a high-impact emerging fishery and developed a fishery management plan to cover it. One of the regulations adopted mandated observer coverage on all scallop vessels. The primary goals of the Scallop Observer Program are to determine scallop population dynamics and the impact the scallop fishery has on other fisheries and the environment through analysis of data from scallop dredge samples.

A scallop observer manual was developed, observers were trained, and the scallop observer program was implemented on June 27, 1993.

OBSERVER PROGRAM GUIDELINES

Observer Program guidelines were originally defined by the Alaska Board of Fisheries in 1988 and remain in regulation. They define the responsibilities of each interest group involved in the observer program.

Contractors

Contractors are required to hire, train and provide all observer logistical support including food, accommodations, sampling equipment, and travel. Contractors secure contracts directly with vessel owners/operators, and deploy observers.

ADF&G

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

Observers

Observer qualifications include a minimum of a Bachelor of Science degree in the Natural Sciences or a valid National Marine Fisheries Service observer certification.

Observers are required to undergo ADF&G approved training and pass a written and practical certification exam administered by Observer Program staff in Dutch Harbor. Observers may not have a financial interest in the observed fishery or assigned vessel. Observers are limited to no more than 90 days duty on a specific vessel in any 12 month period. Observers who are inactive for 12 consecutive months lose their certification. To regain their certification they must be retrained and retested.

Vessels

Regulations require the cost of observers to be borne by the shellfish industry. Vessel owners/operators are required to contract and pay for observers through a "third party contractor", and provide food and accommodations for the observer equal to the vessel's crew.

The observer must be provided, by the vessel, a safe work area, necessary gear, and the opportunity to adequately sample the catch according to ADG&G requirements. Daily fishing information and access to communication equipment for reporting to ADF&G must also be provided.

Fishing year

Tracking of observer and vessel activity for all fisheries, except scallops, begins with the onset of the Dutch Harbor brown king crab fishery starting September first. Tracking continues through completion of the Adak brown king crab fishery the following August. As a result, observer and vessel activity is reported by fishing year. A fishing year which begins in September of 1992 and ends in August 1993 is thus designated as the 1992/93 fishing year or fishing season. For scallop fisheries, the fishing year corresponds to the calendar year, beginning January first.

Observer deployment is calculated by the number of observer days on board a vessel and then converted to observer months. One observer month is the equivalent of 30 observer days.

FISHERIES REVIEW

Vessel Effort and Observer Coverage

During the 1992/93 season (September 1, 1992 through August 31, 1993) shellfish observers made 217 trips and logged 234 observer months at sea. This is a decrease from the 1991-92 season when observers made 246 trips and logged 297 observer months at sea (Table 1).

The decline in number of observer trips, and observer months during the 1992/93 season was due to a short *C. opilio* season in the Bering Sea, and very little effort by catcher processors in the Adak king crab fishery. Also, with reduced king and Tanner crab quotas, many catcher processors bypassed U.S. fisheries, targeting instead on Russian fisheries. Tables 2, 3, and 4 summarize vessel trips and observer activity, by fishery, for the 1990/91, 1991/92 and 1992/93 seasons, respectively. Table 5 summarizes this data through December 31 of the 1993/94 season.

Observer activity, as indicated by number of briefings and debriefings, increased dramatically in 1990/91 and 1991/92 over levels observed the first two years of the Observer Program. This increase, illustrated in Figure 1, was due mainly to additional observer coverage required for the Bering Sea *C. opilio* fishery effective January 15, 1991 (1990/91 fishing season). A sharp increase in the number of at sea processing vessels, from 38 in

September of 1991 to 51 by January of 1992 also contributed to increased demands for observers. During the 1992/93 season this trend reversed as quotas in major crab fisheries declined and seasons were reduced. At sea processors remained constant at 50, but many did not participate in some fisheries.

Observer coverage for scallop vessels was mandated by the Alaska Board of Fisheries effective June 27, 1993. Also, observer coverage for vessels fishing Bering Sea hair crab and snails was required as one of the terms of their permit, starting in April of 1993. Table 6 summarizes vessel trips and observer activity by scallop fishery for 1993.

The following reports by individual fisheries are generally divided into the 1992/93 and 1993/94 fishing seasons. The 1992/93 fisheries are complete and the data is finalized. The 1993/94 fisheries are not all complete consequently some of the data are not included.

Dutch Harbor Brown King Crab 1993/94 Fishery

No observers were deployed in this fishery as no at sea processors participated. Many catcher processors were fishing in Russia at this time. Also, the low ex-vessel price of \$2.10 per pound caused some vessels that traditionally fish for Dutch Harbor brown king crab to participate in the Bering Sea red or blue king crab fisheries instead.

1992/93 Fishery

Observers made six trips on five catcher processors participating in this fishery. They spent 7.2 months at sea representing 3.4 percent of observer time and 3.3 percent of observer trips for the fishing year.

Observers sampled 154 pots for species composition and checked 65,871 crabs for legal status.

Saint Matthew Blue King Crab

The Alaska Board of Fisheries, in February 1993, delayed the opening date for the Saint Matthew king crab fishery from September 1 to September 15 to coincide with the start of the Pribilof king crab fishery.

