

SHELLFISH

Board of Fisheries 1994/95



Alaska Department of Fish and Game
Commercial Fisheries Management and Development Division
Juneau, Alaska
Report No. 1J95-25

REPORT TO THE BOARD OF FISHERIES

1994/95 REGION 1 SHELLFISH FISHERIES



Regional Information Report No.¹ 1J95-25

Alaska Department of Fish and Game
Commercial Fisheries Management and Development Division
Juneau, Alaska

October 1995

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SECTION 1

INTRODUCTION TO 1994/95 SHELLFISH FISHERIES

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REPORT TO THE BOARD OF FISHERIES
INTRODUCTION TO 1994/95 SHELLFISH FISHERIES



By

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Commercial Fisheries Management and Development Division
Juneau, Alaska

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INTRODUCTION

This report reviews the commercial crab fisheries of Southeast Alaska and Yakutat that are managed by Region I, Division of Commercial Fisheries Management and Development. Other fisheries managed by the shellfish section include pot, beam trawl, and otter trawl shrimp fisheries, weathervane scallops, octopus, littleneck clams and dive fisheries that include abalone, geoduck, sea cucumber and sea urchins. Region I consists of shellfish Statistical Areas A (Southeast Alaska) and D (Yakutat) (Figure 1). Statistical Area A encompasses all state waters within the Alexander Archipelago and off the outer coastline between Dixon Entrance and Cape Fairweather. Waters of Statistical Area A are divided into Districts 1-16. Statistical Area D includes all state waters from Cape Fairweather to Cape Suckling, and is divided into Districts 181-191. Most shellfish fisheries in both areas occur in state waters, however, some fisheries and state management authority extend into the United States Exclusive Economic Zone (EEZ).

Region I crab harvests for the last completed season totaled 5,734,900 lbs of product worth an estimated \$13,131,800 exvessel value (Table 1). In descending order, by weight and by exvessel value, the top three crab fisheries were: southeast Tanner, southeast Dungeness, and southeast red and blue king crab.

Shellfish Research in Region I

The single most important research project in Region I has been an annual survey to assess the abundance of red king crab in important bay areas of northern Southeast Alaska. The attainment of the threshold level and the allowable harvest is estimated from survey data. This project has provided a fairly continuous time series of data since 1978. However, since 1986, funding constraints have limited these surveys. In an effort to supplement survey data, test fishing using commercial vessels was unsuccessfully attempted in 1988. The successful management of the red king crab commercial fishery will depend on continued funding for the stock assessment survey.

Some Tanner crab stock composition information has been collected incidentally during red king crab index surveys. This information is the extent of stock composition data available for sublegal male and female Tanner crabs in Region I.

Information on Tanner bitter crab disease has been collected since 1987 from a number of important Tanner crab fishing grounds, either during the red king crab survey or from commercial catches at dockside. This research has provided data on infection rates and geographic distribution of the disease. During the winter of 1991/92, the department also conducted a cooperative research project on the seasonal marketability of infected crab.

Shellfish Management in Region I

In addition to the management related research projects, dockside sampling and skipper interviews are conducted for all the crab fisheries to provide a consistent time-series of data on size frequency, shell condition, average weight, fishing location, effort levels, and estimates of average catch per unit of effort (CPUE). This information allows some assessment of relative strength of various portions of the commercially exploited population and a qualitative estimate of stock condition. Catch and effort data are also collected through the fish ticket system.

Mandatory logbook information has been collected from participants in the last two southeast red king crab and Tanner crab fisheries. Logbook data provide more detailed information on catch per-unit-effort and distribution of catch and effort by area.

Shellfish Staff

The management and research programs for crab, shrimp, scallop, octopus, and littleneck clams are supervised by a Fisheries Biologist III (Timothy Koeneman, Region Shellfish Biologist located in Petersburg) and two assistants (Catherine Botelho, Assistant Region 1 Shellfish Biologist, Fishery Biologist II and Kenneth Imamura, Assistant Region 1 Shellfish Biologist, Fishery Biologist II located in Douglas). Rexanne Stafford is a seasonal Fisheries Technician III port sampler located in Petersburg. Biometric support is provided by John E. Clark, a biometrician, and Doug Woodby, marine fisheries program leader, located in Douglas.

Acknowledgments

The crab reports were written by Ken Imamura and Timothy Koeneman. Catherine Botelho completed the major portion of the data summaries, tables, and figures included within each of these reports.

Doug Woodby and Doug Mecum provided editorial review of the manuscripts, and Beth Rhoden and Marla Trollan were responsible for formatting, organizing, and producing the final reports.

Table 1. Statistical Area (Southeast Alaska) and Statistical Area D (Yakutat) list of crab fisheries, harvest and approximate exvessel values from the last completed season.

Season	Fishery	Harvest in Thousands of Pounds	Approximate Ex- vessel Value in Thousands of \$\$ ^a
<u>Southeast</u>			
1994/95	Dungeness Crab	1,921.7	2,111.8
1994/95	Tanner Crab	2,487.6	7,991.1
1994/95	Red and Blue King Crab	261.6	1,629.8
1994/95	Brown King Crab	39.3	141.6
	SUBTOTAL	7,931.3	11,874.3
<u>Yakutat</u>			
1994/95	Dungeness Crab	915.5	922.6
1994/95	Tanner Crab	107.0	324.3
1994/95	Red and Blue King Crab	2.2	10.6
	SUBTOTAL	1,024.7	1,257.5
GRAND TOTAL		5,734.9	13,131.8

^a This column is calculated from the average price per pound of all tickets having values indicated on them.

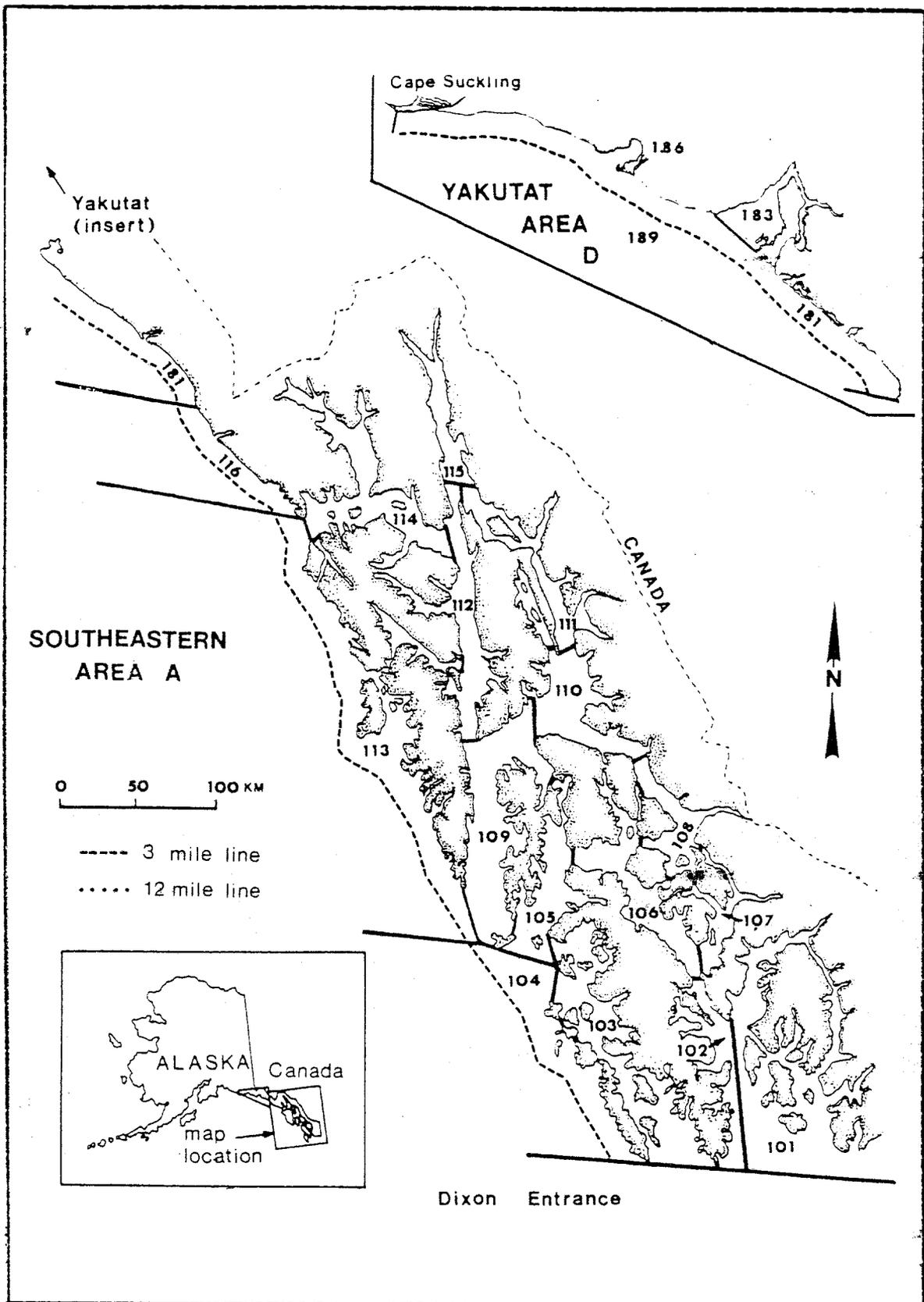


Figure 1. Statistical Area A (Dixon Entrance to Cape Fairweather) and Statistical Area D (Cape Fairweather to Cape Suckling).

SECTION 2

SOUTHEAST ALASKA DUNGENESS CRAB FISHERIES, 1993/94 AND 1994/95

REPORT TO THE BOARD OF FISHERIES
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INTRODUCTION

Dungeness crabs *Cancer magister* are members of the highly evolved brachyuran (true crab) subgroup of the order Crustacea. They are a commercially significant species found in coastal waters from Baja California to the Aleutian Islands.

Dungeness crabs are widely distributed throughout Southeast Alaska. However, they tend to concentrate in areas with mud and sand substrates and depths between 2 and 40 fathoms. Major fishing grounds are generally in the northern half of Southeast Alaska. Southeast Alaska has been a consistently productive area, with a long-term average of about 1,900,000 lbs per season.

Southeast Alaska is a superexclusive registration area for Dungeness crab; a vessel registered to fish in this area cannot register or fish in any other area in Alaska during the same calendar year. Currently, up to 300 vessels per season register and fish in Southeast Alaska. Most vessels are below limit seiner length (58'), although they range in size from aluminum skiffs to over 90 feet. Almost all use standard, hatbox-shaped pots constructed with steel frames and webbed with stainless steel wire. The maximum legal limit of gear is 300 pots.

Management of this fishery is complicated by the limited amount of biological data available, the large number of highly mobile vessels, a wide variety of available marketing options, and lack of a field monitoring program. Conduct of the major harvest overlaps the molting and mating periods of Dungeness crab, resulting in undocumented handling mortality on sublegal males, softshell males, and females. The annual exploitation rate on legal crabs is very high and the fishery is currently heavily dependent on in-coming recruitment. Risk of local depletion or stock collapse is accepted by industry in order to supply the high-priced summer tourist markets for whole-cooked or live crab in Washington, Oregon, and California.

More conservative management of the summer fishery would probably be prudent because Southeast Alaska is near the upper latitudinal limit of the range of Dungeness crab. Environmental factors which govern their survival are probably more extreme and depressions in stock conditions more severe and extended in Alaska.

These concerns were not as pressing during much of the history of this fishery through the early 1980s, when enough open fishing areas remained so crabbers could move gear to avoid crabs in poor condition. Marginal areas were often not fished and they served as nursery or refuge areas that could buffer the effects of heavy harvest on adjacent grounds. The fishery has since intensified to the point where buffers no longer exist. The failure of recruitment of even a single year class would be extremely disruptive to the fishery.

There have been increasing conflicts between user groups as commercial crabbers expand into areas traditionally important to subsistence, personal use, or sport crabbing. These conflicts, both real and potential, have resulted in requests for the Board to close commercial crabbing in small areas around many communities, including Juneau, Ketchikan, Tenakee Springs, Elfin Cove, Point Baker, Hollis, and Gustavus.

A problem that is largely beyond the jurisdiction or control of the state is the rapidly expanding sea otter populations in Southeast Alaska. Their presence in many areas has been accompanied by drastic declines in stocks of Dungeness crab. The extent of their incursions into the more interior waters cannot be foreseen, but they will cause serious depletions in crab stocks in areas they enter.

FISHERY DEVELOPMENT AND HISTORY

This fishery dates from the 1930s. Prior to the 1960s, catches from much of the Gulf of Alaska coast were combined into a single total and the amount contributed by Southeast Alaska is unknown. Since 1960, catches have averaged about 1,900,000 lbs.

The fishery in Southeast Alaska has evolved through three distinct periods since the early 1960s. From the early 1960s through the early 1980s, participation in the Dungeness crab fishery in Southeast Alaska was so low that the fishery was nearly self-regulating. A crabber encountering soft-shelled crabs or experiencing low catches in one area could easily move to other fishing grounds. The need for formal regulations and other restrictions was minimal.

Relatively high catches in the 1960s reflected a period of high market demand due to low catches in Washington, Oregon, and California. Despite wide fluctuations in catches through the 1970s, the numbers of participants remained fairly stable. Most of the product was landed by larger vessels targeting Dungeness crab as their primary fishery. The principal product was canned crab meat.

During the 1970s, market demand declined and lack of processing support accounted at least partially for the low catches. A few dozen vessels in the 30' to 45' range fished during the summer, and many of them fished for Dungeness crabs as their primary fishery.

In the most recent period, since the 1981/82 season, the fishery has undergone several sweeping changes. Catches have averaged 2,800,000 lbs per season, and the numbers of participants has increased from a few dozen to up to 317 vessels. Landings in the fall and winter months climbed as processors bought crabs through the winter.

The summer fishery also slowly changed from a small number of 30' to 45' vessels to an expanding fleet of smaller vessels up to 30' in length. This reallocated the catch from larger to smaller vessels. The fishery went from a primary fishery for a smaller number of dedicated single-species participants to a secondary fishery for a large number of new and often transitory entrants.

Some external factors influenced this evolution. The Dungeness fisheries of other Pacific Coast states were experiencing the start of a long declining trend in catches during the 1980s. Changing marketing preferences for live or whole-cooked crabs, air-shipped to summer markets caused an increased demand for the Alaskan product that was no longer directly related to the supply from Washington, Oregon, and California.

More recently, what had historically been a domestic market was changing into an international one as interest in Dungeness crab grew in the Orient. Emphasis on this developing market has been on shipping of live crabs.

Since the 1993/94 season, processing has been restricted to sections, or the shoulder and legs of crabs, when the Alaska Department of Environmental Conservation determined that unacceptably high levels of paralytic shellfish poison (PSP) was present in the gastrointestinal organs of crabs from specific fishing grounds. Sections are not as desirable a product form as whole cooked or live crabs. Unpredictable restrictions on shipment of live crabs essentially closed operations of all catcher-sellers, who caught and air-shipped live crab to distant markets.

REGULATION DEVELOPMENT

Fishing Seasons and Periods

From the early 1930s through 1955, regulations included a prohibition on the taking of females, a minimum size limit for males, and a closed season on the most important grounds for two to four months between May 1 and September 1. Available documentation from that period indicates that molting was thought to occur during the summer.

The summer closure was generally acceptable to the fishermen because of other fishing opportunities in the salmon and halibut fisheries. It was revoked in the late 1950s. Until 1969, prohibition on the taking of females, a minimum legal size for males, and liberal limits on the units of gear were the only regulations governing the fishery. A small group of crabbers targeted Dungeness crab while most of the fishing fleet concentrated on salmon and other fisheries during the summer.

Since the late 1960s, fishing season closures have been introduced, and then modified, to reduce fishing pressure during sensitive periods in the life history of the species. An example was the closure from March through May in 1976/77 to protect male crabs during their primary molting period. As the fishery moved through the 1980s, resource managers slowly restricted fishing time to avoid sensitive life history periods effort slowly spread into previously unexploited areas. In 1985, the Board adopted a department proposal closing the latter half of August and the entire month of September to avoid the major mating period. The season was further shortened in 1989 by reducing the winter season to October and November in most of Southeast Alaska.

Size Restrictions

From 1924 to 1935, legal crabs were restricted to males over 6.5 inches in greatest width (including spines). From 1936 to 1962, only males over 7.0 inches were legal. In 1963, the legal size changed to 6.5 inches, and the method of measurement changed to the width just in front of the tenth anterolateral spines.

Gear Restrictions

Since 1934, trawls have been prohibited in this fishery. Gear was further limited to pots or ring nets in 1954. A pot limit of 300 pots or ring nets was adopted in 1963, with a further restriction to 150 pots in Districts 5 through 10. The current limit is 300 pots in all districts. Diving gear was included as legal gear in 1966.

Starting in 1963, Dungeness crab buoys have been required to display the registration number of the vessel fishing the gear. In 1977, two escape rings of 4 3/8" diameter were required in each pot, and a Dungeness pot was first defined by its tunnel eye openings, which individually could not exceed 30 inches. In 1978, an escape panel secured by a maximum of 120 thread cotton twine was required. The buoy marking requirement for minimum size of one and one-half inch high and 1/4 inch wide numbers was adopted in 1989. In 1991 the breaking strap or biodegradable twine for the lid retainers was changed from 120 thread to 60 thread. The intent was to minimize untended ghost fishing of lost or derelict pots.

Other Regulatory Changes

Vessel registration and hold inspection requirements started in 1974. Southeast Alaska was designated a superexclusive registration area in 1983. Hold inspections were repealed in 1984. The Commercial Fisheries Entry Commission (CFEC) imposed a permit moratorium on the fishery in January, 1992. The moratorium was specific to the Dungeness crab fishery and directed to sunset itself in January, 1996. At which time, the state would have to decide whether to establish a limited entry program or reopen the fishery to entry of new participants.

1993/94 SEASON SYNOPSIS

The 1993/94 season was divided into summer (June 15 - August 15) and winter (October 1 - November 30) segments for most of Southeast Alaska. Districts 1 and 2 and the portion of District 13 in Sitka Sound had no summer season, opened on October 1 and closed on February 28, 1994, as specified in regulations. The overall catch was 2,536,701 lbs. (Table 1), with an exvessel value of \$2,663,536 (\$1.05/ lb). Prices remained static between 1992/93 and 1993/94. Summer season landings totaled 2,164,739 lbs, and winter season landings totaled 371,962 lbs (Table 2a). One hundred and ninety-eight vessels reported landings this past season (Table 1).

Districts reporting greater than 200,000 pounds each landed for the season include 8, 9, 10, 13, and 14, with reported landings of 1,687,302 lbs, accounted for 66.5% of the total catch (Table 2a and Table 3). Ninety-two percent of the catch was taken during the summer season (Table 2a and Table 4). The winter catch of 371,962 lbs was much higher than last winter (Table 2a and Table 4).

The average shoulder width of the 7,048 crabs measured in the port sampling program was 181.7 mm (7.15 inches). The average width of sampled crab increased over the past four seasons, from 174.8 to 180.3 mm (Table 5). In concert with the catch records for the past four seasons and the increasing trend in average weight (Table 6), this trend of increasing size suggests the entry of a very strong year class into the fishery in the summer of 1990 that comprised a large part of the 1990/91 season's total catch. It continued to contribute to the fishery during the 1991/92 through the 1993/94 seasons, after setting a new record for Southeast Alaska in 1991/92. The increasing size trend also suggests that recruitment in the last two years has been moderate. The continuing strength in the stocks into the current season is probably a result of modest levels of recruitment during the past three seasons augmenting the last remnants of the strong 1991 year class.

1994/95 SEASON SYNOPSIS

The 1994/95 season was divided into summer (June 15 - August 15) and winter (October 1 - November 30) segments for most of Southeast Alaska. Districts 1 and 2 and the portion of District 13 in Sitka Sound had no summer season, opened on October 1, and closed on February 28, 1994, as specified in regulations. The overall catch was 1,921,689 lbs. (Table 1), with an exvessel value of \$2,306,000 (\$1.20/lb). Prices rose over \$.15/lb from the static prices for the previous two seasons. Summer season landings totaled 1,542,906 lbs, and winter season landings totaled 378,783 lbs (Table 2a). One hundred and eighty-two vessels reported landings this past season (Table 1).

Districts reporting greater than 200,000 pounds each landed for the season include 6, 8, 9, and 14, with reported landings of 1,687,302 lbs, accounted for 57.8% of the total catch (Table 2a and Table 3). Eighty percent of the catch was taken during the summer season (Table 2a and Table 4). The winter catch of 378,783 lbs was higher than last winter (Table 2a and Table 4).

The average shoulder width of the 7,528 crabs measured in the port sampling program was 176.3 mm (6.94 inches). The average width of sampled crab declined after four seasons of increasing average size (Table 5). Average weight also declined after progressively increasing over the past four seasons (Table 6), which suggested that the last of the crabs from the last major recruitment event in the summer of 1990 had passed through the fishery and future production would depend on the strength of each incoming recruitment class. The relatively low total season catch suggested that the current recruit class was not as strong as that in 1990/91.

1995/96 SEASON OUTLOOK

The fishery during the coming season will depend on the strength of the recruit class since a strong year class has not entered the fishery since 1990. None of the prior three recruit classes have compared to that entering the fishery in the 1990/91 season. If prices hold or increase over that paid this past season, total catch may be expected to show a modest increase over that of 1994/95.

The 1995/96 season will be the last under moratorium. The CFEC, in conjunction with the Alaska Department of Fish and Game and the Board of Fisheries, will have to decide whether limitation of the fishery is in the best interest of the Dungeness crab resource. The CFEC has determined that under existing regulations, about 308 past participants in the fishery would be eligible for permits and is currently holding hearings to discuss possible limitation options and use of tiered systems for maximum numbers of pots per permit. The CFEC feels that limitation of the fishery will not protect the long-term viability of the fishery unless the total number of pots that could be fished by 308 possible participants is less than the maximum possible under current fishing regulations. The Board of Fisheries will have to decide whether the facts support CFEC's conclusion and merit reduction of the current gear limit.

Table 1. Statistical Area A (Southeast Alaska) Dungeness crab catch, number of permits, number of landings, and average catch per landing, 1961 to present.

Year/ Season	Catch in Pounds	Number of Permits	Pounds per Permit	Number of Landings	Pounds per Landing
1960	1,449,405	-			
1961	671,455	-			
1962	2,985,939	-			
1963	3,296,362	-			
1964	3,996,100	-			
1965	2,392,395	-			
1966	1,968,117	-			
1967	2,033,156	-			
1968	1,900,690	-			
1969/70	1,149,111	24	47,880	392	2,931
1970/71	776,617	21	36,982	380	2,043
1971/72	452,681	22	20,576	315	1,437
1972/73	597,587	31	19,277	315	1,897
1973/74	748,519	41	18,257	483	1,549
1974/75	713,668	55	12,976	453	1,575
1975/76	611,564	36	16,988	344	1,177
1976/77	512,328	24	21,347	171	2,996
1977/78	127,345	12	10,612	87	1,463
1978/79	750,284	25	30,011	207	3,624
1979/80	801,753	37	21,669	313	2,561
1980/81	512,247	26	19,702	226	2,266
1981/82	2,935,027	75	39,134	749	3,918
1982/83	3,667,439	129	28,430	1,303	2,814
1983/84	2,150,692	131	16,417	1,530	1,405
1984/85	1,843,502	180	10,242	1,583	1,164
1985/86	2,314,618	216	10,716	2,073	1,116
1986/87	2,458,224	224	10,974	2,330	1,055
1987/88	3,390,845	241	14,070	2,746	1,234
1988/89	3,321,734	265	12,535	2,683	1,238
1989/90	1,918,653	245	7,831	2,094	916
1990/91	2,675,258	248	10,787	2,346	1,140
1991/92	4,705,314	316	14,890	3,379	1,392
1992/93	3,089,398	247	12,508	2,492	1,239
1993/94	2,536,701	198	12,812	1,956	1,296
1994/95 ^a	1,921,689	182	10,559	1,786	1,075

^a Most recent year's data should be considered preliminary.

Table 2a. Statistical Area A (Southeast Alaska) 1993/94 season; Dungeness crab harvest by month and district.

Dist.	1993						1994		Total		
	May	June	July	Aug	Sept.	Oct	Nov	Dec		Jan	Feb
101	Closed	0	0	0	Closed	33,375	6,249	3,583	3,562	5,806	52,575
102	Closed	0	0	0	Closed	*	0	*	*	0	*
103	Closed	*	0	0	Closed	0	0	0	0	0	*
104	Closed	*	*	*	Closed	0	0	Closed	Closed	Closed	*
105	Closed	45,002	89,880	24,544	Closed	6,965	8,967	Closed	Closed	Closed	175,358
106	Closed	87,755	76,248	14,945	Closed	10,261	4,870	Closed	Closed	Closed	194,079
107	Closed	13,509	23,301	9,941	Closed	9,656	*	Closed	Closed	Closed	58,264
108	Closed	130,500	163,583	33,590	Closed	13,655	10,031	Closed	Closed	Closed	351,359
109	Closed	68,770	122,663	30,033	Closed	13,689	12,868	Closed	Closed	Closed	248,023
110	Closed	100,382	141,909	48,694	Closed	10,116	7,764	Closed	Closed	Closed	308,865
111	Closed	36,750	60,714	15,025	Closed	*	3,384	Closed	Closed	Closed	121,973
112	Closed	43,291	63,209	13,856	Closed	*	4,851	Closed	Closed	Closed	129,531
113	Closed	33,125	93,582	33,093	Closed	26,825	20,865	*	*	0	210,568
114	Closed	74,112	222,186	152,410	Closed	85,317	34,462	Closed	Closed	Closed	568,487
115	Closed	18,781	35,294	14,594	Closed	8,124	6,952	Closed	Closed	Closed	83,745
116	Closed	6,268	*	*	Closed	0	0	Closed	Closed	Closed	24,039
Total		660,473	1,106,117	398,149		232,813	116,882	11,727	4,734	5,806	2,536,701

* Where number of vessels participating is less than three, the information is considered confidential.

Table 2b. Statistical Area A (Southeast Alaska) 1994/95^a season; Dungeness crab harvest by month and district.

Dist.	1994								1995		Total
	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	
101	Closed	0	0	0	Closed	33,212	5,515	17,406	*	*	57,028
102	Closed	0	0	0	Closed	0	0	0	0	0	0
103	Closed	*	*	*	Closed	*	0	*	0	0	6,734
104	Closed	0	0	*	Closed	0	0	Closed	Closed	Closed	*
105	Closed	38,337	44,164	8,968	Closed	*	*	Closed	Closed	Closed	105,628
106	Closed	73,297	63,609	28,773	Closed	42,250	11,303	Closed	Closed	Closed	219,232
107	Closed	31,524	37,581	8,713	Closed	*	*	Closed	Closed	Closed	82,643
108	Closed	118,862	102,811	23,453	Closed	25,753	17,744	Closed	Closed	Closed	288,623
109	Closed	77,243	86,511	27,242	Closed	22,805	15,012	Closed	Closed	Closed	228,813
110	Closed	64,974	78,309	32,137	Closed	5,590	3,213	Closed	Closed	Closed	184,223
111	Closed	11,226	22,936	7,100	Closed	*	*	Closed	Closed	Closed	43,998
112	Closed	30,990	19,685	14,247	Closed	40,472	*	Closed	Closed	Closed	110,474
113	Closed	30,110	56,406	24,515	Closed	*	*	*	*	0	138,061
114	Closed	62,020	159,687	78,008	Closed	46,386	27,953	Closed	Closed	Closed	374,054
115	Closed	8,793	25,329	14,431	Closed	8,198	1,089	Closed	Closed	Closed	57,840
116	Closed	*	*	*	Closed	0	0	Closed	Closed	Closed	*
Total		553,346	712,035	277,525		249,468	99,045	28,909	*	*	1,921,689

* Where number of vessels participating is less than three, the information is considered confidential.

