

Regional Information Report 1J05-02

Report To the Board Of Fisheries, 2005 King and Tanner Crab Fisheries

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye-to-fork	MEF
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	mid-eye-to-tail-fork	METF
hectare	ha	at	@	standard length	SL
kilogram	kg	compass directions:		total length	TL
kilometer	km	east	E		
liter	L	north	N	Mathematics, statistics	
meter	m	south	S	<i>all standard mathematical signs, symbols and abbreviations</i>	
milliliter	mL	west	W	alternate hypothesis	H _A
millimeter	mm	copyright	©	base of natural logarithm	<i>e</i>
		corporate suffixes:		catch per unit effort	CPUE
Weights and measures (English)		Company	Co.	coefficient of variation	CV
cubic feet per second	ft ³ /s	Corporation	Corp.	common test statistics	(F, t, χ^2 , etc.)
foot	ft	Incorporated	Inc.	confidence interval	CI
gallon	gal	Limited	Ltd.	correlation coefficient (multiple)	R
inch	in	District of Columbia	D.C.	correlation coefficient (simple)	r
mile	mi	et alii (and others)	et al.	covariance	cov
nautical mile	nmi	et cetera (and so forth)	etc.	degree (angular)	°
ounce	oz	exempli gratia	e.g.	degrees of freedom	df
pound	lb	(for example)		expected value	<i>E</i>
quart	qt	Federal Information Code	FIC	greater than	>
yard	yd	id est (that is)	i.e.	greater than or equal to	≥
		latitude or longitude	lat. or long.	harvest per unit effort	HPUE
Time and temperature		monetary symbols		less than	<
day	d	(U.S.)	\$, ¢	less than or equal to	≤
degrees Celsius	°C	months (tables and figures): first three letters	Jan, ..., Dec	logarithm (natural)	ln
degrees Fahrenheit	°F	registered trademark	®	logarithm (base 10)	log
degrees kelvin	K	trademark	™	logarithm (specify base)	log ₂ , etc.
hour	h	United States (adjective)	U.S.	minute (angular)	'
minute	min	United States of America (noun)	USA	not significant	NS
second	s	U.S.C.	United States Code	null hypothesis	H ₀
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	percent	%
Physics and chemistry				probability	P
all atomic symbols				probability of a type I error (rejection of the null hypothesis when true)	α
alternating current	AC			probability of a type II error (acceptance of the null hypothesis when false)	β
ampere	A			second (angular)	"
calorie	cal			standard deviation	SD
direct current	DC			standard error	SE
hertz	Hz			variance	
horsepower	hp			population	Var
hydrogen ion activity (negative log of)	pH			sample	var
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

REGIONAL INFORMATION REPORT 1J05-02

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February 2005

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**SECTION 1: INTRODUCTION TO KING AND TANNER CRAB
FISHERIES OF SOUTHEAST ALASKA 2005**

by

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INTRODUCTION

This report reviews the commercial fisheries for king and Tanner crab in Region I, which consists of Southeast Alaska (Registration Area A) and Yakutat (Registration Area D). Area A encompasses all waters within the Alexander Archipelago and offshore waters from Dixon Entrance to Cape Fairweather, divided into Districts 1 through 16 (Figure 1.1). Area D encompasses state waters from Cape Fairweather to Cape Suckling, divided into Districts 81 through 91. King and Tanner crab fisheries in these areas are conducted entirely within state waters.

Regional king and Tanner crab harvests in the 2003/2004 season totaled 1.583 million pounds valued at \$5.127 million during the last completed season or year (Table 1.1). The highest value fisheries as well as highest pounds landed currently come from the Southeast Alaska portion of Region I. The top fishery in terms of exvessel value is Southeast golden king crab, followed by Southeast Tanner crab and Southeast red king crab. In terms of pounds landed, the Southeast Tanner crab fishery ranked first, followed by the Southeast golden king crab and Southeast red king crab fisheries.

All of these fisheries are now fully developed and limited to participant entry. It is likely that limited entry has played a significant role in harvest and effort trends. For most of these fisheries, stock levels have fluctuated widely over time. The Southeast red king crab fishery reopened in 1993 after eight years of closure and provided commercial harvests in seven of the nine seasons when the 300,000-pound threshold was reached. During the last three seasons a lower, 200,000-pound, threshold has been in place. The fishery was open for the first two seasons but closed for the 2004/2005 season. The Southeast golden king crab fishery began its recovery from a 4-year period of low abundance in the 1997/1998 season. This fishery has seen total seasonal catches ranging from approximately 16,000 pounds to over one million pounds, a reflection of the stock strength. Pounds landed from the Southeast Tanner crab fishery often exceeded 1.5 million pounds between 1975 and the late 1990s, however in recent years fewer than 900,000 pounds have been landed. Additionally, this fishery has been experiencing loss of revenue due to a high proportion of crab infected by bitter crab syndrome and low stock abundance for the past five seasons.