1993/94 Fishery

A quota of 4.4 million pounds was established and the fishery ran for seven days, closing on September 21, 1993.

Observers were deployed on three catcher processors and four floating processors for the season spending 3.5 months at sea.

Observers sampled 96 deliveries from catcher vessels, checked 59,271 crabs for legal status, and sampled 84 pots for species composition.

1992/93 Fishery

Observers were deployed on eight catcher processors and seven floating processors during this fishery. They spent 5.8 months at sea representing 2.7 percent of observer time and 8.3 percent of observer trips for the fishing year.

Observers sampled 124 deliveries from catcher vessels, checked 76,083 crabs for legal status, and sampled 70 pots for species composition.

Pribilof Red King Crab Fishery

The Alaska Board of Fisheries, in February 1993, advanced the opening date of the Pribilof king crab fishery from September 25 to September 15 to coincide with the start of the Saint Matthew king crab fishery. This fishery opened for the first time in six years during the 1993/94 season.

1993/94 Fishery

A quota of 3.4 million pounds was established and the fishery lasted seven days, closing September 21, 1993. Observers were deployed on two catcher processors and two floating processors for the season spending 1.8 months at sea.

Observers sampled 55 pots for species composition, 25,086 crabs for legal status, and 46 deliveries from catcher vessels.

Bering Sea Hair Crab 1992/93 Fishery

The first observer deployments on hair crab vessels occurred during the 1992/93 season, which was divided into two periods.

During the first period the entire Bering Sea registration area was open from October 1 to November 1, 1992. One observer was deployed on a catcher processor and two observers (ADF&G staff) were deployed on catcher vessels for 1.3 months. One hundred and fifteen pots were sampled for species composition.

The second fishing period opened April 1 and closed May 15, 1993. The open area was restricted to the Bristol Bay registration area. All vessels participating in this fishery were required to have observer coverage. Seven catcher vessels carried observers for 3.2 months. Observers sampled 249 pots for species composition.

The total for both fishing periods during the year was 10 observers deployed on eight vessels for 4.5 months. This represents 2.1 percent of observer time and 5.5 percent of observer trips during the fishing year.

1993/94 Fishery

This fishery opened on November 1, 1993 with a quota of 2.5 million pounds. Observer coverage was required for all participating vessels. Twelve observers were deployed through January 7, 1994 logging 20.8 months at sea, all on catcher vessels. They sampled 5,741 pots for species composition. The fishery remains open with half the quota taken through January 7, 1994.

Adak King Crab

Both red and brown king crab are fished in the Adak king crab fishery which opens on November 1. The red king crab season closes by regulation on February 15 and the brown king crab season closes on August 15, however, either may be closed earlier by emergency order.

1992/93 Fishery

During this fishery 14 observers were deployed for 20.3 months on five catcher processors and one floating processor. This represents 9.5 percent of observer time and 7.7 percent of observer trips for the fishing year.

Observers sampled six deliveries from catcher vessels, checked 127,497 crabs for legal status, and sampled 643 pots for species composition.

Bristol Bay Red King Crab

This fishery opened November 1 with a quota of 16.8 million pounds. Seventeen observers were deployed on catcher processors and seven observers were on floating processors, spending 13.8 months at sea during this fishery which lasted nine days.

Observers on catcher processors sampled 559 pots for species composition while observers on floating processors sampled 146 deliveries from catcher vessels.

1992/93 Fishery

Observers were deployed on 17 catcher processors and six floating processors for 10.6 months during this eight day fishery. This represented 4.9 percent of observer time and 13.3 percent of observer trips during the season.

Observers sampled 99 deliveries from catcher vessels, checked 72,816 crabs for legal status, and sampled 289 pots for species composition.

Bering Sea *C. bairdi* Tanner Crab

At the February 1993 Alaska Board of Fisheries meeting the opening date for the *C. bairdi* fishery, in the Bristol Bay area only, was advanced to open simultaneously with the Bristol Bay red king crab fishery. The entire eastern subdistrict of the Bering Sea opens to *C. bairdi* fishing ten days after the Bristol Bay king crab fishery closes.

1993/94 Fishery

During the ten day red king crab fishery no catcher processors targeted on *C. bairdi*. With the reopening on November 20, seventeen catcher processors and four floating processors entered the fishery carrying observers. A quota of 19.8 million pounds was set and the fishery remained open until January 1, 1994. Observers spent 15.1 months at sea during this fishery.

Observers on catcher processors sampled 1,007 pots for species composition while observers on floating processors sampled 63 deliveries from catcher vessels.

1992/93 Fishery

This fishery opened November 15, 1992 with a quota of 38.1 million pounds, and closed on March 31, 1993. Thirty-five observers were deployed on 10 floating processors and 22 catcher processors participating in this fishery. Observers spent 63 months at sea representing 29.4 percent of observer time and 22.6 percent of observer trips for the year.

Observers sampled 297 deliveries from catcher vessels, checked 522,718 crabs for legal status, and sampled 517 pots for species composition.

Bering Sea C. opilio Tanner Crab 1992/93 Fishery

This fishery opened on January 15, 1993 with a quota of 207.2 million pounds. It lasted 60 days, closing on March 15, 1993. Fifty observers were deployed on 25 catcher processors and 21 floating processors for 92.6 months at sea. This represents 44.1 percent of observer time and 35.4 percent of observer trips for the fishing year.