^a Most recent year's data should be considered preliminary.

Table 3. Statistical Area A (Southeast Alaska) Dungeness crab harvest in thousands of pounds by district and season, 1969/70 to present.

Season	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	Total
1969/70	12.6	0.0	0.0	0.0	27.8	44.0	9.9	230.1	154.7	103.4	9.7	100.9	28.6	404.7	22.6	0.0	1,149.1
1970/71	16.7	0.0	0.0	1.9	8.1	33.0	5.8	92.7	183.7	72.7	0.0	77.2	12.0	178.4	13.2	81.4	776.6
1971/72	17.1	0.0	0.7	0.0	0.0	60.6	5.3	45.3	54.7	46.8	0.0	35.0	14.5	118.1	16.6	37.9	452.7
1972/73	11.4	0.0	0.0	0.0	8.1	30.8	11.8	40.3	41.9	36.9	0.0	49.8	14.6	106.0	31.7	214.5	597.6
1973/74	11.0	0.0	0.0	0.0	5.5	21.1	36.2	21.4	27.8	50.1	65.6	84.0	39.4	137.1	63.9	185.4	748.5
1974/75	28.5	0.0	0.0	0.0	20.5	96.4	86.9	41.6	16.2	47.9	46.1	62.7	11.6	147.3	41.9	65.9	713.7
1975/76	43.4	0.0	*	0.0	47.9	21.6	*	17.1	*	*	2.4	17.3	72.1	165.3	*	49.0	611.6
1976/77	*	0.0	5.5	*	13.7	*	*	*	*	*	*	41.3	29.7	138.1	*	163.9	512.3
1977/78	21.3	0.0	*	0.0	*	*	*	*	0.0	*	*	*	*	*	0.0	0.0	127.3
1978/79	37.2	0.0	0.0	0.0	*	110.9	*	32.8	*	*	*	10.3	*	195.3	*	89.3	750.3
1979/80	*	0.0	*	0.0	52.4	101.9	63.3	54.8	*	50.9	*	63.0	27.3	279.5	*	81.4	801.8
1980/81	28.5	0.0	*	0.0	73.2	166.4	0.0	19.8	*	*	0.6	61.2	7.0	76.9	*	0.0	512.2
1981/82	13.9	0.0	3.8	0.0	238.2	762.2	119.6	225.3	42.8	66.8	16.9	113.2	201.7	945.2	*	170.1	2,935.0
1982/83	53.0	*	15.7	0.0	294.2	467.2	165.1	791.2	20.7	144.1	39.8	356.5	232.9	538.3	8.4	537.9	3,667.4
1983/84	71.5	*	*	3.9	85.7	141.5	71.0	591.2	79.9	137.7	6.2	77.0	116.3	251.0	8.7	494.3	2,150.7
1984/85	112.0	11.2	9.8	*	131.7	402.1	99.5	265.4	172.5	47.6	22.1	144.4	112.3	197.6	27.3	87.5	1,843.5
1985/86	66.5	6.9	6.5	3.9	137.9	492.3	177.8	374.9	255.5	69.1	15.6	183.6	121.2	262.6	9.0	131.0	2,314.6
1986/87	53.8	0.0	11.0	*	99.3	351.4	83.5	352.8	257.9	315.4	27.5	175.2	100.0	471.1	36.1	122.3	2,458.2
1987/88	57.7	5.8	14.9	*	161.8	508.5	79.6	534.5	301.1	377.2	118.6	150.1	76.7	563.1	32.6	406.7	3,390.8
1988/89	62.7	*	*	*	131.2	786.9	77.4	729.8	143.8	261.2	88.5	77.3	47.9	492.9	13.5	401.9	3,321.7
1989/90	45.6	*	*	0.0	39.0	218.5	36.1	411.7	51.4	138.7	49.4	76.7	82.4	281.8	74.0	410.6	1,918.7
1990/91	58.2	1.5	10.6	0.0	161.0	287.8	49.5	289.9	344.7	320.4	108.0	106.9	58.5	319.6	61.1	497.5	2,675.3
1991/92	81.9	3.9	30.3	*	297.6	398.9	65.5	528.0	727.8	842.5	231.6	208.4	165.9	658.7	105.9	357.2	4,705.3
1992/93	31.6	*	8.2	9.9	142.3	277.9	66.4	502.2	260.2	544.8	213.7	128.5	216.8	446.7	93.6	145.1	3,089.4
1993/94	52.6	4.4	*	*	175.4	194.1	58.3	351.4	248.0	308.9	122.0	129.5	210.6	568.5	83.7	24.0	2,536.7
1994/95 ^a	57.0	0.0	*	0.4	105.6	219.2	82.6	288.6	228.8	184.2	44.0	110.5	138.1	374.1	57.8	*	1,921.7

^a Most recent year's data should be considered preliminary.

Table 4. Statistical Area A (Southeast Alaska) Dungeness crab catch in thousands of pounds by month and season, 1969/70 to present.

Season	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
1969/70	21.3	84.9	201.0	217.5	225.5	210.9	106.2	47.3	14.2	5.0	7.1	8.1	1,149.1
1970/71	11.1	37.0	168.5	150.4	157.1	122.6	68.6	35.9	9.3	5.6	4.6	*	776.6
1971/72	7.4	27.4	43.6	97.8	79.3	88.9	63.3	23.3	10.9	7.0	1.8	2.2	452.7
1972/73	4.2	30.5	38.6	167.2	167.7	83.6	49.5	31.5	16.7	3.5	1.4	*	597.6
1973/74	16.9	40.9	142.4	205.8	129.3	87.3	71.6	27.5	8.8	3.5	4.7	9.9	748.5
1974/75	24.8	21.5	135.5	167.1	135.0	85.0	53.9	27.6	26.5	6.3	13.7	16.8	713.7
1975/76	18.1	35.9	110.2	136.8	120.8	82.8	49.7	25.9	11.7	6.9	2.9	9.9	611.6
1976/77	Closed	Closed	105.9	206.1	89.9	46.1	32.0	10.9	11.0	4.1	*	Closed	512.3
1977/78	Closed	Closed	*	*	29.6	31.4	15.9	25.0	6.3	*	8.0	Closed	127.3
1978/79	Closed	Closed	126.4	206.9	152.7	104.6	70.4	43.3	18.6	18.2	*	Closed	750.3
1979/80	Closed	Closed	165.7	184.6	137.0	137.5	75.1	52.1	30.1	12.7	*	Closed	801.8
1980/81	Closed	Closed	62.7	157.1	122.2	69.9	36.3	30.2	15.1	8.6	*	Closed	512.2
1981/82	Closed	Closed	460.6	899.5	560.3	427.1	292.9	164.2	67.7	28.4	34.2	Closed	2,935.0
1982/83	Closed	Closed	941.6	1,048.3	735.3	450.4	219.7	145.9	87.0	16.2	22.9	Closed	3,667.4
1983/84	Closed	Closed	738.1	451.7	336.2	267.6	146.6	84.5	45.8	30.9	14.7	Closed	2,150.7
1984/85	Closed	Closed	0.0	678.0	494.9	273.6	156.2	139.3	58.6	27.0	15.1	Closed	1,843.5
1985/86	Closed	Closed	362.5	847.8	440.0	Closed	380.1	177.6	55.7	30.7	20.1	Closed	2,314.6
1986/87	Closed	Closed	273.0	796.4	446.5	Closed	460.7	274.5	100.3	58.0	48.9	Closed	2,458.2
1987/88	Closed	Closed	571.9	1,185.9	639.7	Closed	478.9	281.6	109.6	63.1	60.2	Closed	3,390.8
1988/89	Closed	Closed	775.4	1,401.8	573.2	Closed	312.0	178.2	43.8	17.4	20.0	Closed	3,321.7
1989/90	Closed	Closed	500.6	820.9	267.4	Closed	207.0	96.0	15.2	*	*	Closed	1,918.7
1990/91	Closed	Closed	582.3	926.3	360.4	Closed	499.3	281.6	8.6	1.8	15.0	Closed	2,675.3
1991/92	Closed	Closed	987.4	1,821.5	826.1	Closed	716.5	324.1	17.1	7.2	4.0	Closed	4,705.3
1992/93	Closed	Closed	935.2	1,360.7	503.8	Closed	177.1	97.6	9.6	*	4.0	Closed	3,089.4
1993/94	Closed	Closed	660.5	1,106.1	398.1	Closed	232.8	116.9	11.7	4.7	5.8	Closed	2,536.7
1994/95 ^a	Closed	Closed	553.3	712.0	277.5	Closed	249.5	99.0	28.9	*	*	Closed	1,921.7

^a Most recent year's data should be considered preliminary.

Table 5. Dockside length frequency sampling summary for Dungeness crab in Southeast Alaska, 1975/76 to present.

Season	Number of Boats Sampled	Number of Crab Sampled	Carapace Length		Recruitment				
			Average	Range	% Recruits ²	% PR +1 ³ %	PR +2 ⁴	% PR +3 ⁵	% Skip Molts ⁶
1975/76	20	2,029	180.6	154 - 217	77.7	21.6	0.8	0.0	10.8
1976/77	3	304	177.5	159 - 204	77.2	22.1	0.7	0.0	20.7
1977/78	6	624	178.7	159 - 211	44.7	48.0	7.1	0.2	52.1
1978/79	11	1,130	180.0	161 - 213	72.7	24.7	2.5	0.1	20.4
1979/80	4	422	181.3	160 - 217	76.0	22.8	1.2	0.0	15.2
1980/81	5	447	179.8	161 - 207	81.1	17.1	1.4	0.5	10.3
1981/82	12	1,264	182.6	160 - 215	63.0	34.4	2.6	0.0	25.9
1982/83	9	849	187.2	164 - 218	57.0	35.4	7.4	0.1	21.9
1983/84	11	1,205	185.7	159 - 225	59.7	32.7	7.3	0.3	18.8
1984/85	29	2,933	177.5	156 - 228	76.7	20.9	2.4	0.0	18.4
1985/86	26	2,650	177.7	157 - 228	87.3	10.7	1.9	0.2	7.9
1986/87	29	2,933	177.5	156 - 228	76.7	20.9	2.4	0.0	18.4
1987/88	64	6,267	178.3	160 - 213	73.3	21.8	4.7	0.2	21.1
1988/89	79	7,695	182.0	157 - 225	62.3	32.6	4.9	0.3	26.4
1989/90	75	7,225	180.9	157 - 220	57.8	35.8	6.3	0.1	34.3
1990/91	165	16,285	174.8	156 - 223	86.7	11.7	1.5	0.1	12.1
1991/92	172	16,900	178.6	153 - 230	86.3	13.1	0.6	0.0	8.7
1992/93	147	14,358	180.3	157 - 215	76.8	22.0	1.1	0.0	15.7
1993/94	75	7,048	181.7	155 - 226	76.7	21.6	1.6	0.0	12.3
1994/95	76	7,528	176.3	160 - 222	85.7	12.9	1.3	0.1	10.2

¹ District 16 is included in Southeast in all data presented; by regulation it was part of Yakutat until 1983.

² Recruits = all new and soft shell crab ³165 mm and £ 193 mm carapace length.

³ PR +1 = all new and soft shell crab ³ 194 mm and £ 222 mm, and old & very old shell crab ³ 165 mm and £ 193 mm, carapace length.

⁴ PR +2 = all new and soft shell crab ³ 223 mm and £ 252 mm, and old ³ 194 mm & £ 222 mm, and very old ³ 165 mm and £ 193 mm, carapace length.

⁵ PR +3 = all new and soft shell crab ³ 223 mm and all old ³ 252 mm and £ 194 mm, and very old ³ 222 mm and £ mm, carapace length.

⁶ Skip molts = all old and very old crab.

Table 6. Dockside interview sampling summary for Dungeness crab in Southeast Alaska, 1975/76 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight		Estimated No. of Crab Harvested	Percent of Harvest Sampled
						Average	Range		
1975/76	0								
1976/77	0					2.11	2.11 - 2.11	242,809	0.10
1977/78	0					2.19	2.10 - 2.27	58,148	1.07
1978/79	0					2.18	2.03 - 2.52	344,167	0.33
1979/80	0								
1980/81	1	43	375	8.72	8.72 - 8.72				
1981/82	1	299	2,000	6.69	6.69 - 6.69				
1982/83	4	2,475	13,000	5.81	4.29 - 7.27	2.66	2.66 - 2.66	1,378,736	0.01
1983/84	6	1,680	1,540	4.42	2.60 - 6.25	2.41	2.19 - 2.69	892,403	0.14
1984/85	1	260	650	2.50	2.50 - 2.50				
1985/86	19	2,510	4,881	9.07	4.60 - 14.44	2.07	1.70 - 2.55	1,118,173	0.24
1986/87	24	5,061	22,008	6.33	2.67 - 11.52	2.03	1.70 - 2.33	1,210,988	0.24
1987/88	60	11,602	40,406	5.66	1.11 - 11.59	2.01	1.68 - 2.40	1,686,498	0.37
1988/89	76	16,312	79,705	5.02	0.27 - 34.05	2.22	1.60 - 2.59	1,496,277	0.52
1989/90	92	14,530	45,779	2.88	0.24 - 9.62	2.10	1.60 - 2.73	913,644	0.79
1990/91	141	32,201	140,793	4.19	0.47 - 9.74	1.96	1.58 - 2.23	1,364,928	1.19
1991/92	175	54,269	270,611	5.07	1.03 - 13.89	2.13	1.74 - 2.59	2,209,068	0.77
1992/93	151	35,756	158,117	4.63	0.86 - 14.03	2.20	1.88 - 2.74	1,404,272	1.02
1993/94	78	16,541	60,508	3.83	0.71 - 12.50	2.28	1.71 - 2.82	1,112,588	0.63
1994/95	80	17,506	62,871	3.57	0.80 - 8.61	2.05	1.82 - 2.64	937,409	0.80

¹ District 16 is included in Southeast in all data presented; by regulation it was part of Yakutat until 1983.

SECTION 3

1994/95 SOUTHEAST ALASKA TANNER CRAB FISHERIES

REPORT TO THE BOARD OF FISHERIES
1994/95 SOUTHEAST ALASKA TANNER CRAB FISHERIES



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October 1995

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INTRODUCTION

The Tanner crab (*Chionoecetes bairdi*) is a brachyuran (true) crab that inhabits temperate and subarctic waters of the eastern Pacific Ocean from off northern California to the Bering Sea. *C. bairdi* and the closely-related snow crab (*C. opilio*) support significant Alaskan commercial fisheries, but only *C. bairdi* is known to be present in Statistical Area A (Southeast Alaska) of Region 1.

The Southeast Alaska fishery occurs primarily in the waters of the Alexander Archipelago (south and east of Cape Fairweather and north of Clarence Strait). State waters in Statistical Area A are divided into Districts 1 through 16, with lower district numbers in the south and higher numbers in the north. Although fishing occurs throughout Southeast Alaska, effort concentrates in the more northern districts (8 through 16).

Southeast Alaska has been a superexclusive registration area for Tanner crab since 1985. Vessels registered to fish in Southeast Alaska can fish for this Tanner crab only in this area during the registration year (August 1 - July 31).

In Southeast Alaska, the Tanner crab fishery employing pot gear is under limited entry, with a maximum of 83 permits in four permit categories (K49, K59, K69, and T19), some of which are non-transferable. This was the first Tanner crab fishery in the state to be placed under limited entry. Thirty-six permanent permits have been assigned, with 72 interim-use permits still being evaluated for inclusion under the 83 permit limit. Ring net gear (CFEC permit category T10) is also legal in Southeast Alaska and is not under limitation.

Until the late 1980s, most of the vessels used for this fishery were small, generally ranging from 35 to 50 feet in keel length, though there were a few vessels with keel lengths up to about 80 feet. Since then, the rapidly intensifying fishery has promoted use of progressively larger vessels during the past few seasons. Almost all the vessels have live-tanking capability. Most of the vessels in this fishery are used primarily for other fisheries during the rest of the year. Winter crabbing for Tanner and other crabs is generally pursued as a secondary source of income.

Currently, lighter cone or pyramid nesting pots that occupy less deck space are more commonly used than the heavier, seven by seven foot stacking pots originally designed for king crab in the Bering Sea fisheries. The choice of gear may be predicated on the species to be targeted during mixed-species fisheries for Tanner and brown king crab, with the use of conical or pyramid pots favored for Tanner crab.

Current regulations in Southeast Alaska include harvest of only male Tanner crab larger than 5 1/2 inches (140 mm) in carapace width, a winter season, and a guideline harvest range (GHR) of 0 to 2,000,000 lbs.

Actual stock composition and abundance can only be inferred because no preseason stock assessments are conducted for this species and estimation by removal by the commercial fleet is limited to only the legal portion of the stock.

The Tanner crab fishery is heavily dependent on recruits (all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width), typically harvesting over half the available crab in the same season that they molt to legal size. It is difficult to clearly discern interannual variations in recruitment strength from commercial catch data because the actual effectiveness of the fleet is continually increasing.

Size composition of Tanner crab caught incidentally during the summer red king crab survey was once used as a general check of this projection of the strength of the recruitment. However, correlations between survey-caught Tanner crab and the performance of the commercial fleet during the ensuing season have been poor. In recognition of the limitations in this data, the maximum allowable catch is often set lower than the 2,000,000 lb ceiling permitted by regulation. The maximum allowable catch is intended to allow harvest of between 40% and 60% of the legal crab available.

Principal management objectives for this fishery are to attain the allowable catch level, while minimizing pulse fishing, sorting of juveniles and females, and fishing during molting and mating periods. If a major district needs to be closed for any of these reasons, the entire registration area is closed. Conservative management tends to manage the entire fishery based on catch rates and total catches in the most heavily-fished districts; Districts 10, 11, and 14.

Inseason Management Activities

Inseason management activities include an extensive port sampling program. Size and shell condition data are taken for legal male crab as they are delivered to processors. Skippers are interviewed to collect fishing location and effort information. By the end of the first week of a season, port sampling provides good indications of size composition of the legal segment of the population and percent of the fishery comprised of the recruit class. Port sampling is the main management activity undertaken during the season.

Fish tickets are analyzed to estimate effort, cumulative catch rate, and the total catch to date. As the first landings occur during the first week of a fishery, fish ticket information is used to estimate the length of season necessary to attain the appropriate harvest level. Multiple landings from the same vessel, which start to occur by the second week of the fishery, are used to develop a cumulative catch curve to estimate exploitation rate and appropriate season length. Use of fish tickets for these purposes is limited to fisheries longer than ten days in length because multiple landings per vessel spaced over time are required and shorter fisheries result in fewer landings. There is also a limitation in the speed at which catch data can be obtained from the fleet that complicates in-season management of short seasons.

Mandatory logbooks detailing daily fishing activities and catch per pot were initiated in 1993/94 to obtain better exploitation rate estimates. The logbooks replaced fish ticket information for this purpose when the seasons began to shorten to the point where the fish ticket data was inadequate. Transfer rate of the data from the fishing vessel to the fishery manager is insufficient to use logbook information to estimate exploitation and catch rates during short seasons. Their primary use is for more accurate post-seasonal estimates of the probable exploitation rate than can be obtained from fish tickets.

Limited onboard sampling is conducted sporadically to collect specific in-season information needed for management. Available resources are more often concentrated on port sampling.

Aerial overflights by small plane are conducted during the first week of the fishery to map the distribution of the fleet and to document the effort on the most heavily fished grounds. By that time, fishing effort is generally concentrated on the most productive grounds. The distribution of vessels and gear is indicative of the relative contribution of an area to the overall catch and is a check on fish ticket and logbook data reported by crabbers.

In the future, as the fishery intensifies, management will be forced to rely more heavily on a predetermined season length, rather than active inseason management based on fleet performance. When the season shortens to less than 10 days, inseason management as has been conducted for the past decade will no longer be possible. Inseason management activities will then be limited to port sampling for size and shell condition of crabs delivered to processors.

Management by Major Fishing Ground

In the past, harvest and sampling data were both summarized by district. However, major fishing grounds do not often coincide with district boundaries. To better define fishing patterns, three major, geographically distinct fishing grounds were defined. These were designated Icy Straits, Lynn Canal/Upper Stephens Passage, and Frederick Sound/Lower Stephens Passage grounds. District and subdistrict landings within their boundaries were summarized. If resources to conduct surveys by fishing grounds eventually become available, it may be possible to establish harvest rates and quotas by ground. This would permit harvests at, or near, the most appropriate rate for each fishing ground, rather than the present system whereby the weakest of the major grounds determines the length of the season. Conceivably, this would allow a higher total harvest and more management flexibility.

To outline proposed future management direction and needs, a draft comprehensive management plan was first presented to the Board of Fisheries in 1993. The Board declined to consider it at that time because of technical legalities. The draft plan will be resubmitted as the legal problems are resolved.

FISHERY DEVELOPMENT AND HISTORY

General Traditional Pot Fishery

Although Tanner crab landings have been reported in Southeast Alaska since the early 1960's (Table 1), they were not deliberately targeted until the early 1970's. Tanner crab were commonly discarded by crabbers well into the mid-1970s, when they were incidentally caught with red king crab.

Since the 1968/69 season, the Southeast Alaska fishery has produced an average of 1,512,400 lbs per season. Regardless of the length of the seasons, most of the harvest was historically taken between January through April of each year in Districts 110, 111, and 114 (Table 3). These districts generally correspond geographically to the waters of Frederick Sound, Stephens Passage, and Icy Strait, respectively. The 1970s were characterized by gradual fishery development and corresponding managerial response.

However, the pace changed with the shortened 1981/82 season, when 74 vessels landed a record 3,302,211 lbs between December 1, 1981 and April 16, 1982. About two-thirds of this total was reportedly caught in Icy Strait, where the previous long-term, average harvest had been about 725,000 pounds. Climbing demand for Tanner crab, an earlier season opening in Southeast Alaska than in other registration areas to the north and west, open registration, and the record landing in 1981/82, attracted 97 vessels to the fishery in the 1982/83 season. Many larger crab vessels on their way to Kodiak and Bering Sea fisheries fished in Southeast Alaska.

The season was closed after two weeks by emergency order based on extrapolation of early onboard observer catch rate information from the fishery in Icy Straits. Both the fishing effort and exploitation rates were extremely high. The fishery could not be managed in-season and although the fishery was closed by emergency order, the stocks were depressed in District 14 for many subsequent years.

There was no fishery in calendar year 1983. During its Spring meeting early in the year, the Board of Fisheries changed the season opening date in Southeast Alaska to February 10 to match the rest of the state. This action, in itself, discouraged larger vessels from fishing in Southeast Alaska during the 1983/84 season, when more lucrative grounds to the north and west were opening at the same time.

Locally-based vessel operators and processors also requested limited entry status for the king and Tanner crab fisheries in Southeast Alaska. The State initiated a permit moratorium on January 1, 1984.

The Commercial Fisheries Entry Commission instituted a complex system of combined permits for the three species of king crab and Tanner crab. The full impact of the moratorium was not felt until the 1985/86 season because many prospective entrants to the 1984/85 fishery had exercised the two year option on permit renewals and obtained their permits prior to January 1, 1984, the cutoff date for the moratorium on new permit issuance. Moreover, the CFEC was forced by their regulatory guidelines to set the number of permits to be allowed at 83, which was a relatively high level. This proved to have long-term implications, such as progressively shortened seasons as the efficiency of the fleet progressively increased.

Southeast Alaska was designated a superexclusive registration area during the spring Board meeting in 1985. This action was in continued reaction to the frantic 1982/83 season. It was intended to discourage operators of larger vessels, whose primary sources of income were from crab fisheries in other registration areas, from fishing in Southeast Alaska.

In 1986, the Board adopted a regulation to restrict the boundaries of Statistical Area A to those waters of the state between Dixon Entrance and Cape Fairweather. A new statistical area, Statistical Area D, was established for those waters between Cape Fairweather and Cape Suckling. Major restructuring of the Alaska Administrative Code was necessary to accommodate this change, and implementation of the Board's action was delayed until early in 1987.

The catch has fluctuated between 1,563,000 and 2,488,000 lbs during the past five seasons (Table 1). Catch analysis during recent seasons suggested that these levels of harvest generally resulted in overall harvest rates between 50% and 60%, which is sustainable only while recruitment levels remained stable or high. There is a risk with allowing this exploitation level because the department lacks a program to detect possible recruitment failure until it is demonstrated by depressed catch rates during the initial week or so of the commercial fishery.

Recent seasons, lasting two weeks or less, have resulted in a concentration of effort on the most productive grounds. Many marginal grounds are ignored, as searching for small, though productive, areas becomes increasingly difficult to economically justify.

Experimental Pot Fishery

In 1988, in response to requests by fishermen, the Board adopted proposals for exploratory fisheries for Tanner and red king crab to assess the status of small stocks that were not fished during the short, regular seasons. In areas from which low catches or no landings had been reported, fishing was allowed for these two species, from July 1 through March 31, under conditions of a special permit. Procedures for managing the experimental fisheries, seasons, and other criteria were established by the Board.

In general, these fisheries were conducted when potential for overlaps with traditional fisheries were minimal; that is, during periods between the traditional fishing seasons for red king and Tanner crab. A major assumption was that these fisheries would be of such low intensity that mortalities associated with fishing during known molting and mating periods would be minimal. A special permit and logbook were required because the primary purpose of this fishery was to provide assessments from areas that were not surveyed by the department.

After two seasons of exploratory fishing, it was obvious that interest in these fisheries was low, catches were poor, and no major unexploited populations of either species had been found. Also, flagrant abuses of permit conditions and violations of regulations had occurred. As a result, the Board decided during its winter meeting in 1990 to revoke the regulations that provided for these fisheries.

Ring Net Fishery

With the beginning of the pot permit moratorium on January 1, 1984, newcomers who wished to commercially harvest Tanner crab were limited to ring net gear, which was also defined in the regulations as legal gear. New ring net permits could be obtained because the permit moratorium was specific to pot gear. Use of ring nets is most attractive when the price of crab is high; their efficiency is limited and their use is labor-intensive.

The number of ring net fishermen reporting landings increased from five in the 1984/85 season, peaked at 89 in the 1989/90 season, and gradually declined to 44 by the 1993/94 season. The total climbed again to 82 for the 94/95, season in expectation of higher prices. Total ring net catch increased from 1,451 lbs in the 1984/85 season to 100,896 lbs, or 5.11% of the total catch, during the 1989/90 season. Ring net catch has since fluctuated between 33,544 and 49,568 pounds.

During the 1990 winter meeting, the Board passed a number of restrictive regulations intended to cap the ring net portion of the total Tanner catch at a maximum of four percent. Since adoption of these restrictions, ring net catches have consistently been below this level.

Bitter Crab Syndrome

By the 1984/85 season, a problem of astringent taste in some Tanner crab section meat had been reported by processors. At the time, most management staff thought it was associated with a normal pre-molt condition in Tanner crab, since the fishery during that period overlapped the initial phases of the annual molt in some areas. A few blood samples were taken to study this problem during the 1985/86 season. It was discovered that the bitterness in some crab samples was associated with a parasitic, dinoflagellate. It has been tentatively identified as a member of the genus *Hematodinium*.

Symptoms associated with bitter crab disease (BCD) had been reported since at least the early 1980's, with some anecdotal references to off-tasting Tanner crabs dating to the mid 1970s. It has since been reported from most major fishing grounds in Southeast Alaska and sporadically from other areas as well. Its definitive identification in Bering Sea Snow crab (*C. opilio*) stocks, with its economic implications, has accelerated research on *Hematodinium*.

Biologically, the disease is significant because it is thought to be terminal, killing an infected crab within the life cycle of the infective organism, currently estimated to be between one to one and one-half years. It severely reduces the reproductive capacity of infected crabs. Infected crabs are not as robust as healthy ones. The disease may be spread by free-living, infective spores released by dying crabs in the late fall and early winter and may also be infective to some degree in the vegetative stage. The vegetative stage of the organism remains viable for weeks in plain seawater.