Shellfish Research and Management

The ability of the department to provide for sustained yields varies among the fisheries. Those fisheries with developed stock assessment programs and management plans are the most adequately managed. The Southeast red king crab fishery is the only fishery for which there is a long time series of stock abundance information and has a formal management plan with abundance-based guideline harvest levels (GHLs) determined pre-season each year.

The department began a stock assessment survey program for Tanner crab in 1997. Although significant progress has been made in the development of this program and an 8-year time series now exists, the department's ability to estimate absolute abundance has not been realized. Data are currently being modeled to generate population estimates for major stocks in Southeast; these may be used in management as early as the 2006 fishery. There is also a 25-year time series of Tanner crab bycatch information from the red king crab survey. Tanner crab survey data are currently used as input in setting annual season lengths.

The lack of any significant fishery independent stock status information for golden king crab is cause for concern. Due to insufficient staffing, the recently initiated golden king crab onboard sampling program was eliminated in 2004. However, because life history information useful to management was obtained from this program, it will be conducted at a reduced level during the 2005 fishery.

Tanner crab fisheries in the Yakutat area remain closed to allow stocks to rebuild. In order to test for stock recovery, a reduced season fishery was permitted for Tanner crab in January of 2004. Extremely low catch rates during this fishery clearly revealed that Tanner crab stocks in the Yakutat area have not recovered. The department has not yet initiated annual stock assessment programs for these fisheries.

Dockside sampling and skipper interviews are conducted for the king and Tanner crab fisheries to gather a time series of data for size frequency, shell condition, average weight, sex, fishing location, effort levels, and estimates of average catch per unit of effort (CPUE). The biological information collected during this dockside sampling program is especially important for fisheries lacking stock assessment surveys. These data allow an assessment of relative strength of various portions of the commercially exploited populations and a qualitative estimate of stock condition.

Commercial harvest and effort data are also collected through the fish ticket system. Logbook information is collected for Southeast red king crab, golden king crab, and Tanner crab (pot) fisheries. This information is particularly valuable for inseason management and postseason evaluation of the crab fisheries, and provides accurate records of pot lifts and catch by location for each vessel.

In 2000, the department began working with the Southeast King & Tanner Crab Task Force. This effort has opened up a new avenue for better communications and involvement by the fleet in the department's management and research programs for the king and Tanner crab fisheries in Southeast Alaska.

Staff

The management and research programs for red king crab, golden king crab, and Tanner crab, are the responsibility of the Region I shellfish staff. The shellfish program is supervised by the regional marine fisheries supervisor located in Douglas. The regional stock biology staff conduct dockside sampling and skipper interviews with assistance from the shellfish and area management staffs.