Observers sampled 875 deliveries from catcher vessels, checked 1,447,042 crabs for legal status, and sampled 1,216 pots for species composition.

Norton Sound Red King Crab 1992/93 Fishery

This fishery opened on July 1, 1993 with a quota of 340,000 pounds. One observer was deployed on 1 floating processor, spending two months at sea. This represents 0.9 percent of observer time and 0.6 percent of observer trips for the fishing year.

Bering Sea Snails 1992/93 Fishery

The Bering Sea snail fishery is open year round by permit, with no quota set. Observer coverage was required on all vessels fishing snails during the 1993 fishery as condition of the fishing permit.

Five observers were deployed on four vessels during this fishery for a period of 5.5 months at sea. They sampled 1,517 pots for species composition.

Bering Sea Scallops 1993 Fishery

Twelve observers were deployed on nine scallop vessels during this fishery for 9.7 months. This represents 26.8 percent of observer time and 16.9 percent of observer trips in the Alaskan scallop fisheries for the year.

Observers sampled 151 tows for species composition and 899 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

Dutch Harbor Scallops 1993 Fishery

Six observers were deployed on five scallop vessels during this fishery for two months. This represents 5.5 percent of observer time and 8.5 percent of observer trips in the Alaskan scallop fisheries for the year.

Observers sampled 26 tows for species composition and 58 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

Kodiak Scallops 1993 Fishery

Fifteen observers were deployed for 30 trips on nine scallop vessels during this fishery for 15.5 months. This represents 42.8 percent of observer time and 40.8 percent of observer trips in the scallop fisheries for the year.

Observers sampled 276 tows for species composition and 1,794 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

Prince William Sound Scallops 1993 Fishery

Seven observers were deployed on seven scallop vessels during this fishery for 2.1 months. This represents 5.8 percent of observer time and 9.9 percent of observer trips in the scallop fisheries for the year.

Observers sampled 26 tows for species composition and 156 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

Southeastern Scallops 1993 Fishery

One observer was deployed on one scallop vessel during this fishery for 0.3 months. This represents 0.8 percent of observer time and 1.4 percent of observer trips in the Alaskan scallop fisheries for the year.

The observer sampled nine tows for species composition and 19 tows for crab and halibut bycatch. He also sampled scallops for age, sex, and gonad condition.

South Peninsula Scallops 1993 Fishery

Eight observers made nine trips on seven scallop vessels during this fishery for 3.5 months. This represents 9.7 percent of observer time and 12.7 percent of observer trips in the Alaskan scallop fisheries for the year.

Observers sampled 47 tows for species composition and 327 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

Yakutat Scallops 1993 Fishery

Seven observers were deployed on seven scallop vessels during this fishery for 3.1 months. This represents 8.6 percent of observer time and 9.9 percent of observer trips in the Alaskan scallop fisheries for the year.

Observers sampled 79 tows for species composition and 466 tows for crab and halibut bycatch. They also sampled scallops for age, sex, and gonad condition.

OBSERVER PROGRAM ACTIVITY

Observer Briefing and Debriefing Activity

During the 1992/93 fishing year Observer Program staff in Dutch Harbor conducted 173 observer briefings and 224 debriefings (includes mid-trip debriefings)(Table 1).

Briefing, debriefing and mid-trip debriefing activity normally remains high throughout the fall, winter, and spring months corresponding to commercial crab fishing seasons in the Bering Sea and Aleutian Islands area. The number of briefings, debriefings, and mid-trip debriefings by month for the 1992/93 fishing year is presented in Figure 2. A monthly summary of observer briefing, debriefing and mid-trip debriefing sessions for September 1990 through December 31, 1993 is presented in Table 7.

Observer Exams, Certification and Decertification

During 1993 two shellfish observer certification exams were held in Dutch Harbor. Nineteen candidates participated, all of whom passed and were issued trainee shellfish observer certificates. Fifteen observers received full certification by the end of 1993, the rest remain in trainee status. Table 8 presents this certification data by year since the inception of the Shellfish Observer Program in 1988.

Fifteen certification exams have been held since inception of the Shellfish Observer Program, attended by 330 candidates of which 276 passed (84%). Through the end of 1993 there were 84 observers remaining in the Program, the other 192 having been decertified for various reasons, mainly inactivity.

Two observers were placed on suspension for violation of conflict of interest standards in 1993.

The University of Alaska at Anchorage, Observer Training Center, conducted three scallop observer training courses in 1993. This is a two day course open to select shellfish observers. Nineteen observers attended and passed the courses.

A lack of scallop observers, due to poor planning by contractors, forced Kodiak ADF&G staff to conduct two scallop training sessions on short notice attended by two observers.

Evidence Collection

Evidence of illegal activities was collected on 25 percent of observer trips conducted during the 1992/93 fisheries and ten percent of observer trips conducted through December 31 of the 1993/94 season. Table 9 and Figure 3 summarize evidence collection by observers for the fishing years 1991/92 and 1992/93 and completed fisheries during the 1993/94 season.