Crabs in later stages of infection cannot be marketed because of the astringent taste and soft, chalky texture of the meat. These crab can be identified on the fishing grounds by external symptoms such as abnormal pink or pale coloration of their abdomens and the ventral sides of their walking legs. Infected crab continue to be transported out of the areas in which they are caught for two primary reasons. Many vessel operators or their crews cannot or will not differentiate between infected and healthy crab and retain all legal crab. Also, the value of Tanner crab is currently sufficiently high that even those fishermen who can sort infected crab retain all legal-sized male crab for the buyer to sort.

Currently, the season occurs during a period that is generally felt to be the time of optimum meat condition in the majority of heavily fished stocks. Unfortunately, the season also occurs during a period when crabs infected during the previous year have developed advanced symptoms of the disease, including the characteristic bitter taste.

Sorting rates reportedly as high as 80% from some areas, and recent increases in reported pounds of deadloss (mostly attributable to disposed diseased crab) indicate the magnitude of the problem. There are no industry-wide standards, procedures, or regulations for safe disposal of infected crabs. Control measures are limited to voluntary retention of bitter crab for later disposal in upland landfills, heat or chemical disinfection and marine disposal, or hard freezing and marine disposal. Viability of the resource is still being risked by continuing transport and handling of infected crab.

A possible partial solution to the transport and disposal problem would be to schedule the season during an earlier stage of the course of infection. Presumably, there is a period during October or early November during which most crab infected the previous year have died and the majority of the newly infected crab have not yet developed unpleasant taste. A harvest period between October and November is acceptable from a biological standpoint for the harvest of Tanner crab. Preliminary analysis of crab samples from some bays indicate meat recoveries high enough for crabs to be marketable during this period. Small scale openings or test fisheries may be appropriate means of harvesting and utilizing crab from areas with high infection rates.

Although symptoms of the disease are less pronounced from October to early November, they are not absent. Meat recovery is lower during October and November than in February. Crab are not as readily caught because they are deeper and less aggregated during October and November than later in the winter. Despite the disadvantages, a season that minimizes waste and possibly hazardous disposal of infected crab may preferable to the current season.

The state has taken or considered measures to minimize the risks of fishing on infected stocks. Part of District 15 was closed in 1988 to prevent fishing on crabs heavily infested with bitter crab disease. This resulted in reduced fishing opportunity for brown king crab and a total closure has not been imposed on the fishery since then.

In the 1992/93 season, product transfer restrictions were imposed on vessels fishing in District 15. Any Tanner crabs caught in District 15 could not be transferred to tenders in other districts. This requirement was intended to reduce handling of bitter crab. Enforcement of the restriction was difficult. There have been no restrictions to fishing in District 15 since that season.

A Tanner crab fishery to evaluate the feasibility of an earlier season to improve the marketability of Tanner crab infected with bitter crab disease was approved by the Board in 1990. Subsequently, it was determined that this fishery would not be manageable and would not provide the information for which it was intended. As a result, it was canceled by emergency order and subsequent Board of Fisheries action.

More recent efforts for control of bitter crab disease and minimization of risks of its spread have centered on applied research on means of effectively and economically sterilizing infected crabs. Currently, known methods include boiling and freezing. Both effectively kill the bitter crab organism. Boiling is preferred by processors who routinely cook at least a portion of their product and freezing is used by those who supply the green (raw) frozen sections market.

REGULATION DEVELOPMENT

The first regulations pertaining specifically to Tanner crabs were adopted in 1954. Prior to 1954, there was no formal recognition of a commercial fishery for Tanner crabs in Southeast Alaska.

Fishing Seasons and Periods

Prior to 1963, there were no seasons designated for Southeast Alaska. Tanner crab could be caught at any time during the year. In 1963, the season was set at January 1 through December 31. The season was first shortened in some areas in 1969, largely to facilitate management of the red king crab fishery.

In 1974, the season starting date was changed to September 1 and the season was closed by emergency order on May 15, 1974. During much of the 1970s, the season started on September 1 and closed by emergency order in April or early May. In 1981, the season started on December 1, 1981 and was closed on April 16, 1982 by emergency order after a record harvest of over 3,000,000 lbs. In 1982, the season was closed by emergency order after two weeks because of unprecedented effort in the fishery. As a result, no fishing occurred in calendar year 1983. In 1983, the season was changed to start on February 10, 1984.

In 1987, the season starting date was changed to January 15, in part to be consistent with the opening date in most of the rest of the state. The season changed again in 1989, starting on February 15, to reduce conflict with the January herring fishery. Since 1989, the season starting date has been February 15 and the length of the season has progressively shortened to about two weeks. Even during the earlier, longer seasons, most of the catch was taken between late winter and early spring because conflicts with other fisheries were minimal then and the crab were generally more aggregated in shallower, more protected waters (Table 2).

Size Restrictions

Size limits started in 1976. The five and one-half inch, maximum carapace width limit was implemented in 1976 and has been the same since. This size permits nearly all males at least one season, and possibly two, of reproductive activity prior to attainment of legal size.

Quotas and GHRs

A Guideline Harvest Level (GHL) of 1,750,000 lbs was first set in 1976. It was revised downward to a Guideline Harvest Range (GHR) of 750,000 to 1,500,000 lbs in 1978. In 1979, the GHR was revised to 750,000 to 2,500,000 lbs. In response to the locally high harvest rates and the subsequent effects on the stocks in Icy Strait in the early 1980s, the GHR was then revised downward to between 0 and 2,000,000 lbs in 1985. This range has been sufficient to provide a relatively stable harvest up to the most recent season.

Gear Restrictions

Gear restrictions, first imposed in 1954, permitted use of pots or trawl gear to harvest Tanner crab. Ring nets were added as legal gear in 1960. Diving was added in 1966. Shrimp beam trawls were specified as legal gear while diving was rescinded in 1969. Although legal, trawl gear was rarely used in this fishery during this period. Tanner pot gear was further restrictively defined in 1969, with four inch tunnel heights and buoys having to be marked with the vessel registration number preceded by the letter "T". The next major changes occurred in 1973, when in-water storage restrictions were adopted, the "T" buoy marking requirement was dropped, and a pot limit of 60 was implemented for all inside waters. In 1974, tunnel heights were increased to five inches and Southeast and Yakutat were combined into a single registration area.

A major revision of the shellfish regulations was undertaken in 1975. Starting in 1976, escape panels have been required. In Southeast Alaska south of the latitude of Cape Fairweather, Tanner crab pots had to have an entire vertical seam laced with biodegradable twine. In 1977, a 100 pot limit was put into effect in Southeast Alaska. Trawl gear was dropped as legal gear in 1977, leaving only pots and ring nets as options. In 1978, the vertical seam requirement was modified to be more flexible and applicable to different types of gear and tunnel eye definitions were clarified. Buoy stickers were required since 1979 to facilitate enforcement of pot limits.

Since 1981, long-term, in-water storage of gear has been prohibited. In 1985, four and 3/4 inch diameter escape rings (two per pot) were required in each Tanner pot to reduce retention and sorting of small males and females. Pre-season gear storage was prohibited. Vessels and persons registered for the commercial Tanner fishery could not fish with any non-commercial gear for 14 days prior to the start of the season. Since 1987, pre-season gear storage for a period of 10 days before the start of the season was permitted under some conditions. In 1987, escape rings were to be located within eight inches of the bottom of pots.

Between the mid-1980s and 1990, use of ring nets grew because pot permits were under moratorium. In 1990, the number of ring nets was limited to 20 per vessel, ring net marking requirements were defined, and long-lining of ring nets was prohibited. Vessels could not concurrently be registered for both ring nets and pots. Wording was incorporated to prevent use of ring net gear to conduct preseason test fishing under the guise of subsistence fishing. Ring nets were defined in more detail and limits set on their size.

Other Regulations

Retention of soft-shelled crab was expressly prohibited from 1954 through 1968. Hold inspections were initiated in 1974. Also in 1974, Southeast Alaska and Yakutat were combined into a single nonexclusive registration area. In 1975, preseason hold inspections and vessel registrations were required. A preseason registration deadline was in effect in 1978. The first allocative area closure of the commercial fleet in favor of the personal use fishery was in Gastineau Channel. Chemical baits or lures were permitted to attract shellfish. In 1979, the hold inspection requirement was dropped because it was considered unnecessary.

In 1981, Tanner crab had to be landed within 24 hours of the season closure and in-water pot storage was permitted for 72 hours after the closure. Fritz Cove and Auke Bay were closed to commercial fishing. In 1982, the commercial closure was repealed, along with the closure of Gastineau Channel. In 1983, the Board passed proposals for establishing Southeast Alaska and Yakutat as a superexclusive registration area, and a moratorium on new permits was requested by permit holders. Vessels could have only one legal limit aboard, in storage, or fishing during the season and had 72 hours to deliver crabs after the season closure. Gastineau Channel was closed again to commercial fishing. In 1984, fishing with pots or storing pots in the water 10 days before the start of the season was prohibited. A moratorium on new pot permits was implemented in 1985. The delivery period was shortened to 24 hours after the close of the season. Post-season pot storage was allowed for seven days after closure of the entire registration area or 72 hours after closure of a portion of the area. Starting in 1986, a 10 day pre-season, in-water storage period was allowed, with some restrictions. During the spring of 1991, Southeast Alaska and Yakutat were designated separate registration areas, A and D, respectively.

1993/94 SEASON SYNOPSIS

The 1993/94 season opened at 12:00 noon AST, on February 15, 1994. It closed by Emergency Order (1-C-3-94) 17 days later at 12:00 noon AST, on March 4, 1994. At the end of the opening, 1,913,490 lbs of marketable crab, plus 83,538 lbs of deadloss, for a total of 1,997,028 lbs, had been caught. Most of the reported deadloss was attributable to rejected bitter crab. At \$2.00/lb, the good product was worth at least \$3,827,000, exvessel. The economic loss represented by the deadloss was conservatively set at \$167,000. Extensive sorting was conducted on the fishing grounds and the reported bitter crab deadloss is probably a fraction of the unmarketable crab handled by the fleet.

The total catch was much closer to the 2,000,000 pound GHC than expected, considering weather conditions during the fishery. Management intent had been to limit the catch to an intermediate level between 1,500,000 and 2,000,000 pounds. Catch rates and total catch were a clear indication that the fleet is currently composed of vessels and participants fully capable to attaining the harvest ceiling in under two weeks, regardless of weather.

A total of 126 permits were fished during the season. They included 82 pot permits and 44 ring net permits. A total of 37,146 lbs, or about 1.86% of the Tanner crab catch, were reported landed with ring net gear. Marketable crab comprised 35,631 pounds of this total and 1,515 pounds were deadloss, mostly due to bitter crab. The relative percentage of ring net catches during the past few seasons remains well within the 4% of the total catch allocated by the Board to the ring net fishery.

Slightly more than 1,586,500 lbs (79.4%) of the entire Southeast Alaska catch was reported caught in Districts 110, 111, and 114. This distribution of catch is somewhat typical of recent seasons (Table 3). The success or failure of the fishery now hinges on these increasingly crowded, heavily fished districts. Trends in landings by district over the past few seasons suggest that the effort cycles between these major districts. Some of the increasing fishing intensity in the Tanner crab fishery and the changing distribution patterns of the fleet may be attributed to the gradual decline and currently depressed status of the brown king crab fishery, which opens concurrently with the Tanner crab fishery in Southeast Alaska.

A summary of the catch by fishing area indicated that about 1,657,815 lbs (83.0%) of the total season's harvest was taken from the three major fishing areas; Icy Strait, Stephens Passage, and Frederick Sound (Table 5). In the future, management and reporting will be done on the basis of fishing ground, rather than district, since fishing ground boundaries are assumed to more closely approximate major stock boundaries.

Weather was a major detrimental factor during the first full week of the season, with much colder and windier conditions than usual resulting in rapid accumulation of sea ice on vessels. Despite the extreme conditions, much of the total landings were caught during the first week. Weather limited the fleet in many areas to more protected bays and inlets. Particularly in southern District 11, this resulted in heavy concentrated effort in some mainland bays by vessels unable to move to more traditional fishing grounds due to foul weather. The catches recorded from some of these bays was unprecedented and may be indicative of previously unexploited crab stocks. Fishing in upper District 11 in Lynn Canal and the west side of Douglas Island and much of District 15 was impossible for the first week of the fishery. Lower season landings from these areas reflect the weather conditions that extended over the entire northern half of Southeast Alaska during this period. A higher proportion of the total catch than usual was also reported from the Frederick Sound fishing area as an indirect result of vessels inability to access fishing areas in upper Stephens Passage and Icy Strait (Table 5).

Aerial surveys were flown over most of the northern fishing grounds on March 3, 1994, after abatement of the high winds and low temperatures to document effort and location of fishing vessels. Vessels had moved gear into upper Stephens Passage and more exposed areas in Icy Strait by the end of the season.

Nine processors conducted primary on-shore processing. No catcher-sellers reported sales this season. The threat of sections-only processing requirements, prompted by PSP testing by ADEC, probably deterred catcher-seller activities. The major portion of the catch was processed by processors based in Petersburg, with purchases also reported by plants in Juneau, Hoonah, Gustavus, Pelican, and Sitka.

As has been the case for the past few seasons, most of the product was processed "green", which consisted of butchering, cleaning, dipping in anti-oxidant, and freezing raw sections. The anti-oxidant used to prevent discoloration of the crab blood in uncooked section packs is not approved for domestic use. Most of the product was shipped to Japanese and other Asian markets. A small amount of crab was sectioned, cooked, and frozen for surface shipment to domestic and foreign markets. Some crab were air-shipped live to Japanese markets through Anchorage.

Port Sampling Data

Combined port sampling information for the entire region indicated that the average size of crabs was the second smallest on record since the 1970/71 season, when port sampling was initially conducted. It was the lowest in over twenty years. The percent of recruits, representing crabs entering the fishery for the first time, was well above the ten year average (Table 4). Catch per unit effort was estimated to have been higher this season than the ten-year average but the average weight of crab was well below the ten-year average (Table 6). Port sampling information was summarized by fishing grounds; Frederick Sound, Icy Strait, and Stephens Passage. All other areas were combined for reporting purposes. Size frequencies and average weights from catches landed from these areas were sampled when vessels delivered to shore-based processors or tenders. The average sizes and weights of crabs reported from all three major grounds were lower than average (Tables 7 - 12).

The port sampling data, combined with the catch statistics, suggest that the overall abundance of crab is generally stable despite the high estimated exploitation rate. At least for this season, the total catch was probably slightly in excess of what would have been appropriate.

1994/95 SEASON SYNOPSIS

The 1994/95 season opened at 12:00 noon AST, on February 15, 1995. It closed by Emergency Order (1-C-8-95) 11 days later at 12:00 noon AST, on February 26, 1995. At the end of the opening, 2,335,678 lbs of marketable crab, plus 151,925 lbs of deadloss, for a total of 2,487,603 lbs, had been caught. Most of the reported deadloss was attributable to rejected bitter crab. At \$3.50-\$3.75/lb, the marketable product was worth at least \$8,175,000, exvessel. The economic loss represented by the deadloss was conservatively set at \$532,000. The documented bitter crab deadloss was probably a fraction of the unmarketable crab encountered by the fleet. However, processors began to accept bitter crab for sterilization and disposal.

A total of 173 permits were fished during the season. They included 82 pot permits and 91 ring net permits. A total of 73,576 lbs (3.0% of the total Tanner crab catch), were reported landed with ring net gear. This percentage approximates the relative percentage of ring net catches during the past few seasons and remains well within the 4% of the total catch allocated by the Board to the ring net fishery.

Slightly more than 2,086,700 (83.9%) of the entire Southeast Alaska catch was reported caught in Districts 110, 111, and 114. This distribution of catch is somewhat typical of recent seasons (Table 3). The success or failure of the fishery now hinges on these increasingly crowded, heavily fished districts. Trends in landings by district over the past few seasons suggest that the effort cycles between these major districts. The recent decline of the brown king crab fishery, open concurrently with the Tanner crab fishery in recent years, has accentuated effort on Tanner crabs.

A summary of the catch by fishing area indicated that about 2,176,742 lbs (87.5%) of the total season's harvest was taken from the three major fishing areas; Icy Strait, Stephens Passage, and Frederick Sound (Table 5). In the future, management and reporting will be done by fishing ground, rather than district.

Weather was not a major factor during the season. As in most past seasons, much of the catch was landed during the first week. Particularly in southern District 11, there was heavy effort in some mainland bays as a direct result of unexpectedly good catches made there during the previous season. Moderate weather conditions permitted aerial surveys to document pot and vessel locations in northern districts on February 17.

Ten processors conducted onshore, primary processing. Catcher-sellers, permit holders who sold whole crab to the general public, were severely constrained by shorter seasons, high prices being paid by shore-based processors, and the possibility of being forced to sell sections if PSP levels were above acceptable levels for sale of whole crab. Most of the catch was processed by four processors based in Petersburg. The remainder was processed in Sitka, Pelican, Hoonah, Juneau, and Gustavus.

As has been the case for the past few seasons, most of the product was processed "green", which consisted of butchering, cleaning, dipping in anti-oxidant, and freezing uncooked sections. The anti-oxidant used for some years now to prevent discoloration of the crab blood in this section pack is still not approved for domestic use and most of the product was shipped to Japanese and other Asian markets. A small amount of crab was air-shipped live to Japanese markets through Anchorage.

Port Sampling Data

Combined port sampling information for the entire region indicated that the overall average size of crabs was just slightly below the ten year average and the percent of recruits, representing crabs entering the fishery for the first time, was well above the ten year average (Table 4). Catch per unit effort was estimated to have been higher this season than the ten-year average and average weight of crab were about the same as the ten-year average (Table 6).

Data from Icy Strait suggest that the average size and weight were lower than recent seasons and the percent of recruit crabs was higher (Tables 7, 8). This may indicate that this stock is being fished at a higher rate than acceptable. The size and weight of crabs sampled from Lynn Canal (Tables 9,10) and Frederick Sound (Tables 11,12) were comparable to those during the most recent past seasons. The estimated percent of recruit crabs in the catch from all three major areas continues to exceed 60%, which is the general Southeast Alaska guideline and well above the 40% rate generally adhered to by Kodiak shellfish management staff for Tanner fisheries around Kodiak and in the Bering Sea.

1995/96 SEASON OUTLOOK

The estimated exploitation rate in the 1994/95 season was excessive. It is likely that the 1995/96 fishery, scheduled to start on February 15, 1996, will be managed more conservatively than in 1994/95, when the catch exceeded the GHR ceiling by nearly 500,000 pounds. It is anticipated that allowable catch will be lower and the opening will be shorter than in the 1994/95 season. It is also anticipated that the percent of contribution to the catch by the Frederick Sound and Icy Strait fishing grounds will decline while the Lynn Canal catches will rise slightly.

Table 1. Statistical Area A (Southeast Alaska) commercial Tanner crab catches in pounds, number of permits, pounds per permit, number of landings and pounds per landing, 1961 to present.

Season	Catch in Pounds	Number of Permits	Pounds Per Permit	Number of Landings	Pounds Per Landing
1961	6,800	-			
1962	7,820	-			
1963	0	-			
1964	13,940	-			
1965	0	-			
1966	-	-			
1967	2,733	-			
1968	109,220	-			
1968/69	176,572	29	6,089	78	2,263
1969/70	660,337	31	21,301	347	1,902
1970/71	167,378	12	13,948	72	2,324
1971/72	656,661	25	26,266	274	2,396
1972/73	1,600,748	31	51,637	354	4,521
1973/74	1,309,673	52	25,186	419	3,125
1974/75	863,751	52	16,611	244	3,539
1975/76	2,149,397	31	69,335	369	5,824
1976/77	2,561,583	55	46,574	379	6,758
1977/78	2,142,409	44	48,691	337	6,357
1978/79	1,559,769	38	41,047	313	4,983
1979/80	1,781,923	53	33,621	355	5,019
1980/81	2,020,071	58	34,829	418	4,832
1981/82	3,301,909	72	45,860	438	7,538
1982/83	1,103,337	96	11,493	180	6,129
1983/84	1,607,986	100	16,080	334	4,814
1984/85	1,131,913	84	13,475	271	4,176
1985/86	1,007,732	84	11,997	320	3,149
1986/87	1,123,974	74	15,189	271	4,147
1987/88	1,330,485	84	15,839	366	3,635
1988/89	1,646,332	140	11,760	388	4,243
1989/90	2,009,621	172	11,684	461	4,359
1990/91	2,241,593	108	20,755	286	7,837
1991/92	2,108,637	123	17,143	367	5,745
1992/93	1,562,696	134	11,662	319	4,898
1993/94	1,997,028	126	15,849	340	5,873
1994/95 ^{u/}	2,487,603	173	14,379	425	5,853

^{u/} Most recent year's data should be considered preliminary.

Table 2. Statistical Area A (Southeast Alaska) commercial Tanner crab harvest in thousands of pounds, by month and season, 1968/69 to present.

Season	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1968/69	0.0	0.0	0.0	0.0	10.0	8.3	13.1	60.4	35.0	32.9	*	8.6	176.6
1969/70	24.4	30.6	17.5	18.7	19.7	97.2	214.4	149.6	21.1	*	*	*	660.3
1970/71	0.9	*	6.7	7.1	21.3	41.4	56.2	*	0.0	0.0	0.0	0.0	167.4
1971/72	0.0	29.9	31.0	39.0	29.4	17.9	91.6	203.5	148.5	58.5	*	1.0	656.7
1972/73	5.4	42.0	83.8	86.7	50.7	140.8	376.6	554.6	228.7	26.6	*	*	1,600.7
1973/74	29.4	91.8	94.8	87.3	69.5	126.3	314.7	406.2	89.8	0.0	0.0	0.0	1,309.7
1974/75	*	77.2	70.6	56.6	71.6	74.4	180.6	225.8	102.6	Closed	Closed	Closed	863.8
1975/76	13.3	110.3	125.4	107.1	159.7	367.4	634.6	460.0	171.5	Closed	Closed	Closed	2,149.4
1976/77	3.9	76.2	276.4	207.7	338.3	393.8	695.3	458.0	112.1	Closed	Closed	Closed	2,561.6
1977/78	29.4	162.6	139.5	176.0	149.9	303.8	592.5	504.7	84.0	Closed	Closed	Closed	2,142.4
1978/79	6.6	47.6	76.7	91.7	200.1	189.2	465.4	422.3	60.3	Closed	Closed	Closed	1,559.8
1979/80	60.7	55.7	74.5	61.0	153.9	440.0	607.2	282.4	37.5	Closed	Closed	Closed	1,781.9
1980/81	33.7	51.9	48.5	60.1	315.9	504.1	627.3	350.5	28.1	Closed	Closed	Closed	2,020.1
1981/82	Closed	Closed	Closed	870.8	597.7	708.7	809.4	315.2	Closed	Closed	Closed	Closed	3,301.8
1982/83	Closed	Closed	Closed	1,103.3	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	1,103.3
1983/84 ^a	0.0	*	Closed	3.1	0.0	866.0	727.5	Closed	Closed	Closed	Closed	Closed	1,608.0
1984/85	Closed	Closed	Closed	Closed	Closed	531.3	599.9	Closed	Closed	Closed	Closed	Closed	1,131.2
1985/86 ^b	Closed	Closed	Closed	Closed	Closed	575.8	426.4	2.6	Closed	Closed	Closed	Closed	1,007.7
1986/87	Closed	Closed	Closed	Closed	635.4	488.6	Closed	Closed	Closed	Closed	Closed	Closed	1,124.0
1987/88	Closed	Closed	0.0	0.0	787.7	542.8	Closed	Closed	Closed	Closed	0.0	0.0	1,330.5
1988/89 ^c	0.0	*	*	*	*	1,087.9	552.8	Closed	Closed	Closed	0.0	0.0	1,646.3
1989/90 ^d	*	*	13.4	11.4	*	1,233.4	740.7	Closed	Closed	Closed	Closed	Closed	2,009.6
1990/91	Closed	Closed	Closed	Closed	Closed	1,598.8	642.8	Closed	Closed	Closed	Closed	Closed	2,241.6
1991/92	Closed	Closed	Closed	Closed	Closed	1,727.2	381.5	Closed	Closed	Closed	Closed	Closed	2,108.6
1992/93	Closed	Closed	Closed	Closed	Closed	1,261.2	301.5	Closed	Closed	Closed	Closed	Closed	1,562.7
1993/94	Closed	Closed	Closed	Closed	Closed	1,555.4	441.7	Closed	Closed	Closed	Closed	Closed	1,997.0
1994/95 ^e	Closed	Closed	Closed	Closed	Closed	2,487.6	Closed	Closed	Closed	Closed	Closed	Closed	2,487.6

* Where number of permits participating is three or less, information is confidential.

^a Exploratory deep water Tanner (*Chionectes tanneri*) opened September 16 through October 31, 1983, and December 5 to January 24, 1984.

^b Exploratory Tanner open in Districts 1 through 4 opened March 25, 1986, and closed May 1, 1986.

^c Experimental Tanner areas opened July 1, 1988, and closed January 31, 1989. Traditional fishery opened January 15, 1989, and closed February 16, 1989.

^d Experimental Tanner areas opened July 1, 1989, and closed January 31, 1990. Traditional fishery opened February 15, 1990, and closed March 8, 1990.

^e Most recent year's data is considered preliminary.

Table 3. Statistical Area A (Southeast Alaska) commercial Tanner crab, harvest in thousands of pounds, by district and season, 1968/69 to present.