SHELLFISH STAFF				
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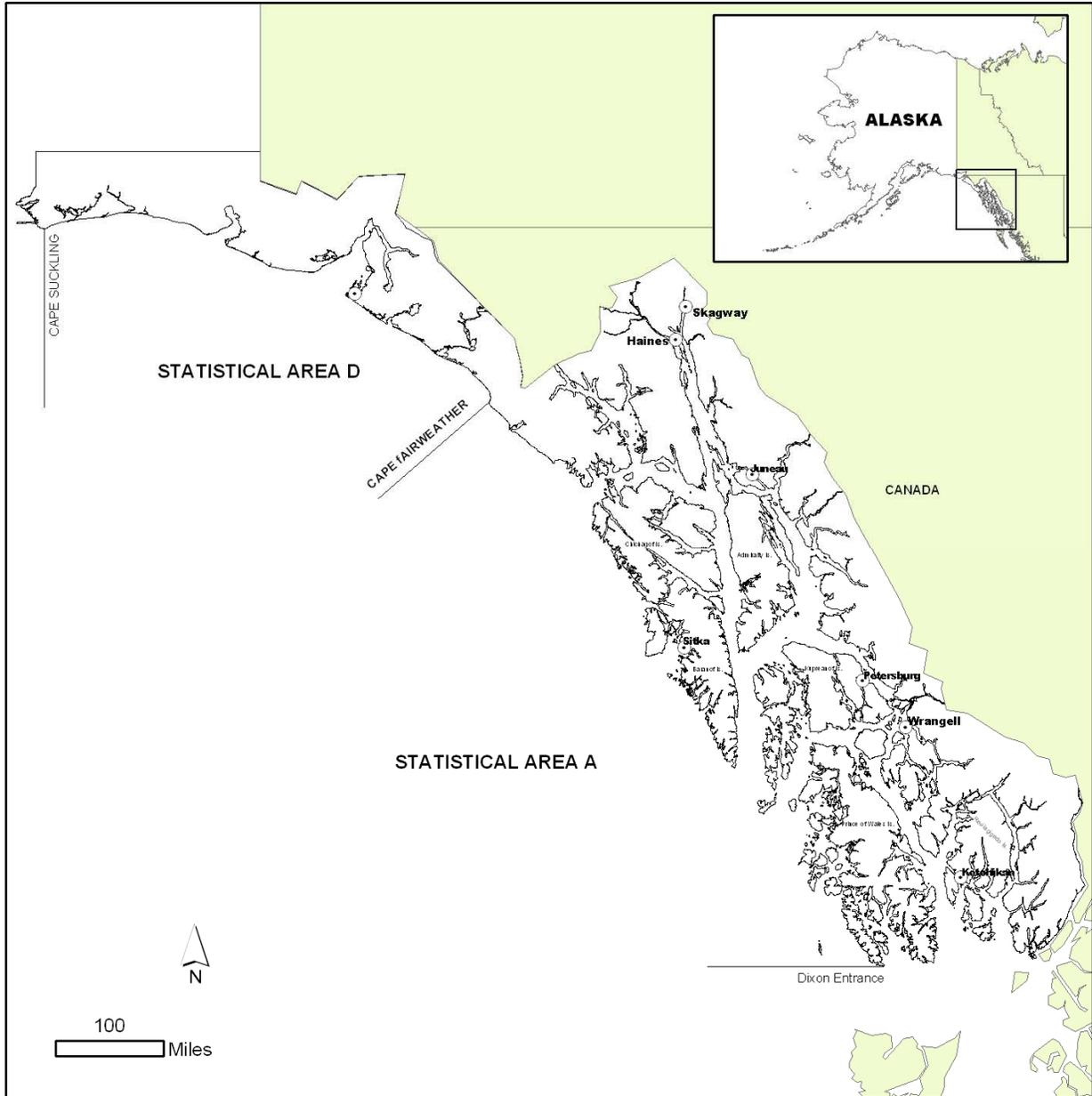
Table 1.1.—Registration Area A (Southeast Alaska) and Registration Area D (Yakutat): list of king and Tanner crab fisheries, harvest, and approximate exvessel values from the last completed season or calendar year.

Season or Year	Fishery	Harvest in Thousands of pounds	Approximate Exvessel value in Thousands of \$\$ ^a
Southeast			
2003/2004	Red and blue king crab	194	\$1,137
2003/2004	Tanner crab (<i>C. bairdi</i>)	832	\$1,748
2003/2004	Golden king crab	557	\$2,242
	SUBTOTAL	1,583	\$5,127
Yakutat			
2003/2004	Red and blue king crab	0	\$0
2003/2004	Tanner crab	*	*
	SUBTOTAL	*	*
GRAND TOTAL		*	*

^aThis column is calculated from the average price per lb of all tickets having values indicated on them.

* Information from areas where 2 or fewer vessels were fishing is confidential.

Figure 1.1.—Registration Area A (Dixon Entrance to Cape Fairweather) and Registration Area D. (Cape Fairweather to Cape Suckling).



SECTION 2: 2005 SOUTHEAST ALASKA RED AND BLUE KING CRAB FISHERIES

by

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INTRODUCTION

This report presents an overview of the commercial red and blue king crab fishery in Southeast Alaska (Registration Area A) with emphasis on the last 3 fishing seasons, 2001/2002, 2002/2003, and 2003/2004. Information is presented on historical harvest and effort, regulation development, research results, and stock assessment.