Fisheries where most of the evidence is collected are the Bering Sea Tanner crab fisheries. Sixty-five percent and 71 percent respectively of evidence collected during the 1991/92 and 1992/93 seasons came from these fisheries. It appears that the 1993/94 season will portray similar results.

Data Analysis

Data collected by shellfish observers are analyzed and reported upon by the Assistant Research Biologist for the Bering Sea and Aleutian Islands. Analysis of this data is available in report form. The latest report is titled "1992 Shellfish Observer Program Database Summary Report". This report includes all fisheries with shellfish observer coverage in 1992.

PROBLEMS WITH THE OBSERVER PROGRAM

Many problems that arose during the early years of the Shellfish Observer Program have been resolved through tightening of regulations and better cooperation between industry, observer contractors, observers, and ADF&G. However, some problems continue to plague the program.

Industry/Vessels

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

Contractors

The current program structure has the potential to place tremendous pressure on contractors. In the interest of maintaining vessel contracts, decisions made by the contractor, including observer vessel assignments, may be affected by demands of the contracting vessels or companies. This is in violation of current regulations and allows vessels indirect control over observer placement. Under the current observer contracting and deployment system, an observer willing to allow illegal activities on board their assigned vessel places that vessel at an advantage over the rest of the fleet.

A major problem for contractors concerns non-payment of bills owed them by vessels. One contractor was forced out of business in 1993 due to unpaid bills, mainly from the federal groundfish program. A requirement of the Shellfish Observer Manual is that vessel owners and operators must contract and pay for observers through a "third party contractor". This stipulation gives contractors some recourse if unpaid.

Observers

The Observer Program structure places the observer in a position of potential compromise between ADF&G requirements (which includes documenting illegal activities and collecting evidence) and possible pressure from the vessel to overlook violations. Overlooked violations can be mutually beneficial to both the vessel and observer in the form of increased profits for the vessel and a reduced workload, possible payoffs, and future deployments or employment for the observer.

Additional problems can occur when observers, immediately after debriefing, go to work as a crewman on vessels other than the assigned vessel. In this case it is questionable whether a recently debriefed observer, exposed to highly confidential fishing information on the assigned vessel (catch rates and exact fishing locations etc.), should be allowed to work as a crew member on another vessel where such privileged information could be dispensed. Observers that participate in such activities are immediately suspended from the Observer Program for 12 months. This suspension is in effect decertification as they will be decertified after 12 months of inactivity.

SUMMARY

The Shellfish Observer program expanded in 1993 due to the Alaska Board of Fisheries mandate for observer coverage in the developing scallop fisheries, and the stipulation on the Bering Sea hair crab and snail permits for observer coverage on all vessels. All shellfish registration areas of the state, except Cook Inlet, had observer coverage during 1993, a first for all areas outside the Westward Region.

Dutch Harbor was again the focal point of the Observer Program in 1993. All observer deployments in the crab fisheries were managed from the ADF&G office located there, except for one observer deployed from Nome for the Norton Sound red king crab fishery.

During 1993 two Shellfish Observer certification exams were given. All 19 candidates passed and were given trainee shellfish observer certificates. Fifteen eventually obtained full certification. Also in 1993, there were 39 observers decertified and two observers suspended. At year's end 84 observers remained in the program.

Observers collected evidence on 25 percent of all crab observer trips during the 1992/93 fishing year, up substantially from the 19 percent of observer trips in the 1991/92 fishing year. The largest portion came from the Bering Sea *C. opilio* fishery where 50 percent of all evidence was collected.

During the Alaska Board of Fisheries Spring 1993 meeting a scallop fishery management plan was adopted mandating observer coverage on scallop vessels. The Scallop Observer Manual was developed, observers were trained, and the Scallop Observer Program was implemented on June 27, 1993.

Problems with the Shellfish Observer Program continue to center around the third party contractor system of obtaining and deploying observers. Many of the problems dealing with observer placement could be minimized if observer deployment was controlled by ADF&G and contractors were not forced to rely on payment for observer services directly from vessel owners.

A looming problem is non payment of fees owed contractors by vessels. This is mainly in the National Marine Fisheries Service program but does cross over into the ADF&G program as all shellfish contractors also participate in the National Marine Fisheries Service Groundfish Observer Program. One contractor went out of business in 1993 due to non payment of fees owed him.

Table 1. Summary of vessels, vessel registrations, observer trips, observer months, number of active observers and contractors, and number of briefings and debriefings from program inception (first briefing September 20, 1988) through August 31, 1993.

Fishing Year ^a	Vessels ^b			Registrations ^c			Observer Trips	Active Observers	Observer Months	Active Contractors	Total	
	C/P	F/P	F/V	C/P	F/P	F/V					Brief ^d	Debrief ^e
1988/89	22	8	0	85	52	0	89	56	96.1	8	112	89
1989/90	24	16	0	68	53	0	128	59	152.0	7	112	128
1990/91	30	18	0	86	55	0	273	90	342.5	5	269	339
1991/92	33	18	0	113	46	0	246	88	297.3	7	259	333
1992/93 ^f	29	22	19	99	49	52	217	75	234.3	6	173	224

^aSeptember 1 through August 31.