Season	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
1968/69	0.0	0.0	0.0	0.0	0.0	*	*	81.3	2.1	63.1	9.2	0.0	8.0	6.4	*	0.0	176.6
1969/70	0.0	0.0	0.0	0.0	0.0	*	0.0	78.4	0.0	179.0	227.6	4.8	28.6	96.9	44.4	0.0	660.3
1970/71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	31.7	*	75.7	*	*	0.0	*	0.0	167.4
1971/72	0.0	0.0	0.0	0.0	0.0	0.6	0.0	71.6	*	69.6	71.0	*	99.7	310.8	*	0.0	656.7
1972/73	0.0	0.0	0.0	0.0	0.0	37.5	0.0	69.2	*	55.0	436.9	*	58.3	505.2	*	318.4	1,600.7
1973/74	0.0	0.0	0.0	0.0	*	18.8	*	*	46.1	132.8	616.2	*	60.8	404.3	1.5	0.0	1,309.7
1974/75	3.5	0.0	0.0	0.0	0.0	*	10.6	22.0	40.0	67.3	211.2	*	100.7	371.1	8.4	*	863.8
1975/76	0.0	0.0	0.0	0.0	14.3	*	11.3	112.8	*	138.0	828.6	92.5	176.3	505.1	*	0.0	2,149.4
1976/77	0.0	0.0	*	0.0	70.3	115.3	0.0	104.0	62.6	217.5	693.8	52.7	96.9	1,034.6	113.6	0.0	2,561.6
1977/78	*	0.0	*	0.0	*	124.6	0.0	*	*	212.6	580.3	96.6	86.6	762.5	191.1	0.0	2,142.4
1978/79	*	0.0	0.0	0.0	*	*	0.0	*	0.0	303.5	425.6	3.6	55.0	655.0	72.2	0.0	1,559.8
1979/80	0.0	0.0	0.0	0.0	0.0	5.9	15.6	118.2	*	237.2	749.4	22.0	*	390.5	125.6	*	1,781.9
1980/81	*	0.0	0.0	*	*	20.3	*	229.1	49.0	282.2	422.2	83.5	53.9	682.0	77.3	58.4	2,020.1
1981/82	*	0.0	0.0	0.0	0.0	121.4	41.5	201.2	*	167.4	405.0	78.5	61.1	2,102.8	122.2	0.0	3,301.9
1982/83	*	0.0	0.0	0.0	*	45.2	0.0	0.0	*	71.3	108.2	26.3	*	816.0	25.9	0.0	1,103.3
1983/84 ^{af}	0.0	0.0	0.0	*	*	42.0	29.1	46.4	28.9	205.4	375.6	16.4	44.2	656.5	145.8	*	1,608.0
1984/85	*	0.0	0.0	0.0	*	7.8	14.3	41.1	38.0	141.2	368.3	66.9	45.4	225.0	182.8	0.0	1,131.9
1985/86 ^{bf}	*	0.0	0.0	0.0	0.0	16.7	3.7	24.0	12.4	74.9	475.8	37.8	47.1	182.3	129.7	0.0	1,007.7
1986/87	0.0	0.0	0.0	0.0	*	31.5	0.0	40.2	32.7	81.1	526.6	34.6	44.2	242.0	80.4	*	1,124.0
1987/88	*	0.0	0.0	0.0	*	46.7	*	29.7	20.3	218.6	541.9	59.4	*	239.2	127.7	*	1,330.5
1988/89 ^{cf}	0.0	0.0	0.0	0.0	*	29.1	*	54.9	29.4	326.8	622.5	91.4	*	349.1	106.0	0.0	1,646.3
1989/90 ^{df}	*	0.0	0.0	0.0	0.4	25.4	0.0	24.2	150.5	446.1	613.0	38.4	41.9	630.1	38.1	0.0	2,009.6
1990/91	0.0	0.0	0.0	0.0	*	36.0	0.0	41.0	237.2	302.1	695.2	63.9	*	798.5	22.4	*	2,241.6
1991/92	0.0	0.0	0.0	0.0	*	67.4	0.0	46.4	64.5	204.3	744.7	71.5	*	822.6	64.0	0.0	2,108.6
1992/93	*	0.0	0.0	0.0	0.0	55.4	0.0	32.8	34.5	197.8	617.9	58.0	15.1	490.1	36.9	*	1,562.7
1993/94	0.0	0.0	0.0	0.0	0.0	32.9	0.0	32.2	201.4	313.4	755.3	43.4	44.8	517.7	39.5	*	1,997.0
1994/95 ^{ef}	*	0.0	0.0	0.0	*	48.5	*	57.0	137.7	247.0	1,124.0	76.7	27.1	715.7	47.9	*	2,487.6

* Where numbers of vessels participating is three or less, information is confidential.

^{af} Exploratory deep water Tanner (*Chionieetes tanneri*) opened September 16 through October 31, 1983, and December 5 to January 24, 1984.

^{bf} Exploratory Tanner in Districts 1 through 4 opened March 25, 1986, and closed May 1, 1986.

^{cf} Experimental Tanner areas opened July 1, 1988, and closed January 31, 1989. Traditional fishery opened January 15, 1989, and closed February 16, 1989.

^{df} Experimental Tanner areas opened July 1, 1989, and closed January 31, 1990. Traditional fishery opened February 15, 1990, and closed March 8, 1990.

^{ef} Most recent year's data should be considered preliminary.

Table 4. Southeast Alaska (Statistical Area A) summary of commercial Tanner crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Width (mm)		Recruitment	
			Average	Range	% Recruits ^{2/}	% Postrecruits ^{3/}
1970/71	1	99	157.0	137 - 177	68.4	31.6
1971/72	3	235	149.8	121 - 183	67.1	32.9
1972/73	3	429	156.9	128 - 183	73.4	26.6
1973/74	9	1,658	153.0	111 - 190	68.7	31.3
1974/75	6	616	157.4	127 - 190	64.2	35.8
1975/76	15	1,663	154.1	116 - 190	62.4	37.6
1976/77	28	3,753	154.5	124 - 192	53.3	46.7
1977/78	36	4,786	155.3	124 - 192	25.4	74.6
1978/79	28	3,273	154.9	129 - 198	44.4	55.6
1979/80	43	4,509	154.6	128 - 193	63.0	37.0
1980/81	43	4,223	152.3	125 - 192	70.0	30.0
1981/82	59	6,556	149.7	129 - 193	67.6	32.4
1982/83	55	5,808	151.3	123 - 185	74.6	25.4
1983/84	24	2,444	152.0	135 - 187	76.2	23.8
1984/85	24	3,211	152.2	135 - 197	77.1	22.9
1985/86	50	5,453	151.0	128 - 191	75.6	24.4
1986/87	62	6,984	152.2	133 - 188	72.8	27.2
1987/88	106	10,933	150.8	134 - 186	67.7	32.3
1988/89	45	10,030	152.8	133 - 194	58.4	41.6
1989/90	122	12,806	150.8	129 - 185	63.7	36.3
1990/91	124	13,050	152.2	131 - 193	74.2	25.8
1991/92	112	11,568	155.0	129 - 190	58.3	41.7
1992/93	104	11,175	151.9	130 - 192	66.0	34.0
1993/94	125	14,731	150.1	130 - 190	77.1	22.9
1994/95	156	18,235	151.6	99 - 191	74.1	25.9

^{1/} Summary tables of all dockside sampling data includes data from Tables 8, 10, and 12 plus data collected that could not be assigned to a fishing area.

^{2/} Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^{3/} Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old shell crab ≥ 140 mm carapace width.

Table 5. Southeast Tanner Crab harvest in pounds by season by fishing area.

Season	Lynn Canal/Upper Stephens Passage ^{1/}		Icy Strait ^{2/}		Frederick Sound/Lower Stephens Passage ^{3/}		Other ^{4/}		Total Harvest
	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	
1971/72	13,440	2.05	310,803	47.33	200,854	30.59	131,564	20.03	656,661
1972/73	177,661	11.10	505,203	31.56	443,106	27.68	474,778	29.66	1,600,748
1973/74	377,190	28.80	404,347	30.87	396,400	30.27	131,736	10.06	1,309,673
1974/75	19,116	2.21	371,115	42.97	289,758	33.55	183,762	21.27	863,751
1975/76	782,127	36.39	505,089	23.50	406,565	18.92	455,616	21.19	2,149,397
1976/77	599,069	23.39	1,034,642	40.39	529,849	20.72	398,023	15.54	2,561,583
1977/78	394,041	18.39	762,491	35.59	648,802	30.28	337,075	15.74	2,142,409
1978/79	308,765	19.80	655,043	42.00	511,769	32.81	84,192	5.39	1,559,769
1979/80	330,221	18.53	399,453	22.42	899,658	50.49	152,591	8.56	1,781,923
1980/81	321,594	15.92	682,011	33.76	641,945	31.78	374,521	18.54	2,020,071
1981/82	380,304	11.52	2,102,755	63.68	428,259	12.97	390,591	11.83	3,301,909
1982/83	96,505	8.75	834,884	75.67	108,918	9.87	63,030	5.71	1,103,337
1983/84	298,975	18.59	656,496	40.83	468,461	29.13	184,054	11.45	1,607,986
1984/85	366,496	32.38	225,044	19.88	365,395	32.28	174,978	15.46	1,131,913
1985/86	421,236	41.80	182,316	18.09	283,182	28.10	122,998	12.21	1,007,732
1986/87	410,674	36.54	242,010	21.53	317,528	28.25	153,762	13.68	1,123,974
1987/88	458,190	34.44	239,194	17.98	459,709	34.55	173,392	13.03	1,330,485
1988/89	476,600	28.95	349,098	21.20	630,687	38.31	189,947	11.54	1,646,332
1989/90	395,623	19.69	621,277	31.92	710,551	35.36	282,170	14.04	2,009,621
1990/91	442,952	19.76	798,460	35.62	617,839	27.56	382,342	17.06	2,241,593
1991/92	617,235	29.27	822,562	39.01	442,200	20.97	226,640	10.75	2,108,637
1992/93	452,466	28.95	490,117	31.36	433,002	27.71	187,111	11.97	1,562,696
1993/94	253,543	12.70	517,735	25.93	886,537	44.39	339,213	16.99	1,997,028
1994/95	409,187	16.45	715,656	28.77	1,051,899	42.29	310,861	12.50	2,487,603

^{1/} Includes all of District 115 and District 111-30 through 111-99.

^{2/} Includes all of District 114.

^{3/} Includes all of District 110, District 111-01 through 111-29 and District 108-40 through 108-69.

^{4/} Includes all of Southeast Alaska outside of Lynn Canal Upper/Stephens Passage, Icy Strait, and Frederick Sound/Lower Stephens Passage.

Table 6. Southeast Alaska (Statistical Area A) summary of commercial Tanner crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)			Estimated No. of Crab Harvested ^{2/}	Percent of Harvest Sampled ^{3/}
						Average	Range	Range		
1970/71										
1971/72										
1973/74										
1972/73										
1974/75	1					3.22	3.22	-3.22		
1975/76										
1976/77	18	58	1,400	24.14	24.14 -24.14	2.58	2.23	-2.98	992,862	0.38
1977/78	27	270	6,268	25.20	16.00 -43.11	2.68	2.27	-3.11	799,406	0.60
1978/79	12	386	5,469	19.80	17.18 -22.42	2.60	1.59	-2.85	599,911	0.55
1979/80	3	160	1,643	10.27	10.27 -10.27	2.80	2.80	-2.80	636,401	0.71
1980/81	5	300	4,560	15.20	15.20 -15.20	2.80	2.06	-3.20	721,454	0.59
1981/82	33	6,277	132,535	26.20	5.27 -71.55	2.33	2.01	-2.55	1,417,128	0.46
1982/83	39	2,043	26,152	15.00	4.91 -29.16	2.45	2.06	-2.97	450,342	1.29
1983/84	16	620	6,050	10.45	6.89 -14.00	2.50	2.30	-2.72	643,194	0.38
1984/85	22	2,070	25,455	11.61	3.89 -17.36	2.60	2.26	-3.04	435,351	0.74
1985/86	51	7,127	75,552	12.69	1.78 -30.71	2.43	1.80	-3.10	414,705	1.32
1986/87	59	14,192	135,615	12.28	2.87 -31.96	2.49	2.13	-2.85	451,395	1.55
1987/88	95	22,745	225,850	11.70	2.40 -32.95	2.38	1.96	-2.71	559,027	2.00
1988/89	99	26,387	350,878	15.17	0.40 -32.95	2.51	2.12	-3.11	655,909	1.53
1989/90	109	31,517	366,514	11.71	1.03 -34.62	2.45	2.12	-2.95	820,253	1.56
1990/91	122	39,168	568,956	15.25	1.27 -40.34	2.57	2.11	-3.05	872,215	1.50
1991/92	105	32,421	354,003	11.73	0.34 -30.00	2.67	2.11	-3.07	789,752	1.46
1992/93	89	27,471	299,288	11.13	2.50 -31.72	2.53	2.05	-3.00	617,666	1.81
1993/94	101	48,905	772,609			2.43	1.92	-2.90		821,822
	1.79									
1994/95	152	56,061	938,582			2.50	1.97	-3.03	995,041	1.83

^{1/} Summary tables of all dockside sampling data includes data from Tables 7, 9, and 11 plus data collected that could not be assigned to a fishing area.

^{2/} Calculated by dividing fish ticket weight data from Table 5 by dockside sampling average weight per crab data.

^{3/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

Table 7. Icy Strait summary of commercial Tanner crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested ^{1/}	Percent of Harvest Sampled ^{2/}
						Average	Range		
1970/71									
1971/72									
1972/73									
1973/74									
1974/75									
1975/76	2					1.86	1.67 -2.09	271,553	0.0
1976/77	2					2.10	1.97 -2.24	492,687	0.0
1977/78	2					2.82	2.78 -2.86	270,387	0.31
1978/79									
1979/80									
1980/81									
1981/82	21	5,074	118,704	29.51	5.27 -71.55	2.31	2.01 -2.55	910,284	0.30
1982/83	34	1,556	22,758	18.37	4.91 -29.16	2.46	2.06 -2.76	339,384	0.98
1983/84	8					2.52	2.35 -2.67	260,514	0.31
1984/85	2					2.30	2.30 -2.30	97,845	0.32
1985/86	1	98	811	8.28	8.28 - 8.28				
1986/87	4	1,087	11,342	12.11	6.04 -20.77	2.37	2.28 -2.51	102,114	0.47
1987/88	10	2,712	27,371	10.90	4.29 -25.00	2.24	2.11 -2.44	106,783	1.05
1988/89	17	5,812	69,339	13.30	0.40 -26.72	2.28		153,113	1.22
1989/90	25	8,812	113,893	13.26	4.17 -34.62	2.50	2.35 -2.65	248,511	1.04
1990/91	34	11,683	153,781	14.08	4.24 -40.34	2.42	2.33 -2.57	329,942	1.05
1991/92	26	8,901	106,340	11.81	1.00 -21.54	2.73	2.56 -2.94	301,305	0.98
1992/93	30	9,676	102,557	10.89	2.50 -26.67	2.60	2.27 -2.98	188,507	2.16
1993/94	24					2.48	2.14 -2.90	208,764	1.47
1994/95	39					2.46	2.24 -3.03	290,917	1.60

^{1/} Calculated by dividing fish ticket weight data for Icy Strait from Table 5, by dockside sampling average weight per crab data.

^{2/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

Table 8. Icy Strait summary of commercial Tanner crab length frequency and shell condition data collected during dockside sampling, 1970-71 to present.

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Width (mm)		Recruitment	
			Average	Range	% Recruits ^{1/}	% Postrecruits ^{2/}
1970/71						
1971/72	1	87	154.0	127 - 183	75.6	24.4
1972/73						
1973/74						
1974/75						
1975/76						
1976/77 ^{3/}	1	101	155.2	140 - 179	76.2	23.8
1977/78	4	828	157.6	126 - 190	22.3	77.7
1978/79						
1979/80	2	207	152.6	138 - 179	67.5	32.5
1980/81	23	2,863	148.8	130 - 181	67.4	32.6
1981/82	22	2,759	148.8	130 - 181	66.5	33.5
1982/83	32	3,317	151.0	123 - 178	74.7	25.3
1983/84	8	803	152.4	137 - 181	68.2	31.8
1984/85	2	309	146.6	136 - 165	55.8	44.2
1985/86	1	118	148.3	138 - 180	82.7	17.3
1986/87	4	485	148.4	136 - 176	42.8	57.2
1987/88	11	1,118	149.4	137 - 184	66.8	33.2
1988/89	18	1,875	151.8	135 - 184	64.9	35.1
1989/90	25	2,576	151.1	135 - 183	69.8	30.2
1990/91	33	3,472	150.0	132 - 180	83.9	16.1
1991/92	27	2,943	155.1	132 - 189	67.3	32.7
1992/93	36	4,079	152.4	135 - 189	71.4	28.6
1993/94	27	3,061	150.8	131 - 185	80.3	19.7
1994/95	40	4,666	150.5	135 - 190	85.6	14.4

^{1/} Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^{2/} Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≥ 140 mm carapace width.

^{3/} The first season that legal size was 5 1/2" (140 mm) carapace width.

Table 9. Lynn Canal/Stephens Passage summary of commercial Tanner crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested ^{1/}	Percent of Harvest Sampled ^{2/}
						Average	Range		
1970/71									
1971/72									
1972/73									
1973/74									
1974/75									
1975/76									
1976/77	10	58	1,400	24.14	24.14 -24.14	2.62	2.45 -2.98	228,652	1.10
1977/78	8	270	6,268	252	16.00 -43.11	2.70	2.57 -2.86	145,941	0.95
1978/79	6	386	5,469	19.8	17.18 -22.42	2.68	2.56 -2.80	115,211	1.05
1979/80	1	160	1,643	10.27	10.27 -10.27				
1980/81									
1981/82	4	762	8,744	12.12	12.08 -12.16	2.35	2.31 -2.40	161,831	0.32
1982/83	8	487	3,394	10.51	5.50 -13.72	2.41	2.37 -2.50	39,911	3.25
1983/84	2					2.60	2.49 -2.72	114,524	0.18
1984/85	6	875	8,832	10.21	3.89 -14.00	2.59	2.49 -2.72	141,504	0.60
1985/86	29	3,577	48,103	15.20	5.92 -30.71	2.43	1.80 -3.10	173,348	1.83
1986/87	37	5,000	64,115	13.97	4.95 -31.96	2.53	2.13 -2.79	161,032	2.78
1987/88	43	7,507	80,893	12.64	3.01 -32.95	2.43	1.96 -2.71	183,247	2.89
1988/89	41	7,355	94,795	14.17	4.49 -37.36	2.63	2.21 -3.11	178,389	2.01
1989/90	33	7,509	89,562	11.61	3.12 -32.40	2.51	2.12 -2.84	157,619	2.50
1990/91	14	2,555	28,802	12.19	1.95 -25.26	2.60	2.45 -2.81	168,434	0.63
1991/92	35	6,481	89,249	15.33	0.34 -30.00	2.73	2.23 -3.07	224,686	1.70
1992/93	22	6,163	68,767	11.37	4.27 -19.35	2.65	2.20 -3.00	170,742	1.59
1993/94	5					2.39	2.24 -2.59	106,085	1.22
1994/95	30					2.53	2.19 -3.00	161,734	2.59

^{1/} Calculated by dividing fish ticket weight data for Lynn Canal/Stephens Passage from Table 5, by dockside sampling average weight per crab data.

^{2/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

Table 10. Lynn Canal/Stephens Passage summary of commercial Tanner crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Width (mm)		Recruitment	
			Average	Range	% Recruits ^{1/}	% Postrecruits ^{2/}
1970/71	1	99	157.0	137 - 177	68.4	31.6
1971/72						
1972/73						
1973/74						
1974/75						
1975/76	5	655	155.5	126 - 182	47.6	52.4
1976/77 ^{3/}	15	2,521	154.7	124 - 191	45.5	54.5
1977/78	10	1,382	155.7	131 - 187	20.2	79.8
1978/79	9	1,213	154.7	129 - 191	53.4	46.6
1979/80	5	555	153.3	128 - 186	74.8	25.2
1980/81	4	155	149.9	136 - 182	36.4	63.6
1981/82	5	518	151.4	131 - 193	71.1	28.9
1982/83	12	1,296	151.2	135 - 177	79.0	21.0
1983/84	2	204	153.8	139 - 177	67.0	33.0
1984/85	8	845	153.5	136 - 183	75.5	24.5
1985/86	29	3,166	151.6	135 - 191	72.4	27.6
1986/87	40	4,473	152.9	133 - 188	72.1	27.9
1987/88	52	5,300	151.9	135 - 185	71.5	28.5
1988/89	33	3,592	154.7	133 - 194	75.2	24.8
1989/90	35	3,945	151.9	129 - 185	69.1	30.9
1990/91	10	1,053	155.2	138 - 188	69.1	30.9
1991/92	37	3,796	156.7	129 - 190	51.2	48.8
1992/93	26	2,713	155.1	135 - 192	54.7	45.3
1993/94	12	1,292	151.7	130 - 190	68.3	31.7
1994/95	30	4,194	152.9	131 - 191	64.7	35.3

^{1/} Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace length.

^{2/} Postrecruits = all new and soft shell crab ≥ 168 mm and ≤ 184 mm, and old and very old shell crab ≥ 151 mm and ≤ 167 mm, carapace length.

^{3/} The first season that the regulatory size was 5 1/2" (140 mm) carapace width.

Table 11. Frederick Sound summary of commercial Tanner crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested ^{1/}	Percent of Harvest Sampled ^{2/}
						Average	Range		
1970/71									
1971/72									
1972/73									
1973/74									
1974/75	1					3.22	3.22 -3.22		
1975/76									
1976/77	4					2.60	2.40 -2.79		
1977/78	14					2.74	2.51 -3.11		
1978/79	5					2.50	1.59 -2.85		
1979/80	1					2.80	2.80 -2.80		
1980/81									
1981/82	5					2.42	2.20 -2.54	176,967	1.16
1982/83	4					2.66	2.35 -2.97	40,947	1.92
1983/84	4					2.42	2.30 -2.56	193,579	0.43
1984/85	7					2.72	2.26 -3.04	134,336	0.80
1985/86	15	2,879	21,651	6.62	1.78 -10.03	2.46	2.10 -2.72	115,115	1.32
1986/87	10	3,423	36,051	11.71	2.87 -22.22	2.48	2.13 -2.85	128,035	0.90
1987/88	22	7,478	67,096	10.26	2.40 -26.00	2.39	2.17 -2.58	190,676	1.23
1988/89	30	8,957	150,506	18.78	4.48 -42.74	2.44	2.25 -2.75	242,605	1.42
1989/90	42	13,577	149,824	10.91	1.03 -30.00	2.45	2.16 -2.95	268,599	1.71
1990/91	35	13,188	209,884	16.12	5.71 -38.64	2.63	2.12 -2.99	230,171	1.78
1991/92	26	10,387	93,663	8.69	2.00 -20.00	2.68	2.34 -2.98	158,191	1.64
1992/93	19	6,449	75,307	12.03	3.33 -31.72	2.45	2.05 -2.82	176,736	1.37
1993/94	44					2.44	1.92 -2.86	363,335	1.73
1994/95	45					2.54	1.97 -3.02	414,133	1.35

^{1/} Calculated by dividing fish ticket weight data for Frederick Sound from Table 5, by dockside sampling average weight per crab data.

^{2/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

Table 12. Frederick Sound summary of commercial Tanner crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Width (mm)		Recruitment	
			Average	Range	% Recruits ^{1/}	% Postrecruits ^{2/}
1970/71						
1971/72	2	148	147.4	121 - 180	60.0	40.0
1972/73	3	429	156.9	128 - 183	73.4	26.6
1973/74	9	1,658	153.0	111 - 190	68.7	31.3
1974/75	4	412	158.8	127 - 190	58.7	41.3
1975/76	3	304	154.3	135 - 183	75.3	24.7
1976/77 ^{3/}	8	820	155.3	129 - 192	67.7	32.3
1977/78	16	1,862	156.2	124 - 192	33.3	66.7
1978/79	17	1,851	155.5	131 - 198	42.3	57.7
1979/80	36	3,747	154.9	134 - 193	61.0	39.0
1980/81	30	3,081	153.0	125 - 192	68.9	31.1
1981/82	20	2,046	150.9	130 - 188	63.8	36.2
1982/83	8	785	153.4	135 - 185	70.2	29.8
1983/84	8	839	152.4	135 - 187	80.6	19.4
1984/85	8	1,068	155.2	135 - 197	67.7	32.3
1985/86	14	1,524	151.5	131 - 188	80.0	20.0
1986/87	10	1,150	151.8	136 - 187	81.3	18.7
1987/88	23	2,338	150.3	135 - 186	65.6	34.4
1988/89	33	3,434	151.9	133 - 182	44.3	55.7
1989/90	45	4,586	150.9	132 - 185	60.0	40.0
1990/91	40	4,086	153.6	131 - 193	70.4	29.6
1991/92	26	2,593	154.6	134 - 189	60.1	39.9
1992/93	24	2,413	149.4	133 - 185	73.1	26.9
1993/94	48	6,297	150.0	130 - 186	80.2	19.8
1994/95	47	5,593	152.8	115 - 188	73.4	26.6

^{1/} Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^{2/} Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≥ 140 mm carapace width.

^{3/} The first season that the regulatory legal size was 5 1/2" (140 mm) carapace width.

SECTION 4

1994/95 SOUTHEAST ALASKA COMMERCIAL RED KING CRAB FISHERIES

REPORT TO THE BOARD OF FISHERIES
1994/95 SOUTHEAST ALASKA
COMMERCIAL RED KING CRAB FISHERIES



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October 1995

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INTRODUCTION

This report presents an overview of the commercial red king crab fishery in Southeast Alaska (Statistical Area A) with emphasis on the 1994/95 fishing season. Information is presented on historical harvest and effort, regulation development, research results, and stock assessment data.

Red king crab, *Paralithodes camtschatica*, are harvested primarily in the protected bays, inlets, and adjacent shorelines of straits and sounds of the waters of northern Southeast Alaska; few red king crab are harvested from the southern portion of Southeast Alaska. Red king crab generally inhabit depths of less than 150 fathoms. Important red king crab fishing grounds are located in bays opening into Frederick Sound, Stephens Passage, Seymour Canal, Icy Strait, and Peril Strait. Small quantities of blue king crab, *P. platypus*, are harvested incidentally during the red king crab fishery.

Commercial vessels participating in the red king crab fishery are primarily salmon tenders, salmon purse seine vessels, and larger drift gillnet boats. Fishing gear has gradually evolved to include side-loading king crab pots (7' x 7' x 30") and top-loading pyramid or conical-style pots.

Management of the commercial red king crab fishery is based on a conservative management plan and policies that have been reviewed and approved by the Board of Fisheries (Board). Primary elements of the plan are 1) seasons that avoid fishing during sensitive life history stages, 2) harvest of only male crab with a minimum legal carapace width of seven inches, 3) limits of 20 or 100 pots per vessel depending on stock abundance, and 4) quotas based on conservative harvest rates and stock assessment survey results.

FISHERY DEVELOPMENT AND HISTORY

Commercial Fishery History

Commercial king crab fishing in Southeast Alaska waters was initially documented in 1960 when a small harvest occurred in the Petersburg-Wrangell Management Area. From 1961 through 1968, harvests averaged less than 900,000 lbs per year with an average of nine vessels participating (Table 1). The peak harvest of 2,199,772 lbs was taken by 19 vessels in 1968. In 1969, effort increased to 39 vessels but the resulting harvest declined to 1,899,930 lbs. These high harvests were due to very liberal gear and season regulations, a smaller minimum legal size, and reported catches that included a combination of blue, red, and brown, *Lithodes aequispina*, king crab.

The department began collecting information on the species composition of the commercial king crab harvest in southeast Alaska in 1970. From the 1970/71 through the 1975/76 seasons, harvests averaged 435,609 lbs of red king crab and effort averaged 23 vessels (Table 1). The first emergency order closure occurred in January 1971 when the harvest for the 1970/71 fishing season totaled only 221,369 lbs after 4.5 months of fishing by 20 vessels. The minimum legal size was also increased to 7 inches in carapace width in 1971.

Accurate species composition information was required on fish tickets beginning in January, 1976. From the 1976/77 through the 1984/85 fishing seasons, an average of 54 vessels harvested an average of 419,514 lbs of red king crab. Adjusted to the 1990 consumer price index (CPI), the average exvessel value of the red king harvest during this period was approximately \$1.0 million. The peak harvest of 670,859 lbs was taken by 43 vessels during the 1979/80 season. Fishing effort peaked during the 1983/84 season when 103 vessels harvested only 320,259 lbs of red king crab (Table 1). During the 1984/85 season, 98 vessels harvested 276,710 lbs during a seven-day fishery in October. The commercial fishery was then closed for eight consecutive fishing seasons (1985/86 through 1992/93) due to low stock abundance. The fishery was reopened for the 1993/94 season after department survey data indicated that red king crab stocks had rebuilt to levels sufficient to support a commercial harvest above the minimum threshold of 300,000 pounds. The fishery was opened again for the 1994/95 season and 84 vessels harvested 259,179 lbs of crab valued at approximately \$1.6 million (exvessel value).

Stock Assessment Surveys

The department has conducted a survey of red king crab abundance in Southeast Alaska since 1979. The survey provides an index of crab abundance in terms of crabs per pot per day. The survey is conducted in districts 10 through 15 in areas where the majority of the red king crab harvest occurs (Table 2). Crab abundance is estimated with a population model, which uses time series of survey catch rate and harvest data (commercial and personal use). This model, in use since 1993, provides estimates of abundance of legal crabs since 1979 for each district (Figure 1).

The trend in all districts has been a decline in abundance of legal males from peaks in the late 1970's and early 1980's to a low extending from 1985 to 1990 (Figure 1). Abundance then increased in the early 1990's to levels which are now considered adequate to support a sustainable fishery.