Red king crab, *Paralithodes camtschaticus*, are taken primarily in the protected bays, inlets, and adjacent shorelines of straits and sounds in Southeast Alaska north of Petersburg. Few red king crabs are caught from the southern portion of Southeast Alaska. Red king crabs generally inhabit depths of less than 150 fathoms. Historically, important red king crab fishing grounds have included Gambier Bay, Pybus Bay, Seymour Canal, the Juneau Area, Lynn Canal, Holkham Bay, Excursion Inlet, Port Frederick, and Peril Strait (Figure 2.1). Small quantities of blue king crab, *P. platypus*, are harvested incidentally during the red king crab fishery as well as during the concurrent golden king crab, *Lithodes aequispinus*, and Tanner crab, *Chionoecetes bairdi*, fisheries.

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 evolved to include both side-loading king crab pots (7 foot x 7 foot x 30 inch) and top-loading pyramid or conical-style pots with 5-foot to 8-foot bases.

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 Alaska Board of Fisheries (board). This plan consists of:

1. seasons that avoid fishing during the sensitive life history stages of molting, mating, and growth;
2. only male crab with a minimum legal carapace width of 7 inches can be taken;
3. limits of 20 to 50 pots per vessel depending on stock abundance; and
4. guideline harvest levels (GHLs) 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 1962 through 1968, harvests ranged widely from about 100,000 pounds to more than 2 million pounds in 1968, with 7–9 permit holders participating until 1968 when effort increased to 19 permit holders (Table 2.1). In 1969, effort increased to 39 permit holders but the resulting harvest declined to 1,899,930 pounds. These high harvests were due to liberal gear and season regulations, a smaller minimum legal size (6.5 inches), harvests that included a combination of red, golden, and blue king crab, and the lack of reasonable guideline harvest levels (GHLs).

In 1970 the department began collecting information on the species composition of the commercial king crab harvest in Southeast Alaska through the dockside sampling and skipper interview programs. From 1970/1971 through the 1975/1976 seasons, harvests averaged 539,742 pounds of red king crab and effort averaged 24 permit holders (Table 2.1). The first emergency

order closure occurred in January 1971 when the harvest for the 1970/1971 fishing season totaled only 389,373 pounds after 4.5 months of fishing by 20 permit holders. The minimum legal size was subsequently increased to 7 inches in carapace width during the 1971 board meeting.

Accurate species composition information was required on fish tickets beginning in January 1976. From the 1976/1977 through the 1984/1985 fishing seasons, the number of permit holders increased from about 34 to more than 90 and harvests averaged 407,384 pounds of red king crab. The average exvessel value of the red king crab harvest during this period was approximately \$1.0 million (adjusted to the 1990 consumer price index). The peak harvest of 658,087 pounds was taken by 39 permit holders during the 1979/1980 season. Fishing effort peaked during the 1983/1984 season when 97 permit holders caught only 280,681 pounds of red king crab (Table 2.1). During the 1984/1985 season, 95 permit holders caught 270,495 pounds during a 7-day fishery in October. The commercial fishery was then closed for eight consecutive fishing seasons (1985/1986 through 1992/1993) when department survey results indicated low stock abundance. The fishery was reopened for the 1993/1994 season after department survey data indicated red king crab stocks had rebuilt to levels sufficient to support a commercial harvest above the minimum threshold of 300,000 pounds. The fishery continued during the next four seasons, with an average harvest of about 300,000 pounds by about 79 permit holders. Declines in the abundance of legal crab in Pybus Bay, Gambier Bay, and Peril Strait resulted in an allowable harvest below the minimum regulatory threshold level of 300,000 pounds for the 1998/1999 and 2000/2001 fishing seasons; hence the fishery was closed. The harvest over the last three open seasons has averaged 241,500 pounds. Exvessel value of this harvest has averaged approximately \$1.3 million. Beginning with the 2002/03 season, the minimum threshold was reduced to 200,000 pounds. The fishery has been managed under this threshold for the past three seasons. The fishery was closed during the 2004/05 season due to estimates of allowable harvest that fell below the threshold.

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 by recruit class 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 2.2). Crab population size is estimated with a 3-stage catch survey model, which uses a time series of survey catch rate and harvest data (commercial and personal use). This model, in use since 1993, provides annual estimates of the population biomass of legal and mature male crab since 1979 for each major production area (Figure 2.2).

The trend in all districts has been a decline in abundance of legal males from peaks in the late 1970s and early 1980s to a low extending from 1985 to 1990. Abundance then increased in the early 1990s to levels that were considered adequate to support a sustainable fishery from 1993/1994 through 1997/1998. Over the last three years there has been a consistent and steep decline in overall biomass. Current legal and mature biomasses are at the lowest levels since the fishery was re-opened in 1993 (Figure 2.2).