^bUnique vessels requiring observer coverage, C/P = Catcher Processor, F/P = Floating Processor, and F/V = Fishing Vessel.

^cCumulative vessel registrations of all vessels requiring observer coverage.

^dIncludes some briefings for the next fishing year.

^eIncludes mid-trip debriefings.

^fIncludes scallop trips starting before August 31, 1993.

Table 2. Summary of registered vessels, observer trips and observer months at sea, by fishery, for the fishing year^a 1990/91.

Fishery	Registered Vessels		Observer Trips	% of Total Obs. Trips	Obs. Months	% of Total Obs. Months
	C/P	F/P				
St. Matthew Blue King	7	3	10	3.7	4.2	1.2
Dutch Harbor Brown King	5	1	6	2.2	7.4	2.2
Bristol Bay Red King	20	15	35	12.8	19.6	5.7
Adak Brown King	8	0	21	7.7	32.5	9.0
Bering Sea Bairdi	19	18	42	15.4	50.2	14.7
Bering Sea Opilio	26	18	155	56.8	226.2	66.0
Miscellaneous	1	0	4	1.5	4.6	1.2
Totals	86	55	273	100	342.5	100

^aSeptember 1, 1990 through August 31, 1991.

Table 3. Summary of registered vessels, observer trips and observer months at sea, by fishery, for the fishing year^a 1991/92.

Fishery	Registered Vessels		Observer Trips	% of Total Obs. Trips	Obs. Months	% of Total Obs. Months
	C/P	F/P				
St. Matthew Blue King	9	2	11	4.5	5.3	1.8
Dutch Harbor Brown King	4	0	4	1.6	7.3	2.5
Bristol Bay Red King	25	14	39	15.9	19.8	6.7
Adak Brown King	9	0	25	10.2	38.8	13.0
Bering Sea Bairdi	27	12	51	20.7	64.5	21.7
Bering Sea Opilio	31	18	107	43.5	158.8	53.4
Miscellaneous	9	0	9	3.7	2.8	0.9
Totals	113	46	246	100	297.3	100

^aSeptember 1, 1991 through August 31, 1992.

Table 4. Summary of registered vessels, observer trips and observer months at sea, by fishery, for the fishing year^a 1992/93, excluding scallop fisheries.

Fishery	Registered Vessels			Observer Trips	% of Total Obs. Trips	Obs. Months	% of Total Obs. Months
	C/P	F/P	F/V ^b				
St. Matthew Blue King	8	7	0	15	8.3	5.8	2.7
Dutch Harbor Brown King	5	0	0	6	3.3	7.2	3.4
Bristol Bay Red King	17	6	0	24	13.3	10.6	4.9
Adak King & Bairdi	13	1	0	14	7.7	20.3	9.5
Bering Sea Bairdi	28	13	0	41	22.6	63.0	29.4
Bering Sea Opilio	25	21	0	64	35.4	94.7	44.1
Bering Sea Hair Crab	1	0	7	10	5.5	4.5	2.1
Bering Sea Snails	1	0	3	5	2.8	5.5	2.6
Adak Hair Crab	1	0	0	1	0.6	.9	0.4
Norton Sound Red King	0	1	0	1	0.6	2.0	0.9
Totals	99	49	10	181	100	214.5	100

^aSeptember 1, 1992 through August 31, 1993.

^bFishing vessels required to carry observers.

Table 5. Summary of registered vessels, observer trips and observer months at sea, by fishery, for completed fisheries, for the fishing year^a 1993/94.

Fishery	Registered Vessels			Observer Trips	% of Total Obs. Trips ^a	Obs. Months	% of Total Obs. Months ^a
	C/P	F/P	F/V ^b				
St. Matthew Blue King	3	4	0	7		3.5	
Pribilof Red King	2	2	0	4		1.8	
Bristol Bay Red King	16	7	0	25		13.8	
Bering Sea Bairdi Crab	17	4	0	21		15.1	
Adak Red and Brown King ^c							
Bering Sea Hair Crab ^c							
Bering Sea Opilio Crab ^c							
Norton Sound Red King ^c							
Totals	39	17	12	72	100	56.4	100

^aSeptember 1, 1993 through August 31, 1994.

^bFishing vessels required to carry observers.

^cOn going or future fisheries.

Table 6. Summary of registered vessels, observer trips and observer months at sea, for the Alaskan scallop fisheries in 1993.

Fishery	Registered Vessels	Observer Trips	% of Total Obs. Trips	Obs. Months	% of Total Obs. Months
Dutch Harbor Scallops	5	6	8.5	2.0	5.5
Bering Sea Scallops	9	12	16.9	9.7	26.8
Southeast Scallops	1	1	1.4	0.3	0.8
Kodiak Scallops	9	30	40.8	15.5	42.8
Prince William Sound Scallops	7	7	9.9	2.1	5.8
Yakutat Scallops	7	7	9.9	3.1	8.6
South Peninsula Scallops	7	9	12.7	3.5	9.7
Totals	45	71	100	36.2	100

Table 7. Number of briefing, debriefing and mid trip debriefing sessions by month and by fishing year^a from Sep. 1990 through Dec. 1993.