Dockside Sampling and Logbook Program

Shell condition and carapace length data have been collected by department personnel from landings at various ports throughout the region since the late 1960s. Resulting data are utilized to estimate recruitment trends and relative contribution from various size-classes of crab. In 1975 staff members began collecting average weight data from landings. Average weight data provides additional insight into stock dynamics.

In 1985, skipper interviews were initiated to provide an estimate of catch per unit of effort (CPUE) that may be useful for determination of fishing mortality. Beginning with the 1993/94 fishing season, a mandatory logbook program was established to obtain detailed CPUE information from the entire fleet. This information is used to gauge fleet efficiency and to estimate the appropriate length of subsequent fishing seasons.

REGULATION DEVELOPMENT

Fishing Seasons

From 1961 through 1968 there was no closed season for the commercial king crab fishery. Prior to the 1969/70 king crab fishing season, a closed season was established from March 16 through August 14. A fishing season of September 1 through January 31 was established in 1971 to provide a closure during the molting and mating season, during a portion of the aggregation period prior to the molting and mating season, and during the major growth period when meat recovery rates are low. The current season extends from November 1 through January 24. Since 1979, actual open fishing periods have been set based on estimates of population size and predicted fishing effort. During the past two seasons, fishing periods have been limited to less than eighteen days.

Sex and Size Limits

From its inception, the king crab fishery has been restricted to harvesting only male crab in order to protect the reproductively important female crab. From 1961 through 1968, a minimum legal size of 6 1/2 inches in carapace width was in place. The minimum legal carapace width was increased to 7 inches in 1969. This size limit was based on growth and size at maturity information collected from Gulf of Alaska red king crab stocks. The larger minimum size limit was implemented to increase reproductive potential by providing additional protection to mature male crab.

In 1990, a regulation was adopted allowing the harvest of any king crab infected with the parasitic barnacle, *Briarosaccus callosus*, regardless of the sex or size of the crab. Crab infected with this parasite are incapable of reproduction and may experience reduced growth. Removal of infected crab may improve stock reproduction and growth.

Quotas and Guideline Harvest Ranges

In 1970, a quota of 1.5 million lbs was provided for king crab (all species combined). In 1971, separate red and brown king crab fisheries were recognized with the adoption of distinct seasons and quotas. From 1971 through the 1978/79 season, the red king crab quotas or guideline harvest levels were based upon historic harvest and limited size distribution information. The first red king crab quota was set in 1971 at 400,000 lbs per season. This was increased to 600,000 lbs in 1974, then reduced to 400,000 lbs in 1977.

After 1977, quotas were replaced by guideline harvest levels (GHL's). The first GHL of 200,000 to 400,000 lbs was established in 1978. The GHL was increased to 300,000 to 600,000 lbs in 1979 based on industry recommendations. Current regulations specify that a minimum of 300,000 lbs of legal sized crab must be available before the commercial fishery will be opened. Since the 1980/81 season, allowable harvests have been based on results from the red king crab index of abundance survey. The available harvest surplus is currently computed using a harvest rate approach.

Fishing Gear

From 1961 through 1967, there were no restrictions on the amount or type of gear that could be fished by a vessel participating in the king crab fishery. In 1968, a limit of 40 pots per vessel was established for Southeast Alaska waters. The maximum number of pots per vessel was increased to 60 in 1974 and to 100 in 1978. In 1988, the Board required a 40 pot limit per vessel for GHL's between 300,000 and 400,000 lbs and a 100 pot limit for GHL's above 400,000 lbs. Based on information provided by the department, the Board reduced the 40 pot limit to 20 pots in 1993.

There is no minimum mesh size requirement for king crab pots. Regulations require degradable twine or a timed galvanic release device in case the pot is lost. Tunnel height on standard side loading pots must be a minimum of eight inches in the vertical dimension. There are restrictions on pot storage before and after fishing seasons and each pot must be independently buoyed and marked. Ring nets were eliminated as legal gear for king crab in 1990.

Management Plan

At the 1993 statewide shellfish meeting, the Board adopted a comprehensive management plan for red king crab in southeast Alaska. This management plan was designed to be consistent with the Board's policy on "King and Tanner Crab Resource Management". The plan includes provisions concerning the abundance of various size classes of males and females necessary to provide for sustained harvests, application of a harvest rate based on both legal males and mature males, a guideline harvest level based on stock conditions for each fishing district, a minimum harvest threshold of legal males, conduct of an orderly fishery, and conservative management when information is lacking.

Limited Entry

A limited entry program was established for the king and Tanner crab pot fisheries in Southeast Alaska by the Commercial Fisheries Entry Commission (CFEC) in January, 1984. The CFEC adopted a maximum effort level of 61 permits for the red king crab fishery. Currently there are 99 permits eligible to participate in the red king crab fishery. Some of these permits may not be eligible to fish after the adjudication process is completed.

1994/95 SEASON SYNOPSIS

Red King Crab Survey Results

The 1994 stock assessment survey was conducted during July and August 1994. Survey results indicated that the overall abundance and relative health of red king crab stocks were again adequate to allow a commercial fishery. For example, the numbers of prerecruit males and females were high in most areas and female egg condition factors were high (over 98 percent with full clutches). In addition, stock abundance in Pybus Bay and Port Frederick had improved significantly from the previous survey.

The estimated harvestable surplus was 300,000 pounds of legal crab which represented a harvest rate of 0.27 on legal size crab. As was the case during the 1993/94 season, most of the legal crab were postrecruits. Data indicated that average weight would exceed 8.0 pounds per crab during the commercial fishery in November.

Commercial Fishery Summary

Prior to the opening date of November 1, 1994, all permits holders and processors were mailed information on registration, reporting, and gear marking requirements. All permit holders were required to pre-register and to complete mandatory logbooks. The GHL of 300,000 pounds resulted in a 20 pot limit per vessel restriction for the second consecutive year.

Because of the stock improvements noted above, Port Frederick and Pybus Bay were allowed to remain open for the 1994/95 season. However, continued high harvests of red king crab by the Juneau area personal use fishery (approximately 5,800 crab) again required a closure of the commercial fishery in the portion of Section 11-A between Outer Point and Amalga Harbor. The department felt that additional harvest by the commercial fleet in this area might result in an excessively high harvest rate on legal male crab.

The commercial fishery was closed by emergency order on November 18, 1994 after 84 vessels made 245 landings totaling 259,179 pounds (Table 1). Based on a sample of 127 landings, the average size was 162.9 mm in carapace length (Table 3a) and the average weight was 8.14 pounds per crab (Table 3b). Approximately 33 percent of the landed crab were recruit crab. Thus, the majority of the harvest was comprised of postrecruit crab.

1995/96 OUTLOOK

Red King Crab Survey Results

The 1995 stock assessment survey was conducted during June, July, and August 1995 using the *R/V Medeia*. Approximately six days were spent surveying the area utilized by the personal use fishery in the Juneau area. These extra survey days improved the accuracy and precision of abundance estimates in the Juneau area. Survey results indicated that the overall abundance and health of red king crab stocks continued to be good and would support a commercial fishery during the 1995/96 fishing season. Numbers of prerecruit males and females continued to be high, but were slightly reduced compared to the previous two surveys. The most significant improvement in the legal male portion of the population occurred in the recruit size class. Data indicated that all survey areas were capable of providing a harvestable surplus.

A harvestable surplus of 300,000 pounds of legal crab is available to the commercial fleet. This harvest will represent a harvest rate of approximately 0.33 on legal size crab, and 0.22 on mature male crab. Data indicated that the average weight will be approximately 7.7 lb. per crab during the commercial fishery.

Commercial Fishery

A news release dated October 3, 1995 announced an 18 day commercial fishery that will occur from noon November 1 through noon November 19, 1995. That portion of Section 11-A between Outer Point and Amalga Harbor (the same area closed to commercial fishing during the previous two seasons) will be closed to commercial fishing to prevent an overharvest of stocks already utilized by the personal use fishery. Logbook harvest rate data from the previous commercial season indicates that if similar effort and catch-per-unit-effort occurs in the open portion of Section 11-A, then the harvestable surplus available for the commercial fishery (2,200 crab) will be taken in four fishing days. The open portion of Section 11-A will be closed to commercial fishing at noon on November 5, 1995.

The department is anticipating that 84 vessels will participate in the commercial fishery. Logbook completion will be mandatory and department personnel will monitor landings and conduct interviews at the docks, and collect logbook information on the fishing grounds. The resulting information will be used to determine if in-season adjustments are necessary to manage the fishery according to the management plan, regulations, and policies.

Table 1a. Statistical Area A (Southeast Alaska) red and blue king crab harvest, number of landings and number of vessels by year or season, 1960 to present.

Year/ Season ^w	Total Catch ^{iv}	Number of ^v Landings	Number of ^{vi} Permits
1960	3,424		
1961	429,600		3
1962	1,289,550		8
1963	1,112,200		8
1964	820,530		9
1965	579,300		7
1966	105,899		8
1967	599,078		7
1968	2,199,722		19
1969	1,899,930	122	39
1969/70	1,438,226	401	33
1970/71	221,369	151	20
1971/72	391,623	213	18
1972/73	476,761	161	17
1973/74	640,369	207	27
1974/75	537,189	201	28
1975/76	346,341	170	25

^w Data for years 1960 through 1969/70 season are from management reports and informal fish ticket logs.

^{iv} 1960 through 1969 data is for all three species of king crab combined (red, brown, and blue king crab). Data for years 1960 through 1975/76 contains small and inconsistent harvest of red and blue kings from the Yakutat area.

^v Total landings are the number of unique fish tickets reporting king crab landings in any combination in a season.

^{vi} Total permits are the number of unique CFEC numbers that made landings in a season.

Table 1b. (continued).

Year/ Season ^w	Total Catch ^w	Number of ^{cl} Landings	Number of ^{cl} Permits
1976/77	330,280	172	35
1977/78	238,108	137	33
1978/79	446,707	164	34
1979/80	658,359	234	39
1980/81	518,718	194	35
1981/82	528,268	172	46
1982/83	459,244	155	69
1983/84	319,011	135	99
1984/85	276,935	137	99
1985/86 ^{cl}	1,886	18	16
1986/87 ^{cl}	1,179	15	13
1987/88 ^{cl}	1,519	36	19
1988/89 ^{cl}	8,130	24	13
1989/90 ^{cl}	24,881	35	14
1990/91 ^{cl}	597	11	8
1991/92 ^{cl}	1,037	14	9
1992/93 ^{cl}	929	11	9
1993/94 ^{cl}	204,508	200	84
1994/95 ^{cl}	261,601	280	84

^w Data for years 1960 through 1969/70 season are from management reports and informal fish ticket logs.

^w 1960 through 1969 data is for all three species of king crab combined (red, brown, and blue king crab). Data for years 1960 through 1975/76 contains small and inconsistent harvest of red and blue kings from the Yakutat area.

^{cl} Total landings are the number of unique fish tickets reporting king crab landings in any combination in a season.

^{cl} Total permits are the number of unique CFEC numbers that made landings in a season.

^{cl} Red king crab season closed; blue king crab open February 10-24, 1986.

^{cl} Red king crab season closed; blue king crab open January 15-29, 1987.

^{cl} Traditional red king crab season closed; experimental red king crab opened July 1, 1988; blue king crab open January 15-February 16, 1988.

^{cl} Traditional red king crab season closed; experimental red king crab closed January 29, 1989; blue king crab opened February 15 and closed March 8, 1989.

^{cl} Traditional red king crab season closed; experimental red king crab closed January 31, 1990, and blue king crab in the Icy Strait/Lynn Canal area closed January 29, 1990. Blue king crab opened again February 15, 1990. The Frederick Sound areas for blues closed April 4, 1990, and Icy Strait/Lynn Canal blues closed November 9, 1990.

^{cl} Traditional red king crab season closed. Blue king crab opened February 15 and closed June 20th.

^{cl} Traditional red king crab season closed. Blue king crab opened February 15 and closed on May 8, 1992.

^{cl} Traditional red king crab season closed. Blue king crab opened February 15 and closed August 20, 1993.

^{cl} Traditional red king crab season opened November 1-9 and November 27-December 3, 1993. Blue king crab opened February 15 and closed May 15, 1994.

^{cl} Traditional red king crab season opened November 1-18, 1994. Blue king crab opened February 15, 1995 and closed May 15, 1995. Most recent year's data should be considered preliminary.

Table 2. Statistical Area A (Southeast Alaska) red and blue king crab harvests in thousands of pounds by district and season, 1970/71 to present.

District	1970/ 1971	1971/ 1972	1972/ 1973	1973/ 1974	1974/ 1975	1975/ 1976	1976/ 1977	1977/ 1978	1978/ 1979	1979/ 1980	1980/ 1981	1981/ 1982	1982/ 1983	1983/ 1984	1984/ 1985
1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	*	0.0	*	*	0.0	0.0	*	*
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	*	*
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.1	0.0	0.0	*	*	0.0	*	0.0	*	7.3	*	0.0
6	0.0	0.0	2.1	0.8	1.5	0.0	*	*	0.0	*	*	*	0.0	*	0.0
7	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	*	*	*	*	*	0.0
8	3.2	7.0	16.8	4.3	7.6	0.0	15.7	*	*	*	27.6	*	*	0.0	*
9	45.2	21.7	11.2	21.2	30.2	0.0	17.5	0.0	0.0	*	*	*	*	*	*
10	118.3	231.4	183.0	273.4	124.5	0.0	49.3	43.0	118.2	168.4	163.7	114.4	77.5	79.5	58.7
11	130.8	164.4	109.1	114.3	74.1	0.0	81.0	64.4	122.6	220.2	179.8	135.9	63.7	37.1	89.9
12	48.6	57.8	19.0	25.1	64.6	53.4	*	*	14.1	39.5	*	32.7	98.0	31.4	14.2
13	1.1	95.4	34.5	78.4	102.2	97.5	*	*	112.5	79.4	73.1	117.6	70.8	46.7	51.9
14	0.8	46.2	95.4	87.9	117.0	103.7	68.3	22.2	43.1	89.1	*	34.6	99.4	81.4	49.7
15	53.8	17.5	0.0	34.6	8.5	6.7	24.7	*	29.7	12.3	41.4	53.8	37.1	6.5	9.9
16	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	221.4	372.9	476.8	640.4	537.2	346.4	330.3	238.1	446.7	658.4	518.7	528.3	459.2	319.0	276.7

-Continued-

Table 2. (Page 2 of 2.)

District	1985/ 1986 ^d	1986/ 1987 ^w	1987/ 1988 ^d	1988/ 1989 ^w	1989/ 1990 ^d	1990/ 1991 ^w	1991/ 1992 ^d	1992/ 1993 ^w	1993/ 1994 ^d	1994/ 1995 ^w
1	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	*	*	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	*	*	*	0.0	0.0	0.0	0.0	*
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.7	*
9	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	2.4	0.0
10	*	0.0	*	*	*	*	0.0	0.0	29.6	69.8
11	1.4	0.4	0.6	2.3	0.8	0.2	1.0	0.9	78.9	118.4
12	0.0	*	*	0.0	0.0	0.0	0.0	0.0	38.9	24.8
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.7	21.8
14	*	*	0.7	*	1.7	*	*	0.0	10.3	13.5
15	0.3	0.3	*	0.0	3.5	*	*	0.0	21.0	6.7
16	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0
Total	1.9	1.2	1.5	8.1	24.9 ^w	0.6	1.0	0.9	204.5	261.6

^w Red king crab season closed; blue king crab open February 10-24, 1986.

^w Red king crab season closed; blue king crab open January 15-February 29, 1987.

^d Red king crab season closed; experimental red king crab opened July 1, 1988; blue king crab open January 15-February 16, 1988.

^d Traditional red king crab season closed; experimental red king crab fishery was open through January 29, 1989; blue king crab opened February 15, 1989 and closed March 8, 1989, with Tanner crab in Frederick Sound.

^d Traditional red king crab season closed; experimental red king crab open through January 31, 1990, and blue king crab in the Icy Straits/Lynn Canal area closed January 29, 1990. Traditional blue king crab opened February 15 and closed with browns in Frederick Sound on April 4, 1990.

^w Traditional red king season closed; experimental red king crab fishery repealed by the Board of Fisheries; blue king crab closed with browns on November 9, 1990, in the Icy Straits area. The Traditional blue king crab fishery opened February 15, 1991 and closed June 20, 1991 in Frederick Sound and Icy Straits areas.

^w Traditional red king crab season closed; Blue king crab opened February 15, 1992 and closed on May 8, 1992.

^w Traditional red king crab season closed; blue king crab in the Icy Straits/Lynn Canal area closed January 29, 1990. Traditional blue king crab opened February 15 and closed with browns on August 20, 1993.

^w Traditional red king season opened November 1 through 9 and November 27 through December 3, 1993; traditional blue king crab fishery opened February 15 and closed with browns on May 15, 1994.

^y Traditional red king crab opened November 1 - 18, 1994. Blue king crab opened February 15 - May 15, 1995. Most recent year's data should be considered preliminary.

^w Majority of this harvest is from illegal catch and test fishing.

* Where number of vessels participating is three or less, the information is considered confidential.

Table 3a. Southeast Alaska (Statistical Area A) summary of commercial red king crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.^{1/}

Season	Number of Boats Sampled	Number of Crab Sampled	Carapace Length (mm)		Recruitment					Skip Molts ^{7/}
			Average	Range	Recruits ^{2/}	% PR +1 ^{3/} %	PR +2 ^{4/}	% PR +3 ^{5/} %	PR +4 ^{6/} %	
1970/71	28	3,333	164.8	138-214	31.4	43.9	20.7	3.6	0.5	23.3
1971/72	9	838	161.1	134-203	44.6	34.1	16.1	4.9	0.3	24.9
1972/73	29	2,914	158.6	133-205	53.9	31.9	11.5	2.4	0.1	19.9
1973/74	15	1,438	161.6	140-208	27.6	52.5	17.6	2.1	0.2	38.6
1974/75	19	2,275	166.4	137-200	26.0	46.6	22.4	4.9	0.0	22.2
1975/76	23	2,058	160.3	135-207	48.8	29.3	17.0	4.7	0.2	20.8
1976/77	18	1,460	160.6	115-204	50.0	33.1	11.8	4.5	0.6	20.3
1977/78	33	3,277	156.7	136-203	28.4	44.7	18.2	8.5	0.2	59.3
1978/79	17	1,603	155.4	137-202	60.1	30.4	8.5	0.9	0.1	21.4
1979/80	30	3,081	156.1	137-193	52.8	34.3	11.0	1.8	0.0	27.6
1980/81	48	4,101	156.3	134-196	51.5	36.6	10.5	1.4	0.0	27.7
1981/82	34	3,316	158.8	123-199	46.3	35.8	15.3	2.5	0.0	29.9
1982/83	30	2,821	159.4	137-200	44.8	35.4	15.1	4.7	0.0	29.2
1983/84	34	3,414	158.5	137-196	51.1	34.8	11.5	2.6	0.0	24.0
1984/85	36	3,641	159.6	139-196	48.0	38.4	12.2	1.5	0.0	22.0
1985/86				Fishery Closed						
1986/87				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	115	8,458	162.9	133-209	29.9	47.7	18.8	3.5	0.0	29.4
1994/95	127	8,639	162.9	121-209	33.3	35.4	22.7	8.5	0.1	35.1

^{1/} Dockside sampling not conducted in Statistical Area D (Yakutat)

^{2/} Recruits = all new and soft shell crab ≥145 mm and ≤161 mm carapace length.

^{3/} PR + 1 = all new and soft shell crab ≥162 mm and ≤178 mm, and old and very old shell crab ≥145 mm and ≤161 mm, carapace length.

^{4/} PR + 2 = all new and soft shell crab ≥179 mm and ≤195 mm, and ≥162 mm and ≤178 mm, and very old ≥145 mm and ≤161 mm, carapace length.

^{5/} PR + 3 = all new and soft shell crab ≥196 mm and all old ≥179 mm and ≤195 mm, and very old ≥162 mm and ≤178 mm, carapace length.

^{6/} PR + 4 = all old and very old where carapace length ≥196 mm.

^{7/} Skip molts = all old and very old crab.

Table 3b. Southeast Alaska (Statistical Area A) summary of commercial red king crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.^{1/}

Season Sampled	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot ^{2/}	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested	Percent of Harvest
						Average	Range		
1970/71									
1971/72									
1972/73									
1973/74									
1974/75									
1975/76	2					8.36	7.49-9.22	11,345	20.0
1976/77	4					8.54	7.34-10.1	38,303	5.4
1977/78	13					7.41	6.85-8.38	36,875	4.0
1978/79	6					7.11	6.29-8.67	80,773	2.0
1979/80	4					7.25	6.62-7.94	90,722	3.4
1980/81	41	5,920	31,187	6.18	1.0-14.47	7.19	6.38-8.16	42,826	9.6
1981/82	17	600	900	1.50	1.50-1.50	7.23	6.45-8.73	72,491	4.6
1982/83	22	1,542	6,449	3.22	1.30-7.63	7.54	6.61-8.51	54,600	5.2
1983/84	18	3,193	3,640	1.54	0.16-4.33	7.26	6.37-8.73	38,661	8.8
1984/85	16	1,804	4,507	3.24	1.27-6.30	7.56	6.49-9.30	35,884	10.1
1985/86				Fishery Closed					
1986/87				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	112	14,439	24,550	1.67	0.0-21.50	8.09	5.84-9.66	26,191	32.3
1994/95	124	17,975	32,987	1.76	0.0-35.07	8.14	6.15-10.33	31,840	27.1

^{1/} Dockside sampling not conducted in Statistical Area D (Yakutat).

^{2/} Data for the 1993/94 and 1994/95 seasons is summarized from mandatory logbooks and not fish tickets.

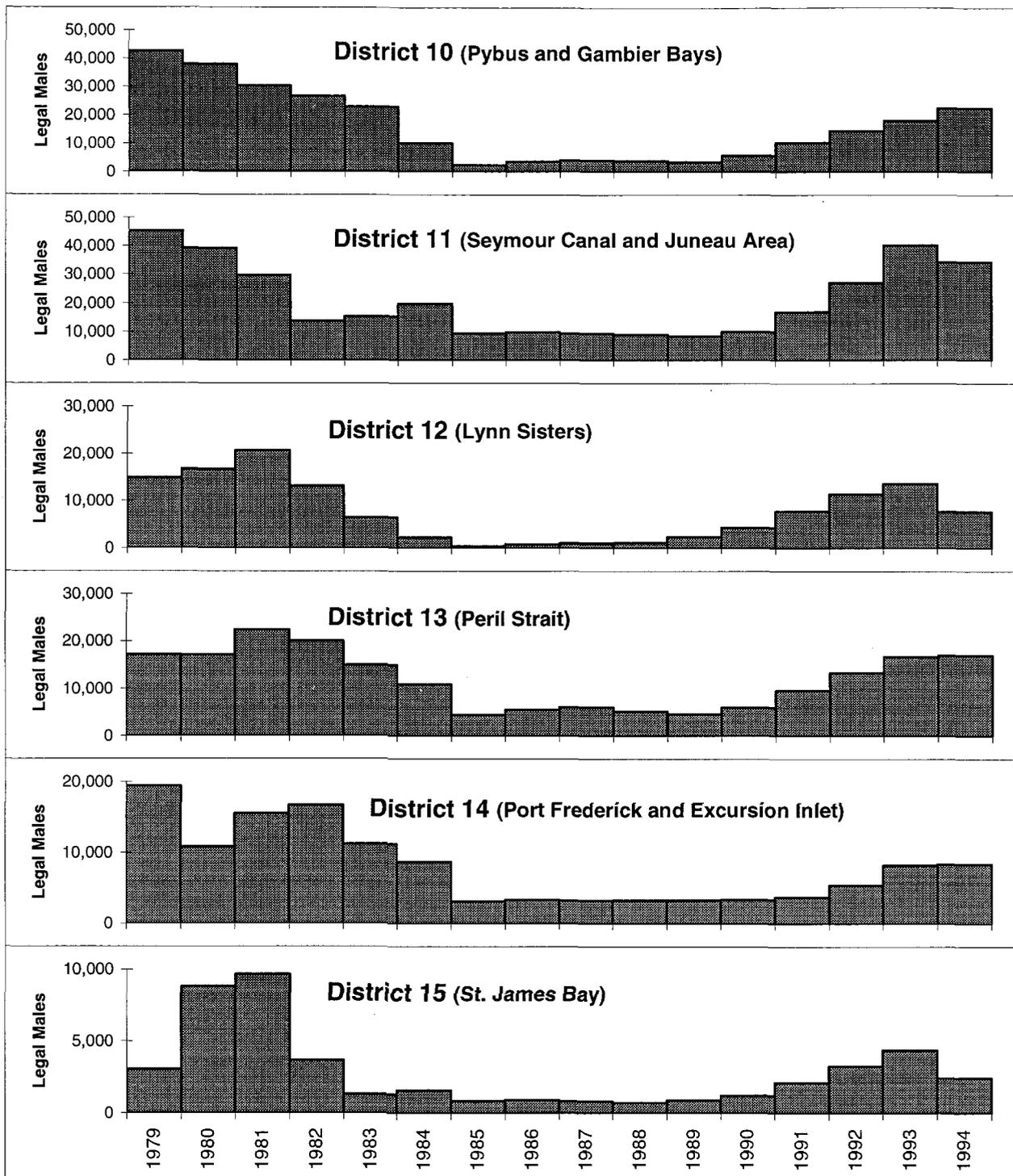


Figure 1. Estimated abundance of legal male red king crabs in districts 10 to 15, 1979 to 1994.

SECTION 5

1994/95 SOUTHEAST ALASKA COMMERCIAL BROWN KING CRAB FISHERIES

REPORT TO THE BOARD OF FISHERIES
1994/95 SOUTHEAST ALASKA
COMMERCIAL BROWN KING CRAB FISHERIES



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Juneau, Alaska

October 1995

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INTRODUCTION

This report presents an overview of the commercial brown king crab fishery in Southeast Alaska (Statistical Area A) with emphasis on the 1994/95 fishing seasons. Information is presented on historical harvest and effort, regulation development, and available dockside sampling data. Stock assessment surveys are not conducted for this fishery.

Brown king crab, *Lithodes aequispina*, are harvested from the deeper waters of northern Southeast Alaska between 100 and 350 fathoms. Few brown king crab are harvested from the southern portion of Southeast Alaska (Figure 1). Important brown king crab fishing grounds are located at the confluence of Icy Strait; Lynn Canal and Chatham Strait; where Chatham Strait and the western portion of Frederick Sound meet; and where Stephens passage and Frederick Sound meet. From the fishers perspective, the brown king crab fishery is more demanding than the red king crab, *Paralithodes camtschatica*, or the Tanner crab, *Chionoecetes bairdi*, fisheries because of the difficulties associated with fishing on grounds more exposed to adverse weather conditions, greater depths, strong tidal exchanges, and heavy currents.

Commercial vessels participating in the brown king crab fishery are primarily salmon tenders, salmon purse seine vessels, and a few large drift gillnet boats. Fishing gear has gradually evolved to include side-loading king crab pots (7' x 7' x 30") and top-loading pyramid or conical-style pots. Because of the depths involved, the heavier gear is preferred.

Management of the commercial brown king crab fishery is based on a conservative management plan and policies that have been reviewed and approved by the Alaska Board of Fisheries. Primary elements of the plan are: 1) seasons that open concurrently with the Tanner crab fishery, 2) harvest of only male crab with a minimum legal carapace width of 7 inches, 3) limits of 100 pots per vessel, and 4) quotas based on historic harvest levels which consider stock dynamics (level of recruitment).