	--BRIEFINGS--				--DEBRIEFINGS--				--MID TRIPS--			
	90/91	91/92	92/93	93/94 ^b	90/91	91/92	92/93	93/94 ^b	90/91	91/92	92/93	93/94 ^b
SEP	9	12	5	19	11	11	17	22	N/A	1	0	1
OCT	36	38	23	32	5	3	5	3	N/A	2	0	0
NOV	38	46	32	30	41	46	27	26	N/A	4	3	6
DEC	14	14	12	1	19	24	15	19	N/A	16	17	6
JAN	45	52	44		29	31	18		0	18	9	
FEB	18	19	7		23	21	9		15	20	8	
MAR	34	11	25		28	11	49		32	19	1	
APR	31	33	3		28	73	10		9	5	2	
MAY	27	3	1		30	5	1		6	0	2	
JUN	9	5	6		37	5	5		3	0	3	
JUL	5	9	7		18	3	5		1	1	2	
AUG	3	17 ^c	6		4	13	8		0	1	6	
Totals	269	259	171	82	273	246	170	70	66	87	52	13

^aSeptember 1 through August 31.

^bIncludes through December 31.

^cIncludes briefings for the 1992/93 fishing year.

Table 8. Mandatory Shellfish Observer Program candidates by exam, including number passed, number of active certified observers and decertified observers^a.

Year	Number of Exams	Number of Candidates	Number Passed	Number Currently Certified	Number Decertified	
					Inactivity ^b	Other ^c
1988	3	105	84	6	65	13
1989	1	54	44	7	33	4
1990	3	47	29	5	23	1
1991	4	64	61	19	40	2
1992	2	41	39	28	11	0
1993	2	19	19	19	0	0
Totals	15	330	276	84	172	20

^a - Numbers in this table have been revised from previous reports due to corrected records.

^b - Decertified due to 12 month shellfish observer employment inactivity or trainee permit expiration after 180 days.

^c - Decertified due to nonconformity with Shellfish Observer Program standards.

Table 9. The number of observer trips and observer trips where evidence was collected in the crab fisheries.

Fishery	Fishing Season	Observer Trips	Trips Evidence Collected	Percent of Each Fishery ^a	Percent of Total Evidence ^b
St. Matthew Blue King	91/92	11	0	0	0
	92/93	15	1	6.7	2.6
	93/94	7	1	14.3	
Dutch Harbor Brown King	91/92	4	1	25.0	2.2
	92/93	6	1	16.7	2.6
	93/94	0	0	0	
Bristol Bay Red King	91/92	39	8	20.5	17.4
	92/93	24	8	33.3	21.1
	93/94	25	3	12.0	
Adak King & Bairdi	91/92	25	7	28.0	15.2
	92/93	3	1	33.3	2.6
	93/94 ^c	1	1	100.0	
Bering Sea Bairdi	91/92	51	12	23.5	26.1
	92/93	31	8	25.8	21.1
	93/94	21	2	9.5	
Bering Sea Opilio	91/92	107	18	16.8	39.1
	92/93	64	19	29.7	50.0
	93/94	N/A	N/A	N/A	N/A
Miscellaneous Crab Fisheries	91/92	9	0	0	0
	92/93	15	0	0	0
	93/94 ^c	18	0	0	
SUMMARY	91/92	246	46	18.7	
	92/93	158	38	24.8	
	93/94 ^c	72	7	9.7	

^a - Percentage of trips evidence collected by fishery.

^b - Percentage of total evidence collected for the fishing year.

^c - Through December 31, 1993 only.

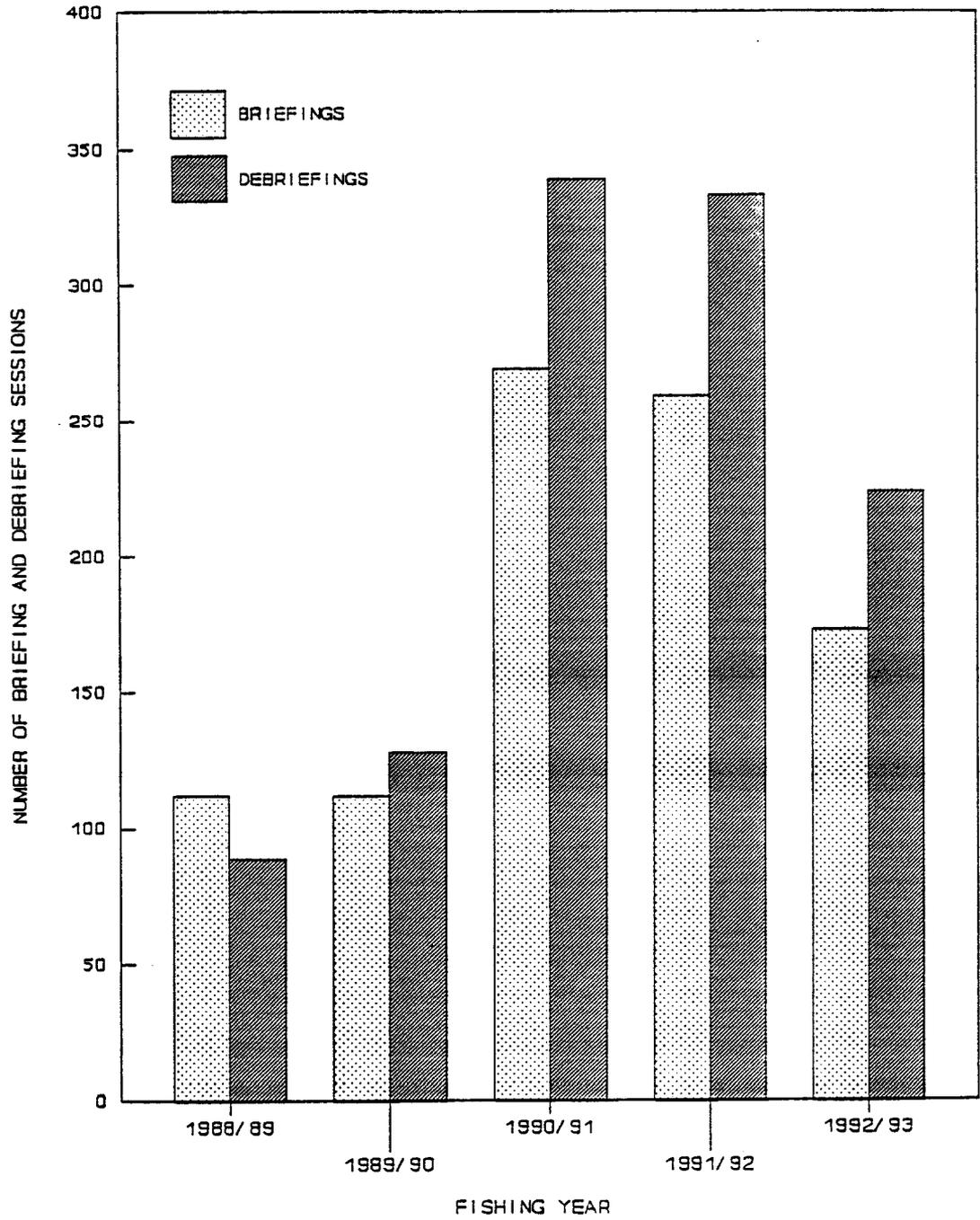


Figure 1. Number of briefing and debriefing sessions by fishery year, 1988/89 through 1992/93.