FISHERY DEVELOPMENT AND HISTORY

Commercial Fishery History

Commercial king crab fishing in Southeast Alaska waters was initially documented in 1960 when a small harvest occurred in the Petersburg-Wrangell Management Area. From 1961 through 1968, harvests averaged less than 900,000 lbs per year with an average of nine vessels participating. The peak harvest of 2,199,772 lbs was taken by 19 vessels in 1968. In 1969, effort increased to 39 vessels but the resulting harvest declined to 1,899,930 lbs. These high harvests were due to very liberal gear and season regulations, a smaller minimum legal size, and catches that included a combination of red, blue, *Paralithodes platypus*, and brown king crab.

The department began collecting species composition information from the commercial king crab harvest in Southeast Alaska in 1970. Reliable data on the harvest of brown king crab has been available since the 1972/73 fishing season. From the 1972/73 through the 1975/76 seasons, harvests averaged 129,680 lbs of brown king crab and an average of 9 permits fished (Table 1).

Accurate species composition information was required on fish tickets beginning in January, 1976. From the 1976/77 through the 1979/80 fishing seasons, an average of 12 vessels harvested an average of 92,597 lbs of brown king crab each season. Adjusted to the 1990 consumer price index (CPI), the average exvessel value of the brown king harvest during this period was approximately \$220,000. Effort and harvests increased significantly after the 1979/80 fishing season.

During the following ten seasons, 1980/81 through 1989/90, the average number of permits fished was 66 and this effort level resulted in an average harvest of 825,006 lbs worth approximately \$1.9 million, adjusted to 1990 CPI. At current prices, this average harvest would be worth about \$2.3 million. These relatively high harvests coincided with a period of good recruitment. Fishing effort peaked during the 1984/85 season when 124 permits fished for a harvest of 848,818 lbs. The harvest peaked two seasons later during the 1986/87 season when only 51 permits fished for a harvest of 1,016,011 lbs. Recruitment in the brown king crab fishery has been very low since the 1985/86 fishing season and recent harvests have been relatively low.

The development of the brown king crab fishery in Southeast Alaska falls into four phases. The first phase occurred from the inception of the fishery in 1960 through the 1971/72 fishing season. This was a development phase characterized by fishermen determining which fishing methods, gear types, depth ranges, geographic areas, and other factors yielded adequate harvests of brown king crab. Also during this phase, processing facilities developed product forms and studied marketing potential. Prices and effort were low and harvests fluctuated, probably because red king crab were the primary target species during this phase. Basic regulations establishing quotas, gear limits, size limits and other regulatory needs were developed. These initial regulations were based on a short history of commercial exploitation, little scientific information, and experiences in other Alaskan king crab fisheries. Many of these initial regulations were changed dramatically when better information was available.

The second phase occurred during the 1972/73 through the 1979/80 fishing seasons and was characterized by low effort levels and generally increasing catches. Additional knowledge on gear requirements, fishing techniques, and geographic distribution of the species became available. Exvessel prices continued to be low.

The third phase began with the 1980/81 fishing season, and ended with the 1984/85 fishing season. Effort gradually increased from 30 to 124 permits fished. Knowledge on gear and fishing techniques developed to a stage where it was sufficient to harvest the available stock throughout the range in Southeast Alaska. Fishing occurred throughout the year. This phase is important because it showed a consistently increasing harvest which led to a liberalization of some regulations. Specifically, quotas used to manage the fishery were increased due to industry interactions with the Alaska Board of Fisheries. Although fishing effort and resulting harvests were increasing, scientific information sufficient to more properly manage stocks was not available. Many fishermen may have entered the fishery or intensified their fishing effort in anticipation of limited entry.

The fourth phase began with the 1985/86 fishing season and continues today. The peak harvest occurred during this period and has declined since the 1986/87 season due to lack of recruitment and overexploitation. The fishery was separated into five management areas with guideline harvest ranges established in each area in an attempt to prevent further overexploitation. The department has used the emergency order authority to close the fishery early each season, when data indicate that substantial recruitment has not entered the fishery and stocks are not strong enough to support significant harvests. The harvest has declined for the past six seasons, and the total Southeast Alaska harvest has been less than 100,000 pounds for the past two seasons.

Dockside Sampling and Skipper Interviews

Shell condition and carapace length data have been collected by department personnel from landings at various ports throughout the region since 1970 (Table 4). Resulting data are utilized to estimate recruitment trends and relative contribution from various size-classes of crab. Department personnel began collecting average weight data from landings in 1975 (Table 5). Average weight data provides additional insight into stock dynamics. In 1985, skipper interviews were initiated to provide an estimate of catch per unit of effort (CPUE) that may be useful for determination of fishing mortality.

REGULATION DEVELOPMENT

Fishing Seasons

Regulation development in the brown king crab fishery has generally paralleled that of the red king and Tanner crab fisheries. Biological information which identifies specific molting and mating periods, or other sensitive life history periods when fishing should be curtailed have not been collected for brown king crab. Available information suggests that molting may occur throughout the year, with no specific peak activity. The presence of eggs in all stages of development throughout the year supports the conclusion of no distinct molting or mating period. As a result, fishing seasons have been liberal. From 1961 through 1968 there was no closed season. Closures have been primarily established to provide fair start opportunities during red king crab and Tanner crab fisheries. Fishing has started on dates ranging from August 1 through October 1. The fishery currently starts on February 15, concurrently with the start of the commercial Tanner crab fishery, and continues through January 29, unless the season is closed earlier by emergency order due to resource conservation concerns or the attainment of established guideline harvest ranges.

Sex and Size Limits

From its inception, the king crab fishery has been restricted to harvesting only male crab in order to protect the reproductively important female crab. From 1961 through 1968, a minimum legal size of 6 1/2 inches in carapace width was in place. The minimum legal size was established to protect sexually mature male brown king crab from harvest during the early years of sexual maturity. The minimum legal carapace width was increased to 7 inches in 1969. This size limit was based on growth and size at maturity information collected from Gulf of Alaska red king crab stocks. The larger minimum size limit was implemented to increase reproductive potential by providing additional protection to mature male crab.

Average size at maturity for male brown king crab in Southeast Alaska is unknown. With the absence of this important piece of biological information, it has been assumed that size of maturity for male brown king crab is the same as for male red king crab, based on red king crab data from Kodiak. This assumption was made because growth information for Southeast Alaska and Kodiak red king crab is very similar; and because growth increments for both species in Southeast Alaska is almost identical. Known regression formulae relating carapace length to carapace width for brown king crab in Southeast Alaska were used to establish the correct legal width measurement.

In 1990, a regulation was adopted allowing the harvest of any king crab infected with the parasitic barnacle, *Briarosaccus callosus*, regardless of the sex or size of the crab. Crab infected with this parasite are incapable of reproduction and may experience reduced growth. Removal of infected crab may improve stock reproduction and growth.

Quotas and Guideline Harvest Ranges

In 1970, a quota of 1.5 million lbs was provided for king crab (all species combined). In 1971, separate red and brown king crab fisheries were recognized with the adoption of distinct seasons, and a quota of 600,000 lbs was established for the brown king crab fishery. This quota remained in regulation through 1977. After 1977, quotas were replaced by guideline harvest ranges (GHR's). The first GHR of 50,000 to 200,000 lbs was established in 1978. The GHR was increased to 200,000 to 500,000 lbs in 1981 based on industry recommendations. This GHR remained in regulation through the 1986/87 fishing season.

Due to the propensity of the fleet to concentrate fishing effort only in the most productive fishing grounds, and in order to prevent overexploitation on any single fishing grounds, separate GHR's were established in 1987. Initially only three areas (Frederick Sound, Icy Strait, and Lower Chatham Strait) were assigned GHR's. Five defined fishing areas and GHR's exist in regulation today. They are:

- | | |
|--------------------------|-------------------|
| (1) Frederick Sound Area | 0 to 350,000 lbs; |
| (2) Icy Strait Area | 0 to 250,000 lbs; |
| (3) Chatham Strait Area | 0 to 150,000 lbs; |
| (4) Cape Ommaney Area | 0 to 100,000 lbs; |
| (5) Clarence Strait Area | 0 to 25,000 lbs. |

Fishing Gear

From 1961 through 1967, there were no restrictions on the amount or type of gear that could be fished by a vessel participating in the king crab fishery. In 1968, a limit of 40 pots per vessel was established for Southeast Alaska waters. The maximum number of pots per vessel was increased to 60 in 1974 and to 100 in 1978.

There is no minimum mesh size requirement for king crab pots. Regulations require degradable twine or a timed galvanic release device in case the pot is lost. Tunnel height on standard side loading pots must be a minimum of eight inches in the vertical dimension. There are restrictions on pot storage before and after fishing seasons and each pot must be independently buoyed and marked. Ring nets were eliminated as legal gear for king crab in 1990.

Limited Entry

A limited entry program was established for the king and Tanner crab pot fisheries in Southeast Alaska by the Commercial Fisheries Entry Commission (CFEC) in January, 1984. The CFEC adopted a maximum effort level of 57 permits for the brown king crab fishery. Currently there are 73 permits eligible to participate in the brown king crab fishery. Some of these permits may not be eligible to fish once the adjudication process is completed.

1994/95 SEASON SYNOPSIS

The 1994/95 brown king crab fishery opened concurrently with the commercial Tanner crab fishery on February 15, 1994 and was closed by emergency order on April 19, 1995. During the season 19 permits were fished and 39,344 lbs of crab were harvested (Table 1). Most of the harvest occurred during March and April (Table 2) and was landed from the Frederick Sound and Chatham Strait areas. Little effort targeted on brown king crab while the Tanner crab fishery was open.

Dockside sampling information indicates that more than 66 percent of the crab harvested were postrecruits, and over 21 percent were skipmolt crab (Table 4). The average weight of 7.52 lbs per crab was high, and the average CPUE of 1.51 crab per pot lift was low (Table 5). In combination these data suggest that significant recruitment had not entered the fishery prior to the fishing season, that the stock is still comprised of predominantly older crab from previous recruitment events, and stock abundance remained low.

1995/96 OUTLOOK

The only information available to assist management is fish ticket data which provides catch and effort information, and dockside sampling data which provides stock structure and limited CPUE information. These sources provide only a postseason analysis of stock condition. Some small differences in data exist between the fishing areas, but the same pattern emerges for all. Stock abundance throughout the region remains at a low level. The last significant recruitment event started with the 1982/83 fishing season and ended with the 1986/87 fishing season. It is likely that the abundance of legal brown king crab will continue at a low level, or decline further, unless significant recruitment enters the fishery prior to the 1995/96 fishing season.

Table 1. Southeast Alaska (Statistical Area A) summary of commercial brown king crab harvest data from fish tickets by accounting year (October through September), 1972/73 to present.^a

Accounting Year	Permits	Landings	Pounds	Lbs/Landing
1972/73	10	113	265,310	2,348
1973/74	14	92	179,520	1,951
1974/75	7	35	34,451	984
1975/76	5	21	39,439	1,878
1976/77	6	30	74,941	2,498
1977/78	14	53	82,733	1,561
1978/79	10	65	49,679	764
1979/80	19	78	163,035	2,090
1980/81	30	152	698,606	4,596
1981/82	54	255	653,015	2,560
1982/83	70	283	812,437	2,870
1983/84	90	307	973,100	3,169
1984/85	124	277	848,818	3,064
1985/86	61	211	697,710	3,306
1986/87	51	222	1,016,011	4,576
1987/88	56	234	948,798	4,054
1988/89	59	229	968,703	4,230
1989/90	63	260	632,871	2,434
1990/91	39	220	426,877	1,940
1991/92	33	151	225,927	1,496
1992/93	18	80	103,781	1,297
1993/94	13	51	30,318	594
1994/95 ^{bv}	19	65	39,344	605

^w Includes all test fishing and illegal harvest data which has been excluded from Tables 6, 11, 16, and 21.

^{bv} Most recent year's data should be considered preliminary.

Table 2. Southeast Alaska (Statistical Area A) summary of commercial brown king crab harvest data from fish tickets by month and accounting year (October through September), 1972/73 to present.

Accounting Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Total Landings	Permits Fished	
1972/73	18.1	43.7	18.6	22.0	26.3	19.5	35.6	11.0	6.0	11.1	9.6	43.8	265.3	113	10
1973/74	25.6	21.4	15.6	16.5	12.2	24.6	30.9	15.5	0.0	0.0	3.2	13.9	179.4	92	14
1974/75	8.9	4.9	3.2	4.5	1.4	2.8	3.8	0.0	0.0	0.0	0.0	5.0	34.5	35	7
1975/76	16.1	4.8	7.9	*	*	13.2	1.7	*	0.0	0.0	*	*	39.4	21	5
1976/77	*	9.1	*	*	*	9.1	7.5	*	0.0	0.0	0.0	*	74.9	30	6
1977/78	*	*	*	*	10.0	11.7	14.3	0.0	0.0	0.0	0.0	*	82.7	53	14
1978/79	*	4.4	8.7	9.7	5.9	5.9	3.7	*	0.0	0.0	*	3.3	49.7	65	10
1979/80	4.7	8.2	4.9	9.0	16.5	34.8	44.9	10.4	*	8.8	0.0	13.9	163.0	78	19
1980/81	30.2	43.2	18.2	79.3	178.3	171.0	87.7	*	*	*	*	14.0	698.6	152	30
1981/82	43.0	41.7	44.0	17.9	65.8	80.9	70.7	20.9	82.0	70.0	55.8	60.4	653.0	255	54
1982/83	174.1	77.5	66.7	0.0	115.8	168.3	15.0	46.8	27.5	36.6	59.8	24.0	812.4	283	70
1983/84	23.7	50.6	11.0	33.7	152.7	303.5	287.7	53.4	32.2	11.0	6.9	6.6	973.1	307	90
1984/85	166.9	250.8	19.9	14.9	117.8	172.5	22.3	19.6	24.9	*	19.1	11.9	848.8	277	124
1985/86	39.9	53.8	41.1	32.1	240.4	249.1	8.6	4.5	14.7	*	*	*	697.7	211	61
1986/87	147.5	80.2	46.3	326.2	136.5	70.5	67.9	39.3	39.0	*	27.8	17.3	1,016.0	222	51
1987/88	13.2	15.2	10.3	264.6	297.4	80.2	64.0	79.0	63.8	29.3	20.1	12.2	948.8	234	56
1988/89	2.6	*	3.3	*	220.9	329.2	122.6	101.1	63.0	44.3	41.8	35.0	968.7	229	59
1989/90	78.8	31.8	6.5	5.9	71.1	145.3	68.2	60.3	55.7	42.2	23.3	43.7	632.9	260	63
1990/91	51.3	14.0	8.4	*	38.1	89.3	67.9	60.0	52.0	14.3	*	11.6	426.9	220	39
1991/92	18.7	17.7	16.0	10.8	8.7	44.6	56.2	29.6	*	*	*	*	225.9	151	33
1992/93	*	*	*	*	2.9	28.2	22.3	13.9	8.6	*	*	0.0	103.8	80	18
1993/94	0.0	0.0	0.0	0.0	2.6	9.0	13.1	5.6	0.0	0.0	0.0	0.0	30.3	51	13
1994/95 ^u	0.0	0.0	0.0	0.0	6.3	14.5	15.2	3.4	0.0	0.0	0.0	0.0	39.3	65	19

^u Most recent year's data should be considered preliminary.

* Where number of permits participating is less than three, information is confidential.

Table 3a. Southeast Alaska (Statistical Area A) summary of commercial brown king crab harvest data from fish tickets by fishing district and accounting year (October through September), 1972/73 to present.

District	Accounting Year											
	1972/ 1973	1973/ 1974	1974/ 1975	1975/ 1976	1976/ 1977	1977/ 1978	1978/ 1979	1979/ 1980	1980/ 1981	1981/ 1982	1982/ 1983	1983/ 1984
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	3.2
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	*
8	0.4	0.1	0.1	0.0	0.0	*	0.0	1.1	1.2	6.1	*	5.4
9	10.5	0.5	14.9	0.0	*	0.0	0.0	0.0	*	48.8	109.3	135.4
10	186.5	149.2	12.3	*	*	73.7	36.7	61.3	204.6	248.2	186.5	222.7
11	36.2	24.6	0.7	0.0	*	7.3	6.7	21.8	25.9	48.8	52.6	24.6
12	5.8	0.0	5.2	*	*	*	1.3	61.8	169.7	92.9	228.7	438.2
13	0.0	0.6	0.0	*	0.0	*	0.0	0.0	*	6.2	12.9	*
14	2.6	4.1	1.4	0.0	0.0	0.0	*	*	236.9	152.6	151.7	46.5
15	23.4	0.4	0.1	*	*	*	*	16.7	53.8	49.4	39.3	91.7
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	265.3	179.5	34.7	39.4	74.9	82.7	49.7	163.0	698.6	653.0	812.4	973.1

^{u/} Most recent year's data should be considered preliminary.

* Where number of permits participating is less than three, information is confidential.

Table 3b. Southeast Alaska (Statistical Area A) summary of commercial brown king crab harvest data from fish tickets by fishing district and accounting year (October through September), 1972/73 to present.

District	Accounting Year										
	1984/ 1985	1985/ 1986	1986/ 1987	1987/ 1988	1988/ 1989	1989/ 1990	1990/ 1991	1991/ 1992	1992/ 1993	1993/ 1994	1994/ 1995 ^a
1	0.0	*	*	0.0	0.0	*	0.0	0.2	0	0	0
2	*	*	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
6	*	17.6	10.1	*	*	*	*	*	*	0.0	*
7	14.1	*	*	*	*	0.0	0.0	*	0.0	0.0	0.0
8	*	5.2	*	*	10.3	*	*	*	*	0.0	0.0
9	192.3	234.0	609.3	298.0	413.6	231.3	213.3	137.8	74.7	15.9	22.3
10	375.9	324.4	298.8	318.6	338.8	146.1	83.2	13.1	6.7	3.8	*
11	34.5	35.6	43.8	36.9	9.1	6.9	18.5	20.6	11.2	5.6	9.0
12	153.3	23.3	*	195.7	140.5	206.0	82.9	35.1	*	*	2.8
13	2.5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	52.8	24.8	1.5	16.4	37.5	30.2	19.4	9.2	*	*	*
15	13.1	24.9	16.2	66.6	12.4	9.2	8.7	4.0	0.0	0.0	*
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	848.8	697.7	1,016.0	948.8	968.7	632.9	426.9	225.9	103.8	30.3	39.3

^aMost recent year's data should be considered preliminary.

*Where number of permits participating is less than three, information is confidential.

Table 4. Southeast Alaska (Statistical Area A) summary of commercial brown king crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.^{1/}

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Length (mm)		Recruitment					
			Average	Range	Recruits ^{2/}	% PR +1 ^{3/}	% PR +2 ^{4/}	% PR +3 ^{5/}	% PR +4 ^{6/}	% Skip Molts ^{7/}
1970/71	16	1,244	172.7	142 - 214	29.2	47.3	19.5	3.4	0.6	12.9
1971/72	15	1,594	175.2	150 - 211	18.0	47.7	28.8	5.5	0.1	26.9
1972/73	13	1,236	174.2	149 - 208	25.7	47.2	22.3	4.5	0.2	16.1
1973/74	8	604	173.0	146 - 210	26.7	39.5	28.7	4.7	0.3	28.6
1974/75	*									
1975/76	10	934	171.8	145 - 208	36.1	43.1	17.6	3.1	0.1	11.3
1976/77	*									
1977/78	8	727	170.0	149 - 201	23.2	39.2	29.3	8.3	0.0	53.9
1978/79	6	498	171.0	145 - 201	35.2	39.8	23.1	1.8	0.0	20.5
1979/80	5	477	169.8	145 - 203	37.1	36.5	18.9	7.3	0.2	32.7
1980/81	21	1,355	171.6	149 - 206	31.2	46.5	18.4	3.9	0.0	20.1
1981/82	7	634	177.7	148 - 214	21.3	43.7	26.7	7.6	0.8	15.1
1982/83	18	1,567	169.8	146 - 204	35.4	43.5	17.6	3.4	0.1	23.9
1983/84	10	703	169.6	150 - 196	40.9	41.3	15.2	2.6	0.0	15.8
1984/85	12	1,368	165.3	148 - 196	58.2	32.1	9.0	0.7	0.0	15.9
1985/86	21	2,106	166.7	149 - 198	48.4	41.2	9.1	1.4	0.0	16.4
1986/87	40	4,327	168.4	143 - 214	39.9	43.7	13.1	3.3	0.0	21.5
1987/88	64	5,733	173.3	148 - 212	20.0	49.9	23.4	6.6	0.0	26.7
1988/89	80	7,924	173.2	145 - 210	24.2	46.5	24.9	4.4	0.1	24.7
1989/90	97	9,031	176.1	146 - 211	18.9	45.8	29.5	5.7	0.1	20.8
1990/91	77	7,121	174.5	146 - 214	25.5	40.8	26.1	7.4	0.2	23.8
1991/92	49	4,100	173.7	148 - 213	27.7	37.4	24.7	9.7	0.4	31.2
1992/93	12	1,158	173.4	150 - 211	29.5	42.9	21.0	6.5	0.1	21.2
1993/94	13	1,080	171.1	133 - 206	30.5	53.0	14.1	2.4	0.0	16.1
1994/95	12	1,035	171.2	137 - 208	33.8	43.9	16.8	5.3	0.2	21.9

^{1/} Summary tables of all dockside sampling data includes data from Tables 9, 14, 19, and 24 plus data collected that could not be assigned to a fishing area.

^{2/} Recruits = all new and soft shell crab ³151 mm and £167 mm carapace length.

^{3/} PR +1 = all new and soft shell crab ³168 mm and £184 mm, and old & very old shell crab ³151 mm and £167 mm, carapace length.

^{4/} PR +2 = all new and soft shell crab ³185 mm and £201 mm, and old ³168 mm & £184 mm, and very old ³151 mm and £167 mm, carapace length.

^{5/} PR +3 = all new and soft shell crab ³202 mm and all old ³185 mm and £201 mm, and very old ³168 mm and £184 mm, carapace length.

^{6/} PR +4 = all old and very old where carapace length ³202 mm.

^{7/} Skip molts = all old and very old crab.

Table 5. Southeast Alaska (Statistical Area A) summary of commercial brown king crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.^{1/}

Season	Number of Boats Sampled	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested ^{2/}	Percent of Harvest Sampled ^{3/}
						Average	Range		
1970/71	0								
1971/72	0								
1972/73	0								
1973/74	*								
1974/75	0								
1975/76	*								
1976/77	0								
1977/78	*								
1978/79	0								
1979/80	*								
1980/81	9					7.78	6.55 - 8.78	89,795	1.51
1981/82	*								
1982/83	13	1,697	3,482	2.91	1.09 - 5.32	7.04	6.48 - 7.88	115,403	1.36
1983/84	7					7.10	6.28 - 7.63	137,056	0.51
1984/85	15					6.48	5.74 - 7.28	130,990	1.04
1985/86	20	5,857	28,954	5.14	1.58 - 8.68	6.61	5.98 - 8.45	105,554	2.00
1986/87	36	8,707	33,062	4.51	1.57 - 16.40	6.90	6.16 - 8.46	147,248	2.94
1987/88	65	17,626	59,220	3.44	0.09 - 12.69	7.40	6.50 - 10.58	128,216	4.47
1988/89	86	25,765	89,212	3.50	0.43 - 8.98	7.37	5.75 - 8.71	131,439	6.03
1989/90	94	18,049	40,411	2.61	0.32 - 8.84	7.98	6.45 - 9.40	79,307	11.39
1990/91	80	13,701	28,373	2.28	0.31 - 6.57	7.70	6.31 - 10.99	55,439	12.84
1991/92	47	8,594	16,427	2.02	0.18 - 4.00	7.63	6.30 - 9.78	29,727	13.79
1992/93	13	2,342	5,584	2.50	0.52 - 4.25	7.55	6.53 - 8.29	13,746	8.42
1993/94	13	1,425	2,771	1.89	0.65 - 3.42	7.23	6.51 - 8.27	4,193	25.76
1994/95	13	1,112	1,808	1.51	0.52 - 2.67	7.52	6.55 - 9.15	5,232	19.78

^{1/} Summary tables of all dockside sampling data includes data from Tables 10, 15, 20, and 25 plus data collected that could not be assigned to a fishing area.

^{2/} Calculated by dividing fish ticket weight data by dockside sampling average weight per crab data.

^{3/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

SECTION 6

YAKUTAT DUNGENESS CRAB FISHERIES, 1993/94 AND 1994/95

REPORT TO THE BOARD OF FISHERIES
YAKUTAT DUNGENESS CRAB FISHERIES, 1993/94 AND 1994/95



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Alaska Department of Fish and Game
Division of Commercial Fisheries
Juneau, Alaska

October 1995

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INTRODUCTION

Dungeness crabs (*Cancer magister*) are members of the highly evolved brachyuran (true crab) subgroup of the order Crustacea. They are a commercially significant species found in coastal waters from Baja California to the Aleutian Islands.

Fishing grounds in Statistical Area D (Yakutat), between Cape Fairweather and Cape Suckling, account for much of the total Alaskan harvest in many seasons. The fishery is recruit-based. Interannual variability in recruitment is very high, resulting in large, multi-year cycles of high and low abundance.

The northwesternmost waters of the Yakutat Area are within a degree of the upper latitudinal limits of the range of Dungeness crabs. Although they are widely distributed in Yakutat waters, they tend to concentrate in relatively limited, discontinuous areas of better habitat, often found along open ocean beaches on sand and silt substrates at depths between two and ten fathoms. Some of the most productive summer fishing occurs in waters as shallow as two fathoms in the shore break of exposed beaches. Although the fishery extends along the entire coast, much of the total catch is reported from four or five distinct fishing grounds along the coast.

Yakutat is a superexclusive registration area for Dungeness crab; a vessel registered to fish in this area cannot register or fish in any other area in Alaska during the same calendar year. During recent seasons, up to 67 vessels have registered and fished in the Yakutat area. Most of these vessels are 50 feet or larger with some vessels up to 90 feet in length. As a rule, the fleet is composed of sturdy vessels designed to operate in near-shore rollers and capable of open ocean transit. The 400 pot limit, open ocean conditions, and the remote nature of the fishing grounds favor vessels typical of Dungeness fisheries in the Pacific Northwest. In fact, most of the highly mobile vessels fishing the more remote ends of the western and eastern grounds in the Yakutat fishery are from the Pacific Northwest or Northern California.

All crabbers use standard, hatbox-shaped pots constructed with rubber-wrapped steel frames and stainless steel wire meshing. The maximum legal limit for Yakutat is 400 pots per registered vessel. This is a reduction from 600 pots that was last available in the 1993/94 season.

Management is based on harvest information from fish tickets and size frequency information obtained from a limited port sampling program. Many landing ports, such as Pelican and Cordova, are remote, making dockside sampling particularly difficult. Understanding the effects of the fishery on crab stocks requires more field work than is currently programmed.

An important concern is the overlap of summer fisheries with portions of the male molting period, that extends into mid-summer, and the female molting period that extends through the summer into early autumn. The major mating period follows the major female molting event in any given area and occurs from mid to late summer. The major management concern is for injury and mortality resulting from high handling rates on unmarketable soft-shell and sublegal males and molting and mating females. Alaska is

the only management jurisdiction on the West Coast that permits major summer fisheries for Dungeness crab, mostly exported to summer tourist markets for whole-cooked and live crabs in Washington, Oregon, and California.

These concerns were not as pressing through the early 1980s, when ample fishing grounds were available and fishermen who encountered a high percentage of soft-shelled crabs, female crabs, or mating pairs could move to other grounds where better product conditions prevailed. Many peripheral areas were not fished, serving as nursery or refuge areas. Since the late 1980s, all available fishing grounds have been fully utilized and the fishery is increasingly dependent on annual recruitment. The success of the summer fishery depends greatly on occasional recruitment events which support the fishery for up to three subsequent years. Until the next large recruitment event, the fishery would be highly vulnerable to local stock depressions.

More conservative management of the summer fishery would be prudent because Yakutat is so near the upper latitudinal limit of this species. Limiting factors are probably more accentuated here than in more central parts of their range and depressions in stock abundance should be expected to be more severe and extended. In addition, the gradual adoption of limited entry in the fisheries of Washington, Oregon, and California could be expected to displace effort to Alaskan waters. In Alaska, the Yakutat area most closely resembles the open-ocean fisheries in these other states and could be expected to attract the most interest.

The long-term management goal is to promote long-term viability of the resource and to minimize the effects of poor recruitment. Attaining this goal will require innovative management measures tailored to the unique requirements of this fishery.

FISHERY DEVELOPMENT AND HISTORY

From the mid-1920's to the mid-1960's, the Southeast Alaska and Yakutat dungeness crab fisheries were managed as a single unit. Prior to the 1960's, catches from much of the Gulf of Alaska coast were combined into a single total. Since 1960, harvests from the Yakutat area have averaged 1,663,600 lbs (Table 1). Historically, the largest proportion of the catch has been taken during the months of June and July even during those years when the fishery opened earlier and lasted longer than currently (Tables 2 and 3).

The fishery in the Yakutat area has evolved through two major periods since the early 1960's. Between the early 1960's and the 1981/82 season, landings and efforts fluctuated widely; with 3 to 27 vessels landing between 131,000 and 2,347,800 lbs per season (Table 1). Since the 1981/82 season, effort has generally been higher (22 to 67 permits) and landings have fluctuated between 371,200 and 5,160,100 lbs per season. Until the mid 1980's, demand for Dungeness crab from Yakutat was generally inversely related to the availability of crab from Washington, Oregon, and California. To a certain extent, effort was constrained by low prices and limited interest by processors fully occupied with summer salmon fisheries.

A number of factors contributed to the general increase in effort during the early to mid 1980's. As the preferred product changed from a frozen or canned meat pack, there was increasing interest from processors to process Dungeness crab throughout the year. A series of poor seasons to the south prompted greater interest in Alaskan fisheries to fill the demand for product and supplemental income. For many crabbers from the Pacific Northwest, the Yakutat fishery was, and continues to be attractive because the major catch and effort occurs during the summer when fisheries in their home waters are closed. The crabbers who fished the 1980/81 and 1981/82 seasons also observed the entry of at least one, and perhaps two, huge recruit classes into the fishery. These year classes supported increasing fishing effort through the next two seasons and set the pattern for the development of the current fishery.

In recent years, the seasons have been shortened and separated into summer and winter segments. Since the departure of the strong 1980/81 and 1981/82 year classes from the fishery, the catch has apparently been limited by actual abundance of crab rather than effort. There was a significant recruitment event in the 1987/88 season that supported the fishery for two seasons and modest recruitment in 1990/91 and possibly in 1991/92. During the past four seasons, consistent indications of local depression in the stocks on the Icy Bay and Cape Yakataga grounds have been reported by crabbers. During the past two seasons, effort has concentrated more on the Eastern Forelands grounds between Cape Fairweather and Ocean Cape. The past season was one of the poorest on record, with low catches reported throughout the Yakutat registration area.

REGULATION DEVELOPMENT

Fishing Seasons and Periods

The documented regulatory history of this fishery extends from 1924 to the present. For most of the seasons between 1924 and 1975/76, the fishery was open all year. The season opened on January 1 and closed on December 31. The effort and landings started changing in the late 1960's and early 1970's. Following eight consecutive years of catches between 1,000,000 and 2,000,000 lbs, and a rapid rise in the number of fishing vessels, the season was shortened in 1975, starting on May 16, with a scheduled closure on February 28, 1976. The season was closed early by emergency order due to the occurrence of large numbers of soft-shelled crab in the catch. It was a below-average season and notable only because it marked the advent of short seasons and in-season management of the fishery based on stock conditions.

The opening date was changed by regulation to June 1 for the 1976/77 season, with a scheduled closure on February 28, 1977. This season remained the same through the 1981/82 season, although several intervening seasons were closed by emergency order when large numbers of soft-shells were sampled at the dock. The season changed again in 1982, with an opening date set by regulation on May 1, with a closing date of February 28, of the following year. However, from 1982/83 through 1984/85, the season was closed by emergency order at some point in the summer, usually because of soft-shelled crabs in the commercial catch. In 1985, a split season was adopted by regulation. The summer season was established from May 1 through July 14, and the winter season from November 1 through February 28, 1986. This provided fishing opportunities during the winter, which were mostly utilized by local residents fishing in Yakutat Bay. The summer season was generally tailored to start after the major molt on the western grounds off Icy Bay and Cape Yakataga and end before the major molt in the Yakutat Bay and Eastern Forelands grounds. By 1986, it was evident that the May 1 opening was too early and the season was shortened to start on May 15. For each season since, the summer segment of the season has started on May 15 and ended on July 14, and the winter segment has started on November 1 and ended on February 28. Emergency closures have not been implemented since the 1987/88 season.

Size Restrictions

From 1924 to 1935, the legal size of male crabs was 6 1/2" in greatest width of carapace. This changed in 1936 to seven inches and remained unchanged until 1963, when the measurement was redefined as 6 1/2" in width, measured immediately anterior to the tenth anterolateral spines. This was essentially the equivalent of a seven inch total shell width measurement but more consistent since damage to the tips of the tenth anterolateral spines is common, particularly in older shell crabs. This measurement standard has been in effect since then.

Two-S Management

The Dungeness crab fishery in Yakutat is managed under a 2-S (size and sex) system, a modification of the 3-S system used in California, Oregon, Washington and British Columbia. The 3-S is a passive management system developed over a long period of time specifically for Dungeness crab management. It employs a seasonal closure to avoid sensitive life history periods such as molting and mating and restricts harvest to only male crabs (sex) 6 1/2" or more in width (size) which presumably allows for least one reproductively active season prior to molting to legal size. In most places, the major open season is scheduled for the late autumn or winter months to avoid soft-shell crab and the mating period. In Yakutat, the major fishery is scheduled during the summer, with a starting date and closure date tailored to avoid the peak molts and mating periods to the extent possible. This is a concession to the extreme weather conditions in the winter in Yakutat. Both classical 3-S and modified 2-S management do not provide for effective management of intensive, highly competitive fisheries. If the effort in Yakutat continues to climb or the stocks significantly decline, other management options will need to be considered.

Gear Restrictions

In 1934, trawls were prohibited by regulation and only pots or ring nets were allowed from 1954 to 1965. A gear limit of 300 pots or ring nets was implemented in 1963. In 1966, diving gear was legalized. The legal limit for pots and ring nets was raised to 600 pots in 1968. This limit was lowered to 400 pots for the 1994 summer fishery and continues to the present. Two escape rings with a minimum inside diameter of 4 3/8" were first required in 1976. The intent of escape rings is to permit the escape of females, which are usually smaller than legal and sublegal males. In 1977, a Dungeness pot was defined as a pot with tunnel eye openings which individually do not exceed 30" in perimeter to differentiate it from other shellfish gear. A biodegradable natural fiber breaking strap for the pot tiedown has been required since 1978. Originally specified for a maximum of 120 thread, it was reduced in 1990 to 30 thread, then increased in 1991 to 60 thread.

Other Regulations

Registration and hold inspections were required starting in 1974. In 1983, Yakutat was designated a superexclusive registration district and vessels registering to fish in Yakutat were prohibited from fishing in any other area in Alaska for the calendar year. The hold inspection requirement was rescinded in 1984, although registration was still required. In the same year the area between Sitkagi Bluffs and Cape Yakataga, the western half of the Yakutat fishing district, was designated a non-exclusive area. Gear storage in the water was allowed for seven days after the closure if doors were open and bait removed. The partial non-exclusive area was difficult to enforce and other problems led to redesignation of the entire Yakutat fishing district as a superexclusive registration area in 1985. In 1986, Yakutat was designated as Statistical Area D, distinct and separate from Southeast Alaska (Statistical Area A).

1993/94 SEASON SYNOPSIS

Forty-four permit holders reported landings in the 1993/94 season. The 1993/94 fishery was divided into summer (May 15 - July 14) and winter (November 1 - February 28) seasons, during which a total of 815,969 lbs. were landed (Table 1). This was well below the long-term, historical and most recent ten-year averages. About 93.9% of this total was landed during the summer season (Table 2). A large proportion of the total tonnage was landed by non-resident fishermen. Most of the winter catch (about 49,505 lb.) was taken by the local Yakutat fleet. Exvessel value of the total summer and winter catch was between \$0.95 and \$1.00 per pound, for a total of about \$800,000, caught by 44 permit holders making 250 landings (Table 1). All indicators of stock abundance were down this past season, including total catch, catch per permit, and pounds per landing.

During the summer fishery, most of the catch was reported from the eastside districts (Districts 181 and 183) between Cape Fairweather and Ocean Cape (Tables 2 and 3). This represented a departure from the usual trend where the catches are more evenly distributed between the eastside grounds and those to the westside between the Sitkagi Bluffs and Cape Suckling (Table 4). This large differential between the eastside and westside grounds may indicate problems in the general health and abundance of crabs on the westside, particularly because it appears to be part of a trend of declining catches from the westside grounds since the late 1980's.

The catch-by-month information indicated that fishing effort was sufficient to catch over half the available crabs within the first two weeks of the fishery. Fishing was reportedly so poor that some of the vessels left after the first few weeks to tender salmon, fish for halibut, or return to the Pacific Northwest. This early departure for other fishing opportunities or home ports has persisted through at least two seasons.

Five major processors, including one in Cordova and one in Southeast Alaska, purchased crabs from the area. Some used tenders to move product out of the registration area, notably to Cordova and Pelican. Some product was also sold by catcher-processors.

Partly because deliveries to the shore-based plant in Yakutat were sporadic and scheduled on very short notice, fewer crabs were sampled than statistically desirable. A total of 1,757 crabs were sampled for width and shell condition (Table 5). Ideally, 500 crabs per month from four major fishing areas would be necessary to delineate stock composition by fishing ground.

The average size for the season was 179.5 mm. In general, the percentage of recruit crabs (76.5%) was very high and the percentage of skip-molts was slightly below average (16.8%). Port sampling indicated that recruits were a high proportion of the catch and there was little hold-over from the previous season.

1994/95 SEASON SYNOPSIS

The 1994/95 fishery was divided into summer (May 15 - July 14) and winter (November 1 - February 28) seasons, during which a total of 915,523 lb. were landed by 47 permit holders (Table 1). This poundage was well below the long-term, historical average as well as the most recent ten-year average. About 84.9% of the total was landed during the summer season (Table 2). A large proportion of the total tonnage was landed by non-resident fishermen. Most of the winter catch (about 137,835 lb.) was taken by the local Yakutat fleet. Exvessel value of the total summer and winter catch was between \$1.00 and \$1.20 per pound, for a total of about \$1,007,000 caught by 47 permit holders making 240 landings (Table 1). While total catch, pounds per permit, and pounds per landing were slight improvements over the 1993/94 season, they were well below the most recent five season average. All these indicated that stock abundance continued to be at low to moderate levels.

During the summer fishery, most of the catch was reported from the eastside areas within Districts 181 and 183 between Cape Fairweather and Ocean Cape. This represented a continuation of a trend where the catches are coming more from the eastside grounds than those from the westside areas in Districts 181 and 191. This large, recent, differential between the eastside and westside grounds may indicate problems in the general health and abundance of crabs on the westside.

Harvest information indicated that fishing effort was sufficient to take over a third of the total catch within the first two weeks of the fishery. Fishing was reportedly very poor, with some of the vessels leaving after the first week to tender salmon or return to the Pacific Northwest. This early departure for other fisheries or home ports has persisted through at least three seasons.

Four major processors, two in Cordova and two in Southeast Alaska, purchased crabs from this fishery. Some used tenders to move product out of the registration area, notably to Cordova and Pelican. Lower volumes were shipped or sold by a few catcher-processors, independent small processors, and incidental deliveries to larger processors outside the registration area.

Only 971 crabs were sampled for width and shell condition (Table 5). Ideally, 500 crabs per month from four major fishing areas would be necessary to delineate stock composition by fishing ground. The average size for the season was 178.1 mm. In general, the percentage of crabs which were recruits (87.7%) was very high. Similar rates have been noticed during the past as the larger individuals of a strong year class first begin to recruit into the fishery (1980/81 and 1981/82). However, during those seasons, there were strong indications from vessel operators and port sampling that a significant recruitment event was imminent or occurring. There were no indications that a similar situation existed during this past season. The percentage of skip-molts was well below average (5.9%), indicating that there was very little hold-over from the previous season.

1995/96 SEASON OUTLOOK

The department does not conduct any assessment surveys for this fishery. There was also no observer coverage this past summer to assess the relative abundance of sublegal males that would be recruiting into the fishery during the 1995/96 season. As the fishery will be highly dependent on the strength of recruitment, it is difficult to provide an accurate outlook for next season. In the absence of any means of evaluating incoming recruitment, the only indications of its stock strength next season is from interviews of the skippers this past summer season. Their reports suggest that stock conditions will continue to be poor.

Table 1. Statistical Area D (Yakutat) Dungeness catch, number of permits, number of landings, and average catch per landing, 1960 to present.

Year/ Season	Catch in Pounds	Number of Permits	Pounds Per Permit	Number of Landings	Pounds Per Landing
1960	543,762	-			
1961	1,023,545	-			
1962	937,051	-			
1963	1,383,298	-			
1964	637,140	-			
1965	910,278	-			
1966	528,060	-			
1967	2,031,460	-			
1968	2,096,119	-			
1969/70	1,207,397	11	109,763	107	11,284
1970/71	1,508,561	10	150,856	83	18,175
1971/72	1,212,198	7	173,171	88	13,774
1972/73	1,992,574	9	221,397	85	23,442
1973/74	2,347,752	27	86,954	236	9,948
1974/75	1,031,573	22	46,890	154	6,698
1975/76	579,908	17	34,112	113	5,131
1976/77	537,543	7	76,792	28	19,197
1977/78	131,052	3	43,684	11	11,913
1978/79	1,799,403	12	149,950	122	14,749
1979/80	1,436,923	21	68,425	87	16,516
1980/81	895,220	11	81,384	63	14,209
1981/82	3,228,301	28	115,296	169	19,102
1982/83	5,160,135	35	147,432	305	16,918
1983/84	2,666,383	67	39,797	458	5,821
1984/85	774,828	39	19,830	228	3,398
1985/86	371,237	32	11,601	168	2,209
1986/87	748,192	22	34,009	111	6,740
1987/88	2,725,040	28	97,323	191	14,267
1988/89	3,494,368	32	109,199	220	15,883
1989/90	1,701,859	29	58,685	207	8,221
1990/91	2,089,982	36	58,055	318	6,572
1991/92	2,852,074	67	42,568	482	5,917
1992/93	1,392,700	49	28,416	257	5,419
1993/94	815,969	44	18,545	250	3,263
1994/95 ^a	915,523	47	19,479	240	3,814

^a Most recent year's data should be considered preliminary.

Table 2. Statistical Area D (Yakutat) 1993/94 and 1994/95 seasons: Dungeness crab harvest by month and district.

Dist.	1993							1994		Total	
	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan		Feb
181	355,228	255,994	27,892	Season ----- Closed			20,271	7,419	*	*	670,070
183	63,811	14,121	3,928	Season ----- Closed			7,983	3,580	*	*	97,298
186	0	0	0	Season ----- Closed			0	0	0	0	0
191	*	*	0	Season ----- Closed			0	0	0	0	*
Total	434,904	299,740	31,820				28,254	14,015	4,705	2,531	815,969

Dist.	1994							1995 ^a		Total	
	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan		Feb
181	296,010	401,710	13,266	Season ----- Closed			95,097	*	*	*	807,755
183	7,785	10,119	4,520	Season ----- Closed			13,110	*	*	*	38,419
186	0	0	0	Season ----- Closed			0	*	0	0	*
191	*	*	0	Season ----- Closed			0	0	0	0	*
Total	333,656	426,246	17,786				108,407	27,329	*	*	915,523

^a Most recent year's data should be considered preliminary.

* Where number of permits is less than three, the information is considered confidential.

Table 3. Statistical Area D (Yakutat) Dungeness crab catch in thousands of pounds, by month and season, 1969/1970 to present.

Season	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Total
1969/70	0.0	87.7	254.7	529.0	336.1	0.0	0.0	0.0	0.0	0.0	0.0	1,207.4
1970/71	0.0	*	386.6	426.1	511.9	*	0.0	0.0	0.0	0.0	0.0	1,508.6
1971/72	0.0	*	407.8	572.4	223.4	0.0	0.0	0.0	0.0	0.0	0.0	1,212.2
1972/73	0.0	100.7	653.7	842.1	392.7	*	0.0	0.0	0.0	0.0	0.0	1,992.6
1973/74	*	205.4	679.7	1,079.5	195.2	88.3	*	0.0	0.0	0.0	*	2,347.8
1974/75	16.3	141.0	476.0	213.3	113.3	37.4	*	0.0	0.0	0.0	0.0	1,031.6
1975/76	Closed	84.3	239.5	256.1	Closed	579.9						
1976/77	Closed	Closed	136.0	238.5	163.0	0.0	0.0	0.0	0.0	0.0	0.0	537.5
1977/78	Closed	Closed	0.0	0.0	*	*	0.0	*	*	*	0.0	131.1
1978/79	Closed	Closed	738.1	816.3	245.0	Closed	Closed	Closed	Closed	Closed	Closed	1,799.4
1979/80	Closed	Closed	840.1	563.9	32.9	Closed	Closed	Closed	Closed	Closed	Closed	1,436.9
1980/81	Closed	Closed	404.4	328.3	141.2	*	*	0.0	0.0	*	*	895.2
1981/82	Closed	Closed	2,467.7	634.9	111.8	Closed	Closed	Closed	Closed	Closed	Closed	3,228.3
1982/83	Closed	0.0	3,092.1	1,857.4	210.7	0.0	0.0	0.0	0.0	0.0	0.0	5,160.1
1983/84	Closed	970.7	1,197.8	201.8	42.6	183.8	55.9	*	5.6	*	3.0	2,666.4
1984/85	Closed	404.3	316.5	54.1	Closed	Closed	Closed	0.0	0.0	0.0	0.0	774.8
1985/86	Closed	158.2	160.5	49.2	Closed	Closed	Closed	*	*	*	*	371.2
1986/87	Closed	195.2	386.1	123.0	Closed	Closed	Closed	24.9	16.6	*	*	748.2
1987/88	Closed	846.6	1,280.0	474.6	Closed	Closed	Closed	41.8	44.3	8.5	29.4	2,725.0
1988/89	Closed	1,003.7	1,856.5	590.3	Closed	Closed	Closed	*	14.5	*	0.0	3,494.4
1989/90	Closed	647.2	860.9	191.4	Closed	Closed	Closed	0.0	*	*	*	1,701.9
1990/91	Closed	668.3	1,057.9	256.4	Closed	Closed	Closed	49.1	25.6	28.0	4.6	2,090.0
1991/92	Closed	866.4	1,598.1	329.8	Closed	Closed	Closed	22.9	18.8	8.1	8.0	2,852.0
1992/93	Closed	665.5	655.3	59.0	Closed	Closed	Closed	0.0	5.2	4.4	*	1,392.4
1993/94	Closed	434.9	299.7	31.8	Closed	Closed	Closed	28.3	14.0	4.7	2.5	816.0
1994/95 ^a	Closed	333.7	426.2	17.8	Closed	Closed	Closed	108.4	27.3	*	*	915.5

^a Most recent year's data should be considered preliminary.

* Where number of permits is less than three, information is considered confidential.

Table 4. Statistical Area D (Yakutat) Dungeness crab harvest in thousands of pounds, by district and season, 1969/70 to present.

Season	District				Total
	181	183	186	191	
1969/70	*	481.3	442.5	264.7	1,207.4
1970/71	420.5	*	*	711.2	1,508.6
1971/72	681.4	*	355.5	41.6	1,212.2
1972/73	1,152.5	*	727.8	60.4	1,992.6
1973/74	1,257.3	108.0	652.8	329.7	2,347.8
1974/75	420.5	35.0	514.6	61.5	1,031.6
1975/76	248.5	28.3	283.2	19.9	579.9
1976/77	130.5	*	369.4	0.0	537.5
1977/78	0.0	*	*	0.0	131.1
1978/79	715.9	209.2	797.9	76.4	1,799.4
1979/80	419.5	108.6	599.2	309.7	1,436.9
1980/81	262.4	72.8	435.0	123.0	895.2
1981/82	1,460.4	237.3	994.0	485.9	3,228.3
1982/83	2,380.8	404.3	784.7	1,564.2	5,160.1
1983/84	1,276.0	333.8	714.8	341.8	2,666.4
1984/85	302.3	135.8	306.4	28.7	774.8
1985/86	156.4	79.0	112.2	23.7	371.2
1986/87	259.5	50.0	362.9	75.7	748.2
1987/88	2,233.3	44.7	0.0	447.1	2,725.0
1988/89	2,264.4	118.6	0.0	1,111.3	3,494.4
1989/90	1,269.5	66.8	*	347.9	1,701.9
1990/91	1,869.2	64.6	*	142.6	2,090.0
1991/92	2,692.5	60.5	*	66.3	2,852.1
1992/93	1,318.8	17.3	0.0	56.3	1,392.7
1993/94	670.1	38.4	*	*	816.0
1994/95 ^a	458.4	19.4	0	19.4	915.5

^a Most recent year's data should be considered preliminary.

* Where number of permits is less than three, information is considered confidential.

Table 5. Dockside length frequency sampling summary for Dungeness crab in Yakutat, 1975/76 to present.

Season	Number of Boats Sampled	Number of Crab Sampled	Carapace Length		Recruitment				
			Average	Range	% Recruits ²	% PR +1 ³	% PR +2 ⁴	% PR +3 ⁵	% Skip Molts ⁶
1975/76	11	1,500	180.1	157 - 210	79.8	18.0	2.2	0.0	7.9
1976/77	2	327	176.3	157 - 207	95.1	3.9	1.0	0.0	2.4
1977/78	2	192	182.4	160 - 211	52.1	43.1	4.8	0.0	39.1
1978/79	27	4,503	183.9	156 - 221	73.3	29.9	0.8	0.0	7.3
1979/80	4	616	187.0	166 - 221	65.3	32.3	2.4	0.0	10.1
1980/81	1	315	176.6	161 - 219	95.2	4.8	0.0	0.0	0.6
1981/82	11	1,215	182.1	160 - 218	82.9	15.6	1.4	0.1	4.4
1982/83	16	1,695	186.2	158 - 222	72.2	27.7	0.1	0.0	0.6
1983/84	27	2,489	193.9	163 - 227	42.4	53.5	3.7	3.0	7.7
1984/85	40	4,094	190.5	162 - 233	48.9	45.8	5.2	0.1	12.7
1985/86	61	8,398	180.0	156 - 226	70.5	20.2	8.5	0.7	22.7
1986/87	29	3,522	176.1	158 - 225	66.9	29.3	3.6	0.2	30.5
1987/88	33	4,721	182.6	159 - 224	67.5	29.5	3.0	0.0	17.4
1988/89	45	5,387	184.3	153 - 222	64.3	31.9	3.8	0.0	17.5
1989/90	17	1,702	185.2	159 - 223	58.7	34.9	6.4	0.0	22.6
1990/91	19	1,901	183.8	161 - 217	73.9	24.3	1.6	0.2	7.8
1991/92	26	2,592	185.2	157 - 220	66.1	30.8	3.1	0.1	14.8
1992/93	9	1,013	185.3	163 - 221	59.1	37.2	3.7	0.0	18.1
1993/94	17	1,757	179.5	158 - 220	76.5	17.7	5.7	0.2	16.8
1994/95	8	971	178.1	161 - 215	87.7	11.9	0.4	0.0	5.9

1 District 16 is included in Southeast in all data presented; by regulation it was part of Yakutat until 1983.

2 Recruits = all new and soft shell crab ≥ 165 mm and ≤ 193 mm carapace length.

3 PR +1 = all new and soft shell crab ≥ 194 mm and ≤ 222 mm, and old & very old shell crab ≥ 165 mm and ≤ 193 mm, carapace length.

4 PR +2 = all new and soft shell crab ≥ 223 mm and ≤ 252 mm, and old ≥ 194 mm & ≤ 222 mm, and very old ≥ 165 mm and ≤ 193 mm, carapace length.

5 PR +3 = all new and soft shell crab ≥ 223 mm and all old ≥ 252 mm and ≤ 194 mm, and very old ≥ 222 mm and \leq mm, carapace length.

6 Skip molts = all old and very old crab.

Table 6. Dockside interview sampling summary for Dungeness crab in Yakutat, 1975/76 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight		Estimated No. of Crab Harvested	Percent of Harvest Sampled
						Average	Range		
1975/76	0								
1976/77	0								
1977/78	0					2.38	2.38 - 2.39	55,064	0.35
1978/79	20	27,320	62,955	9.44	6.37 - 15.72	2.47	2.03 - 2.98	728,503	0.62
1979/80	4	15,000	18,734	7.21	7.21 - 7.21	2.61	2.42 - 2.80	550,545	0.11
1980/81	0					2.11	2.11 - 2.11	424,275	0.01
1981/82	0					2.29	1.96 - 2.52	1,409,738	0.01
1982/83	0					2.40	1.90 - 2.72	2,150,056	0.01
1983/84	23	1,500	12,500	8.33	8.33 - 8.33	2.64	1.92 - 3.01	1,009,994	0.01
1984/85	35	4,529	5,555	1.76	0.92 - 2.46	2.58	2.11 - 2.95	299,750	1.37
1985/86	66	29,883	14,581	1.94	0.30 - 9.17	2.15	1.78 - 2.50	172,668	4.86
1986/87	23	9,405	47,226	6.57	3.45 - 9.15	2.07	1.85 - 2.47	361,445	0.97
1987/88	25	8,168	30,720	5.54	3.00 - 8.79	2.20	1.91 - 2.40	1,238,655	0.38
1988/89	41	43,232	137,104	8.11	4.49 - 22.95	2.40	2.06 - 2.68	1,455,987	0.37
1989/90	17	13,739	71,125	5.91	2.77 - 9.56	2.42	2.22 - 2.58	703,248	0.24
1990/91	18	15,150	77,201	6.37	2.25 - 10.25	2.37	2.11 - 2.61	881,849	0.22
1991/92	26	14,639	70,012	5.29	1.25 - 11.43	2.45	2.19 - 2.71	1,161,169	0.22
1992/93	8	2,330	7,906	3.12	1.76 - 4.47	2.48	2.08 - 2.82	561,573	0.18
1993/94	17	15,905	50,118	2.92	0.75 - 4.60	2.23	1.99 - 2.50	365,905	0.48
1994/95	7		NO DATA COLLECTED			2.27	1.97 - 2.48	403,314	0.24

SECTION 7

YAKUTAT TANNER CRAB FISHERIES, 1992/93, 1993/94, 1994/95

REPORT TO THE BOARD OF FISHERIES

YAKUTAT TANNER CRAB FISHERIES, 1992/93, 1993/94, 1994/95



By

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Division of Commercial Fisheries
Juneau, Alaska

October 1995

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INTRODUCTION

The Tanner crab (*Chionoecetes bairdi*) is a brachyuran (true) crab that inhabits temperate and subarctic waters of the eastern Pacific Ocean from northern California to the Bering Sea. *Chionoecetes bairdi* and the closely-related snow crab (*C. opilio*) support significant Alaskan fisheries, but only *C. bairdi* is known to be present in Statistical Area D (Yakutat) of Region 1.

The Yakutat fishery occurs in both the relatively protected major bays in the area, Icy Bay and Yakutat Bay, as well as portions of the more exposed outside coast between Cape Fairweather and Cape Suckling. Most of the fishing occurs out to the 100 fathom contour. For reporting purposes, this area is divided into four major districts, 181, 183, 189, and 191. Districts 181, 183, and 191 encompasses state waters within three miles, and District 189 includes waters under state management jurisdiction between three and 200 miles.