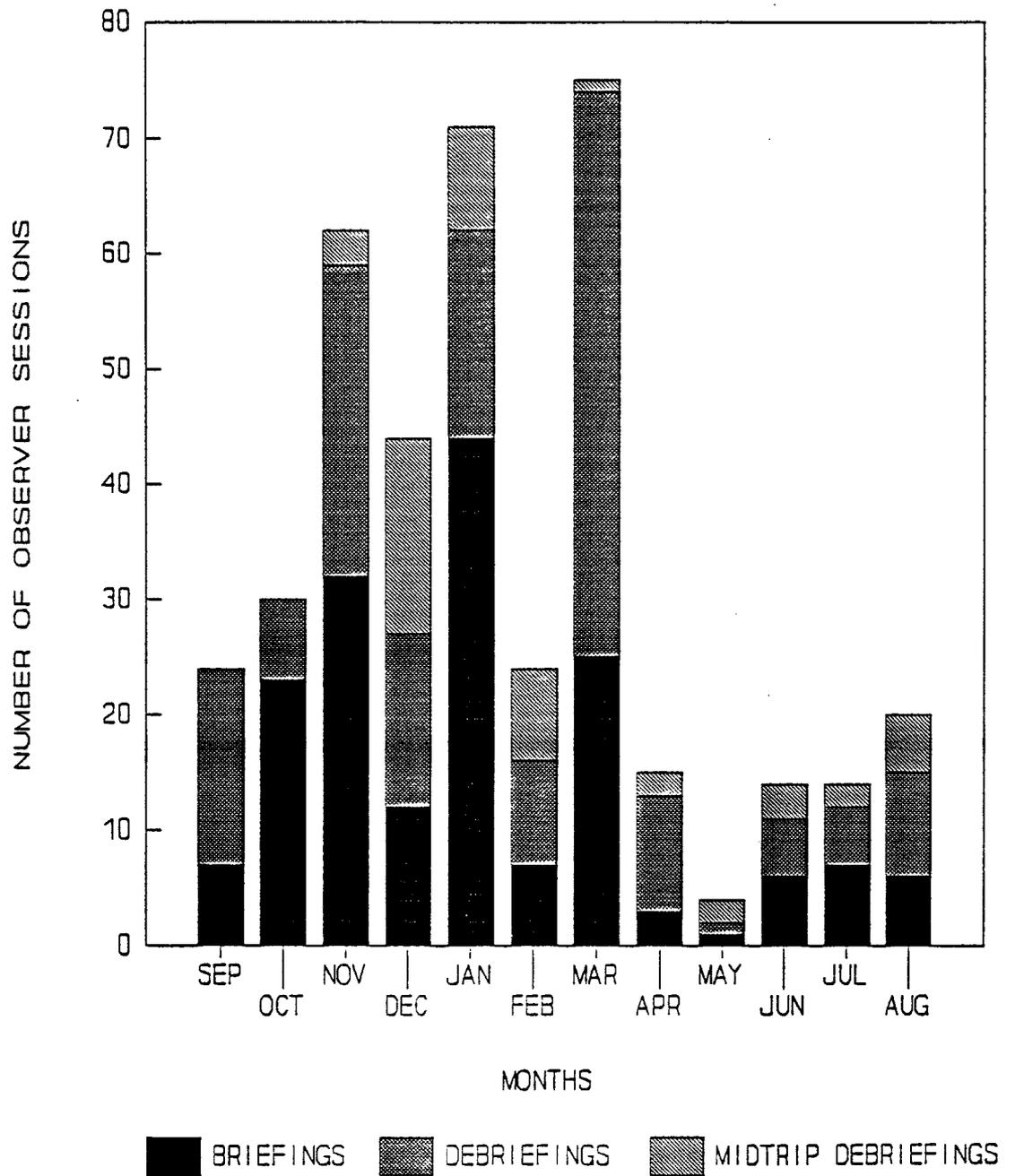


Figure 2 Number of observer sessions by month and session type (briefings, debriefings and midtrip debriefings). For the fishing year 1992/93.

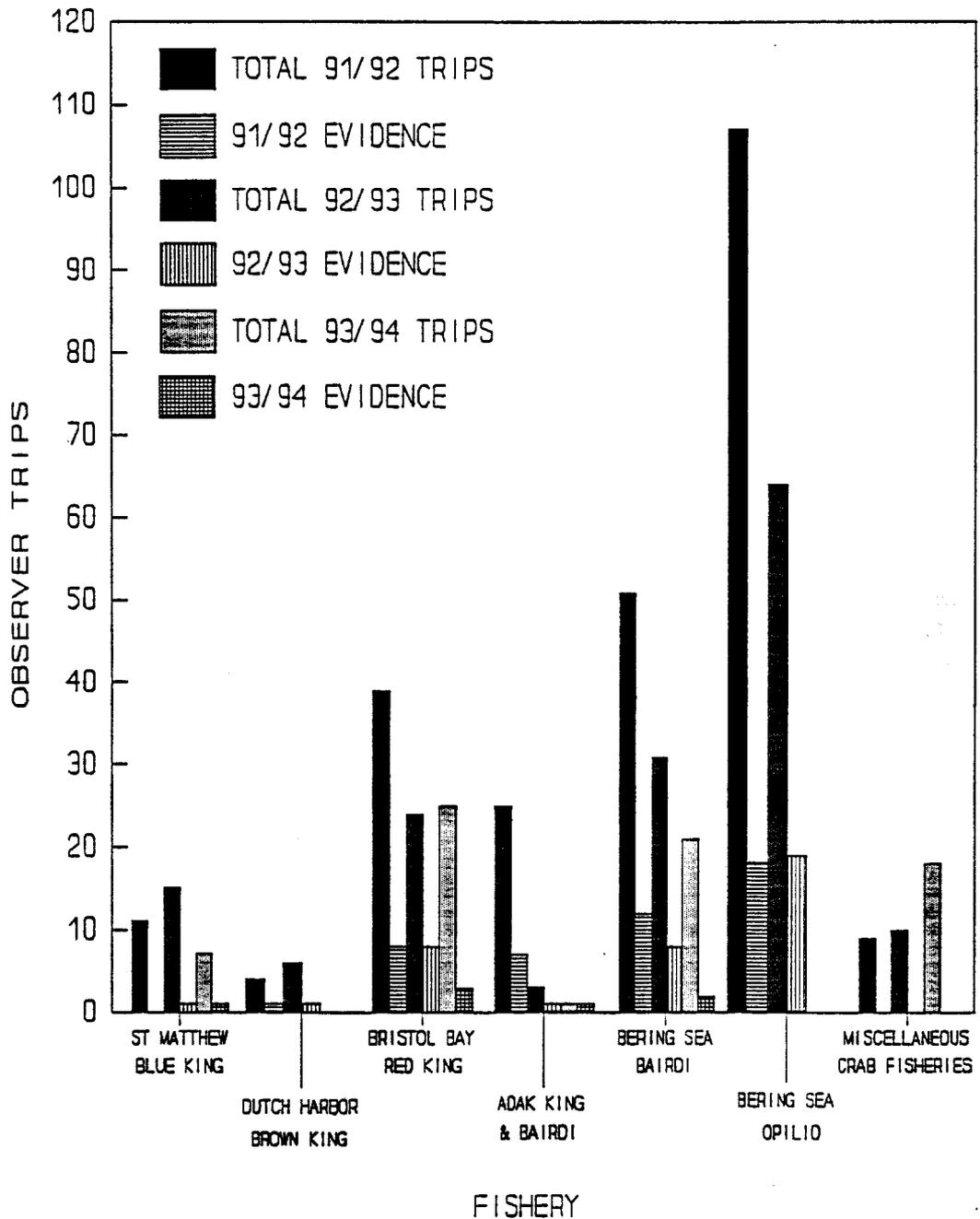


Figure 3 Number of observer trips and observer trips where evidence was collected for fishing years 91/92, 92/93 and 93/94 through December 31, 1993.

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-6077, (TDD) 907-465-3646, or (FAX) 907-465-6078.