Yakutat is an open registration area for Tanner crab, which means that a vessel fishing there may also fish in other open registration areas in the same registration year (August 1 through July 31). The Yakutat fishery is also open to entry to any properly licensed, permitted, and registered participant.

In recent years, this fishery has been conducted either by smaller vessels based in Yakutat fishing mainly in Yakutat Bay or by larger vessels based in other ports that range widely throughout the registration area. Most of the vessels have live tanks, although some of those on the smaller vessels are simple drop-in tanks intended for day fishing. Most of the smaller vessels are used primarily for other fisheries during the rest of the year and winter crabbing for Tanner and other crabs is generally pursued as a secondary source of income. No more than six vessels of various sizes normally fish in any given season.

Currently, light-weight cone- or pyramid-shaped pots are more commonly used than the heavier, seven-foot square pots originally designed for king crab. An additional factor favoring the lighter gear in Yakutat is the area-wide prohibition on the use of side-loading pots.

Regulations in Yakutat include harvest of only male Tanner crab larger than 5 1/2 inches (140 mm) carapace width during an extended winter season (Jan 1 - May 1). Also, a guideline harvest ceiling of 1,000,000 lbs, based on historic harvest trends, has been established for this area. Actual stock composition can only be inferred because no preseason stock assessments are conducted for this species. In recent years, the season has opened by regulation on January 15 and has usually closed by regulation on May 1.

Although port sampling of Tanner crab from Yakutat is limited by the widespread, low-level fishery, available information indicates that Yakutat crab are smaller, more often skip-molts, and generally less robust than those harvested in more productive areas to the east (Southeast Alaska) and west (Kodiak). These characteristics have been assumed to indicate more marginal habitat or environmental conditions for Tanner crab in Yakutat than other areas. Seasonal effort and total catch in the last decade have been a fraction of that during the 1970's. Despite many indications of poor recruitment and low abundance, continued fishing has been permitted so harvest data is available to generally assess stock condition. A low level of fishing activity will be tolerable as long as it does not significantly exceed that of recent seasons. If stocks decline further or more vessels enter this fishery, more restrictive management will become necessary.

FISHERY DEVELOPMENT AND HISTORY

It was not until the early 1970's that significant Tanner crab fisheries developed in the Yakutat area (Table 1). As the overall market for Tanner crab slowly grew, landings from the Yakutat area also rose, averaging about 1,500,000 lbs per season between the 1972/73 and 1979/80 seasons. Following the record 2,435,000 lb catch during the 1979/80 season the harvest steadily declined through most of the 1980's. Peak catches consistently occurred between the months of February and April (Table 2), although the season extended from September 1 to May 15 during most of the early years of the fishery.

During the 1970's, this fishery attracted large, long-ranging vessels with live tanks in which many tons of crabs could be kept alive for extended periods. Landings from this period suggest that much of area was heavily fished (Table 3). Many vessels also participated in shellfish fisheries in other areas of Alaska.

The stocks could not sustain the levels of harvest of the late 1970s and crashed between the 1979/80 and 1980/81 seasons. The early 1980s saw the use of side-loading pots prohibited, the starting date of the season changed to mid-winter, and a continued decline in the number of vessels, the catch per vessel, and the total catch. Many of the larger vessels left the fishery. Those remaining were forced by regulation to switch to top-loading conical or pyramidal pots. By 1984 and 1985, only small, local vessels, operated by residents of Yakutat, were participating in this fishery. Reported landings were limited to the immediate vicinity of Yakutat Bay (Table 3).

In 1986, two larger crabbers entered the fishery. The larger vessels experienced uniformly poor catches despite extensive exploratory fishing. In 1987, five large vessels based in Kodiak, Valdez, and Pelican registered for the fishery, along with the local fleet in Yakutat. Only two of the larger vessels actively participated in the fishery, and their disappointing landings discouraged the remaining three from entering the fishery. In 1988, only one large vessel and several of the smaller vessels fishing around Yakutat Bay reported any landings. In 1989, one large vessel and several of the smaller vessels based in Yakutat reported landings from the Yakutat area. Much of the detailed data from this fishery is considered confidential because of the few vessels that fish in this area.

During the 1988/89 season, only a few local vessels, limited to the waters of Yakutat Bay, participated in the fishery. From the 1989/90 season to the present, the consistent fishing pattern has been for one or two larger vessels a season to prospect throughout much of the area and land most of the catch while smaller vessels based in Yakutat fished Yakutat Bay.

The Tanner crab stocks in the Yakutat area have not recovered since the crash in the early 1980s. They continue to show signs of severe depletion and exhibit no indication of imminent recovery.

REGULATION DEVELOPMENT

Fishing seasons and Periods

Fishing seasons in Yakutat started in the 1973/74 season. By regulation, the season started on September 1 and ended on May 20, 1974. For most of the 1970s, the seasons started on September 1 and extended through May 15 of the following year.

The 1979/80 and 1980/81 seasons were shorter, closing by emergency order on April 20 in the 1979/80 season and by regulation on May 1, 1981, respectively. Stocks began crashing in the 1980/81 season, and subsequent changes to the season resulted into reduced fishing time. In 1981/82 and 1982/83, the season started on February 1 and closed on May 15. The season was further shortened in early 1982, starting on February 10 for the 1983/84 season and ending on May 1, 1984. Increasing catch resulted in adoption of a 1984/85 season that extended from January 15 to May 1, 1985. Although catches reached their historical lows in 1984/85 and 1985/86, and have fluctuated widely from 38,615 lbs in 1991/92 to 155,528 lbs in 1988/89, season dates have remained unchanged since 1984/85.

Size restrictions

Size restrictions permitting harvest of only male crabs over 5.5 inches in carapace width were first implemented in the 1976/77 season and have remained the same since then.

Quotas and GHRs

A 3,000,000 lb Guideline Harvest Ceiling (GHC) was instituted in 1976/77 in response to the rapidly escalating fishery. It was amended to a Guideline Harvest Range (GHR) in 1978/79, of between 500,000 and 3,000,000 lbs. This range remained unchanged through the 1983/84 season. The range was revised for the 1984/85 season to 200,000 to 1,000,000 lbs. This was further revised for the 1986/87 season to ceiling of 1,000,000 lbs and has remained unchanged since. The last revision essentially reduced the lower end of the GHR to zero lbs and provided for closures if stock conditions did not support any harvest.

Gear Restrictions

There were no gear restrictions during the 1973/74 season. Between the 1974/75 and 1976/77 seasons, pots, ring nets, and shrimp trawls were legal. In 1976/77, a pot limit was imposed for waters within Yakutat Bay. Only 60 pots could be used for king and Tanner crabs within the bay when both seasons overlapped. During the closed season for Tanner crab, only 100 pots could be used for king crabs. Starting in 1977/78, gear was limited to either pots or ring nets and the pot limit in Yakutat Bay was changed to allow 100 pots for both Tanner and king crab fisheries. Tanner pots had to have a tunnel eye opening with a maximum height of five inches and a tunnel eye perimeter of greater than 30 inches. This distinguished Tanner pots from Dungeness pots. Buoy stickers for fishing in Yakutat Bay were required. In 1980/81, the 100 pot restriction area was expanded to an area in Yakutat Bay east of a line from Cape Sitkagi to Ocean Cape, essentially including all productive waters within Yakutat Bay. Side-loading pots were prohibited from the entire registration area for the 1982/83 season to reduce halibut by-catch. Consequently, some vessels which had been using side-loading king crab pots with Tanner boards were discouraged from entering the fishery. Two, four and three-quarter inch diameter escape rings were required for each pot during the 1984/85 season. Starting in 1985/86, gear storage was restricted to a period of seven days after the season closure. Escape rings were repealed for the 1988/89 fishery. Ring nets were prohibited, starting with the 1991/92 fishery, as a consequence of Board action restricting their use in the state to Southeast Alaska.

Other Restrictions

Starting in 1979/80, formal hold inspections and certifications were repealed. Starting in 1985/86, pre-season prospecting during a period 14 days before the season opening was prohibited and vessels were required to be at a processing plant within 24 hours after the closure of the season.

1992/93 SEASON SYNOPSIS

During the 1992/93 season that lasted from January 15 through May 15, 1993, a total of five vessels, only one of which was large enough to access the more remote fishing grounds, harvested 116,718 lbs of Tanner crab in the Yakutat area. As in the past, the major portion of the catch was reported from waters between the Yakutat Forelands and Icy Bay.

Port sampling for Tanner crab from the Yakutat area was not conducted for the 1992/93 season. The landings were sporadic and occurred in remote ports, such as Pelican, or at times when department personnel were unable to sample them. In general, samples available from past seasons suggest that Yakutat crab are generally smaller in average size than crab from Statistical Area A (Tables 4 and 5). There has also been a high incidence of skip-molt crab in catches from the Yakutat area in recent seasons.

1993/94 SEASON SYNOPSIS

During the 1993/94 season that lasted from January 15 through May 15, 1994, 11 vessels harvested 364,365 lbs of Tanner crab in the Yakutat area. The major portion of the catch was reported from waters between the Yakutat Forelands and Icy Bay. The combined catch of a few of the larger vessels accounted for most of the harvest.

Port sampling for Tanner crab from the Yakutat area was limited to four deliveries. In general, the samples suggested that Yakutat crab this season were generally smaller in average size than crab from Statistical Area A (Tables 4). There has also been a high incidence of skip-molt crab in recent seasons but some reports from crabbers crabbing in Yakutat Bay noted fair percentages of new shelled, larger crabs. Average size of crabs sampled were very similar to average sizes encountered through the 1980's. There was a very high percentage of recruits into the fishery. It is likely that a modest recruit class comprised a large fraction of the total crabs landed.

1994/95 SEASON SYNOPSIS

During the 1994/95 season (January 15 through May 15, 1995), 14 vessels harvested 107,010 lbs of Tanner crab in the Yakutat area. As in the past, the major portion of the catch was reported from waters between the Yakutat Forelands and Icy Bay. The combined catch of a few of the larger vessels accounted for most of the harvest.

Port sampling for Tanner crab from the Yakutat area was not conducted for the 1994/95 season. The decline in catch from the 1993/94 season, in the face of higher effort levels, strongly suggests that the crab taken last season comprised the bulk of a moderate recruit class that entered the fishery in early 1993. The lack of production during the current season suggests that a large segment of the recruit class was taken in their first year in the fishery and the recruitment event that occurred early in 1994 was insufficient to measurably support the fishery for more than one season.

1995/96 SEASON OUTLOOK

In the total absence of any stock assessment data and a lack of port sampling data for the 1994/95 season, no projections are available for the coming season. There is little expectation of a significant improvement in the abundance of Tanner crab in Statistical Area D.

Table 1. Statistical Area D (Yakutat) commercial Tanner crab catches in pounds, number of vessels, pounds per permit, number of landings and pounds per landing, 1961 to present.

Season	Catch in Pounds	Number of Permits	Pounds Per Permit	Number of Landings	Pounds Per Landing
1961	-	-			
1962	-	-			
1963	-	-			
1964	-	-			
1965	-	-			
1966	-	-			
1967	-	-			
1968/69	-	-			
1969/70	-	-			
1970/71	-	-			
1971/72	-	-			
1972/73	222,441	7	31,777	22	10,110
1973/74	1,872,357	11	170,214	110	17,021
1974/75	1,972,752	13	151,750	60	32,879
1975/76	1,762,589	5	352,518	35	50,359
1976/77	966,650	7	138,093	15	64,443
1977/78	1,003,116	8	125,390	103	9,738
1978/79	1,691,941	15	112,796	107	15,812
1979/80	2,435,123	23	105,875	114	21,360
1980/81	642,608	14	45,901	84	7,650
1981/82	71,302	7	10,186	32	2,228
1982/83	151,621	10	15,162	55	2,756
1983/84	11,142	4	2,786	13	857
1984/85	3,665	5	733	15	244
1985/86	2,379	5	476	9	264
1986/87	48,877	3	16,292	9	5,430
1987/88	*	*	*	*	*
1988/89	155,528	5	31,106	23	6,762
1989/90	76,816	5	15,363	27	2,845
1990/91	41,709	6	6,952	42	993
1991/92	38,615	4	9,654	29	1,331
1992/93	116,718	5	23,344	37	3,154
1993/94	364,365	11	33,124	75	4,858
1994/95 ^{al}	107,010	14	7,644	76	1,408

^{al} Most recent year's data should be considered preliminary.

* Where numbers of vessels participating is three or less, information is confidential.

Table 2. Statistical Area D (Yakutat) commercial Tanner crab harvest in thousands of pounds by month and season, 1968 to present.

Season	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972/73	0.0	*	*	0.0	0.0	0.0	0.0	*	122.9	*	0.0	17.9	222.4
1973/74	0.0	0.0	0.0	0.0	*	*	313.8	990.2	558.0	Closed	Closed	Closed	1,872.4
1974/75	0.0	0.0	0.0	0.0	*	*	592.1	839.4	481.9	Closed	Closed	Closed	1,972.8
1975/76	0.0	0.0	0.0	*	*	*	661.8	456.7	*	Closed	Closed	Closed	1,762.6
1976/77	0.0	0.0	0.0	0.0	*	*	486.1	*	0.0	Closed	Closed	Closed	966.7
1977/78	0.0	*	14.5	31.6	161.7	206.0	254.2	279.0	53.1	Closed	Closed	Closed	1,003.1
1978/79	*	*	0.0	*	63.7	185.1	412.8	766.3	238.1	Closed	Closed	Closed	1,691.9
1979/80	0.0	10.2	16.4	27.9	56.9	524.1	1,220.9	578.7	Closed	Closed	Closed	Closed	2,435.1
1980/81	0.0	0.0	0.0	*	6.2	181.9	392.7	60.8	0.0	Closed	Closed	Closed	642.6
1981/82	Closed	Closed	Closed	Closed	0.0	0.0	16.4	47.1	7.8	Closed	Closed	Closed	71.3
1982/83	Closed	Closed	Closed	Closed	Closed	50.2	73.9	27.5	0.0	Closed	Closed	Closed	151.6
1983/84	Closed	Closed	Closed	Closed	Closed	*	5.8	3.6	0.0	Closed	Closed	Closed	11.1
1984/85	Closed	Closed	Closed	Closed	0.0	0.0	0.0	3.7	0.0	Closed	Closed	Closed	3.7
1985/86	Closed	Closed	Closed	Closed	*	*	1.1	*	0.0	Closed	Closed	Closed	2.4
1986/87	Closed	Closed	Closed	Closed	0.0	*	48.2	*	*	Closed	Closed	Closed	*
1987/88	Closed	Closed	Closed	Closed	0.0	*	*	*	*	Closed	Closed	Closed	*
1988/89	Closed	Closed	Closed	Closed	*	*	70.3	36.8	47.1	Closed	Closed	Closed	155.5
1989/90	Closed	Closed	Closed	Closed	*	29.2	37.5	7.4	0.0	Closed	Closed	Closed	76.8
1990/91	Closed	Closed	Closed	Closed	*	8.7	14.1	15.9	0.0	Closed	Closed	Closed	41.7
1991/92	Closed	Closed	Closed	Closed	0.0	18.9	13.4	5.8	0.0	Closed	Closed	Closed	38.6
1992/93	Closed	Closed	Closed	Closed	0.0	*	66.2	31.6	15.7	Closed	Closed	Closed	116.7
1993/94	Closed	Closed	Closed	Closed	7.6	207.3	109.4	31.0	9.1	Closed	Closed	Closed	364.4
1994/95 ^{a/}	Closed	Closed	Closed	Closed	54.0	35.7	7.3	2.6	0.0	Closed	Closed	Closed	107.0

^{a/} Most recent year's data should be considered preliminary.

* Where numbers of vessels participating is three or less, information is confidential.

Table 3. Statistical Area D (Yakutat) commercial Tanner crab, harvest in thousands of pounds by district and season, 1968/69 to present.

Season	District						Total
	181	183	184	186	189	191	
1968/69	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969/70	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970/71	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971/72	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972/73	15.6	102.2	0.0	*	0.0	0.0	222.4
1973/74	777.9	292.6	0.0	*	616.0	0.0	1,872.4
1974/75	1253.8	193.7	0.0	*	0.0	428.0	1,972.8
1975/76	*	*	0.0	753.1	0.0	*	1,762.6
1976/77	*	452.7	0.0	346.2	0.0	0.0	966.7
1977/78	0.0	1,003.1	0.0	0.0	0.0	0.0	1,003.1
1978/79	589.2	404.6	0.0	128.9	0.0	544.0	1,692.0
1979/80	918.3	216.2	0.0	461.4	0.0	838.2	2,435.1
1980/81	150.7	151.0	0.0	*	*	262.3	642.6
1981/82	0.0	51.2	0.0	0.0	0.0	*	71.3
1982/83	*	83.8	0.0	*	*	*	151.6
1983/84	0.0	11.1	0.0	0.0	0.0	0.0	11.1
1984/85	0.0	3.7	0.0	0.0	0.0	0.0	3.7
1985/86	0.0	2.4	0.0	0.0	0.0	0.0	2.4
1986/87	*	*	0.0	0.0	0.0	0.0	*
1987/88	0.0	*	0.0	0.0	0.0	*	*
1988/89	*	7.9	0.0	0.0	*	*	155.6
1989/90	27.9	*	0.0	0.0	0.0	*	76.8
1990/91	16.2	25.6	0.0	0.0	0.0	0.0	41.7
1991/92	*	13.1	0.0	*	0.0	0.0	38.6
1992/93	*	53.3	*	*	0.0	0.0	116.7
1993/94	290.9	28.6		*	15.2		364.4
1994/95	77.4	29.6					107.0

^{a/} Most recent year's data should be considered preliminary.

* Where numbers of vessels participating is three or less, information is confidential.

Table 4. Yakutat summary of commercial Tanner crab length frequency and shell condition data collected during dockside sampling, 1970/71 to present.

Accounting Year	Number of Boats Sampled	Number of Crab Sampled	Carapace Width (mm)		Recruitment	
			Average	Range	% Recruits ^{1/}	% Postrecruits ^{2/}
1970/71						
1971/72						
1972/73						
1973/74						
1974/75	3	516	141.4	110 - 174	87.3	12.7
1975/76	11	1,079	140.7	96 - 179	39.3	60.7
1976/77 ^{3/}						
1977/78	9	2,256	145.1	122 - 171	65.0	35.0
1978/79	15	1,616	147.8	128 - 172	57.3	42.7
1979/80	22	2,509	147.3	131 - 174	22.5	77.5
1980/81	22	2,505	147.3	107 - 172	2.7	97.3
1981/82	1	99	146.6	137 - 165	75.0	25.0
1982/83	17	1,894	145.9	131 - 173	81.9	18.1
1983/84	1	100	149.9	139 - 170	44.9	55.1
1984/85						
1985/86						
1986/87	4	520	144.0	130 - 166	14.3	85.7
1987/88	2	548	145.4	136 - 169	59.2	40.8
1988/89	6	611	148.4	135 - 177	35.8	64.2
1989/90	5	779	147.0	137 - 174	4.1	95.9
1990/91						
1991/92	4	565	148.5	137 - 178	8.7	91.3
1992/93						
1993/94	4	654	147.0	436-171	71.1	28.9
1994/95						

^{1/} Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^{2/} Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≥ 140 mm carapace width.

^{3/} The first season that the regulatory legal size was 5 1/2" (140 mm) carapace width.

Table 5. Yakutat summary of commercial Tanner crab CPUE and average weight data collected during dockside sampling and interviews, 1970/71 to present.

Season	Number of Boats Interviewed	Number of Pots Lifted	Number of Crab Captured	Average Catch Per Pot	Range of Catch/Pot	Weight (lbs)		Estimated No. of Crab Harvested ^{1/}	Percent of Harvest Sampled ^{2/}
						Average	Range		
1970/71									
1971/72									
1972/73									
1973/74									
1974/75									
1975/76	11					1.86	1.67 -2.09	947,628	0.11
1976/77 ^{3/}	2					2.10	1.97 -2.24	460,310	
1977/78	4					2.22	2.01 -2.51	451,854	0.50
1978/79	7	3,810	160,164	34.05	20.09 -48.57	2.32	2.25 -2.38	729,285	0.22
1979/80	21	8,802	322,624	40.85	7.69 -79.02	2.25	2.13 -2.38	1,082,277	0.23
1980/81	12	3,688	51,765	17.37	10.18 -27.13	2.29	2.05 -2.67	280,615	0.89
1981/82									
1982/83	16					2.08	1.91 -2.21	72,895	2.60
1983/84									
1984/85	1					2.41	2.41 -2.41	1,521	
1985/86									
1986/87	3	1,460	18,629	15.48	10.0 -19.77				
1987/88	2	840	17,850	23.28	18.55 -28.01	2.09	2.09 -2.09		
1988/89	5	705	12,429	9.81	1.39 -38.11	2.10	2.09 -2.11	74,061	0.82
1989/90	4	142	1,621	11.32	7.87 -16.25	2.19	2.12 -2.30	35,076	2.22
1990/91									
1991/92	5	597	8,335	7.61	1.21 -16.62	2.31	2.23 -2.41	16,168	3.49
1992/93									

^{1/} Calculated by dividing fish ticket weight data by dockside sampling average weight per crab data.

^{2/} Calculated by dividing number of crab sampled for length frequency by estimated number of crab harvested.

^{3/} The first season that the regulatory legal size was 5 1/2" (140 mm) carapace width.

SECTION 8

YAKUTAT RED AND BLUE KING CRAB FISHERIES, RECENT SEASONS

REPORT TO THE BOARD OF FISHERIES
YAKUTAT RED AND BLUE KING CRAB FISHERIES
RECENT SEASONS



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October 1995

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INTRODUCTION

This chapter describes the commercial red and blue king crab fisheries in the Yakutat area (Statistical Area D). Red and blue king crab, *Paralithodes camtschatica*, and *P. platypus*, are harvested in small numbers in a season that starts on November 15 and ends on January 24. Catches are limited by low abundance of both species.

Statistical Area D is a non-exclusive registration area and the red king crab fishery is not under limitation. Depending on circumstances in other crab fisheries in the state, the fishery attracts skiffs as well as occasional Bering Sea-class crabbers. Most of the participating vessels are small, based locally in Yakutat and limited by severe winter weather to crabbing in Yakutat Bay and its fjords.

The current red and blue king crab management approach is to avoid fishing during sensitive life history stages, harvesting only male crab, and to require separate minimum legal carapace widths for each species (7 inches for red king crab and 6.5 inches for blue king crab).

FISHERY DEVELOPMENT AND HISTORY

Harvests and effort in this fishery have been relatively low and intermittent. Since 1969, there have been reported harvests during 13 seasons, with a maximum of four participating vessels, and resulting harvests have averaged only 4,474 lbs. The highest seasonal harvests on record total less than 15,000 lbs. Both red and blue king crab have been landed, but the most consistent harvests are from the Russell Fjord blue king crab population.

REGULATION DEVELOPMENT

Fishing Seasons

Starting in 1962, a season was established by regulation to extend from January through December. In 1969 the season was shortened to August 15 to March 15. In 1970 the season length was tied into a maximum harvest of 1.5 million lbs combined from Statistical Areas A and D. In 1971 the season was from September 1 through January 31 or until 400,000 lbs of red king crab were taken in areas A and D combined. The season remained the same but the harvest ceiling was raised to 600,000 lbs in 1974. The season was shortened in 1981 to October 1 to January 31 and in 1983 to November 15 to January 24. In 1982 the season was changed to October 10 to January 24 and once more in 1985 to November 15 to January 24.

Sex and Size Limits

From its inception, this fishery has been restricted to harvesting only male crab in order to protect the reproductively important female crab. The minimum legal size was 6 1/2 inches in carapace width from 1960 to 1971, and 7 inches beginning in 1972. The limit was lowered back to 6 1/2 inches in 1979 for blue king crab in response to information from other locations in the state which indicated that growth and size at maturity were smaller for this species than for red or brown king crabs.

Quotas and Guideline Harvest Ranges

In 1970 a quota of 1.5 million lbs was provided for king crab, all species (red, blue, and brown) combined, for Southeast Alaska and Yakutat. The first red and blue king crab quota was set in 1971 at 400,000 lbs per season for Southeast Alaska and Yakutat, combined. This was increased to 600,000 lbs in 1974, then incorporated into a Guideline Harvest Range (GHR) of 300,000 to 600,000 lbs in 1979. In 1982, the Guideline Harvest Level of 40,000 lbs was established specifically for Yakutat. Catches have never approached this catch ceiling.

Fishing Gear

Starting in 1962, only pots could be used in the Yakutat king crab fishery. In 1969, pots could be stored in waters of five fathoms or less if all bait and bait containers were removed and doors were fastened open. Buoys were required to display the license number of the vessel operating the gear. In 1971 a limit of 40 pots per vessel was established for Yakutat waters. The maximum number of pots per vessel that could be set in Yakutat Bay was increased to 60 in 1974, and to 100 in 1976. Rigid tunnels were required with a minimum size of five inches in one dimension and a total perimeter greater than 30 inches. In 1978 an escape panel sewn with no greater than 120 cotton or linen thread was required to minimize ghost fishing of lost gear. Buoy stickers for pots fished in Yakutat Bay were implemented in 1979 and pot storage was permitted in waters less than 25 fathoms, with doors open and bait removed.

In-water gear storage was not allowed from May 1 to August 31 in 1981 and 1982. Side-loading pots were prohibited in Yakutat waters from January 1, 1983 and all gear needed to be removed from the water within seven days of the closure of the 1983/84 season. Starting in 1985, pot gear could not be used for 14 days prior to the season opening date by crabbers intending to fish for red and blue king crabs. Pots could be stored all year in waters of Russel Fjord. In 1988 escape panels needed to be fastened with no greater than 30 count thread.

RECENT SEASON SYNOPSES

Yakutat Red and Blue King Crab Fishery

The Yakutat red king crab season was open from November 15 through January 24 during each of the past three seasons. A very small harvest of red and blue king crab occurred during each season. The long-term average catch since the 1977/78 season is 3,231 lbs. There were some seasons when no catches were reported (Table 1). Catch and participation during 1992/93 is confidential because fewer than three boats reported landings. During 1993/94 and 1994/95, three participants each season landed totals of 7,378 lbs and 2,174 lbs, respectively. Stock assessment surveys are not conducted in the Yakutat area.

1995/96 SEASON OUTLOOK

Yakutat Red and Blue King Crab Fishery

Fishing opportunities are provided by regulation, but past fishing efforts and harvests have been limited. It is anticipated that the same situation will exist next season.

Table 1. Statistical Area D (Yakutat) red and blue king crab harvest, number of landings and number of vessels by year or season, 1977 to present. Landings prior to 1977 are omitted because they were small and combined with the much larger S.E. Alaska total.

Year/ Season ^{a/}	Total Catch ^{b/}	Number of ^{c/} Landings	Number of ^{d/} Permits
1977/78	*	*	*
1978/79	*	*	*
1979/80	12,500	17	4
1980/81	9,784	5	3
1981/82	*	*	*
1982/83	4,118	14	4
1983/84	1,248	4	4
1984/85			
1985/86	*	*	*
1986/87			
1987/88			
1988/89			
1989/90			
1990/91	*	*	*
1991/92	1,160	7	3
1992/93	*	*	*
1993/94	7,378	8	3
1994/95 ^{e/}	2,174	7	3

^{a/} Data prior to 1977/78 is combined with S.E. Alaska totals and omitted because it was an insignificant part of the total.

^{b/} Catch data is for red and blue king crab, combined. In some years, the blue catch was a large part of the total.

^{c/} Total landings are the number of unique fish tickets reporting king crab landings in any combination in a season.

^{d/} Total permits are the number of unique CFEC numbers that made landings in a season.

^{e/} Most recent year's data should be considered preliminary.

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