Experimental Fishing

In 1976 the department received funds to survey portions of Southeast Alaska that were not normally fished by the commercial fleet. The purpose was to find additional stocks to help support the commercial fishery. Three commercial fishers were contracted to fish for 10 days each in Districts 3 and 4 during February and March. February and March were selected because

of the propensity for crab stocks to congregate in bay areas during egg-hatch, molting, and mating in the late winter and spring months. While some small isolated stocks of red king crab were identified, the numbers of legal crab available were very few and insufficient to support a commercial fishery. Catch rates were less than 0.01 legal crabs per pot.

During the winter 1988 meeting, the Board of Fisheries provided regulations allowing for experimental fishing in non-traditional areas by commercial king crab permit holders. These regulations required mandatory logbook completion. This experimental fishing effort was an attempt to find new and significant stocks to reach the threshold and reopen the commercial fishery. During the 1988/1989 and 1989/1990 seasons, the department issued experimental permits to 19 permit holders who fished at various times from July through January. Of the 19 permits issued, 7 resulted in landings. The total number of pounds landed was 2,061. Thirty-six subdistricts were fished, with harvests reported from ten subdistricts. 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.

Dockside Sampling and Logbook Program

Department personnel have collected carapace length and shell condition data from landings at ports throughout the region since the late 1960s. Resulting data, collected from 1970/1971 to present, are used to estimate recruitment trends and relative contribution from various size-classes of crab to the total stock (Table 2.3). Staff members began collecting average weight data from landings in 1975. Average weight data provides additional insight into stock dynamics. Beginning in 1980, skipper interviews provided an estimate of catch per unit of effort (CPUE) that could be used inseason to estimate harvest rate. Beginning with the 1993/1994 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. These data can also be used to improve harvest projections for upcoming seasons.

REGULATION DEVELOPMENT

Fishing Seasons

From 1961 through 1968 there was no closed season for the commercial king crab fishery. Prior to the 1969/1970 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 regulatory season extends from November 1 through January 24. From 1979 through 1999 the open fishing period was set preseason based on estimates of population size and predicted fishing effort necessary to achieve the GH. Section 11-A has been managed for a separate GH beginning with the 1996/97 season. Inseason harvest tracking to achieve the GH with closure by emergency order has been conducted since 2001 when the fishery length was 12 days. For the 2002 and 2003 seasons the fishery was closed after respectively 8 and 4 fishing days and the fishery was not opened during the 2004 season.

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 6.5 inches in carapace width was in place. The minimum legal carapace width was increased to 7 inches in 1969 following apparent stock declines. This size limit was based on growth and size at maturity information collected from Gulf of Alaska red king crab stocks and the size frequency distribution of Southeast Alaska stocks. The larger minimum size limit was implemented to increase reproductive potential by providing additional protection to mature male crabs for approximately two seasons prior to recruitment to the fishery.

A regulation was adopted in 1990 allowing the harvest of any king crab infected with the parasitic barnacle *Briarosaccus callosus*, regardless of the sex or size of the crab. Crabs infected with this parasite are incapable of reproduction and experience reduced growth. Removal of infected crabs may improve stock reproduction and growth by decreasing the incidence of infection and reducing the population size of the parasite.

Quotas and Guideline Harvest Ranges

A quota of 1.5 million pounds was provided for king crab (all species combined) in 1970. Separate red and golden king crab fisheries were recognized with the adoption of distinct seasons and quotas in 1971. From 1971 through the 1978/1979 season, the red king crab quotas, guideline harvest ranges (GHR), or guideline harvest levels (GHLs) were based upon historic harvest and limited size distribution information obtained from the dockside sampling program. The first red king crab quota was set in 1971 at 400,000 pounds per season. This was increased to 600,000 pounds in 1974, and then reduced to 400,000 pounds in 1977.

Quotas were replaced by GHRs after 1977. The first GHR of 200,000 to 400,000 pounds was established in 1978. The GHR was increased to 300,000 to 600,000 pounds in 1979 based on industry recommendations. Since the 1980/1981 season, allowable catches, expressed as either GHLs or GHRs, 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. Beginning in 1988 a threshold of 300,000 pounds surplus legal sized crab had to be available before the commercial fishery would be opened. In 2002 this threshold was reduced to 200,000 pounds by the Board of Fisheries in response to an industry proposal.

Fishing Gear

There were no restrictions on the amount or type of gear that could be fished by a vessel participating in the king crab fishery from 1961 through 1967. A limit of 40 pots per vessel was established for Southeast Alaska waters in 1968. The maximum number of pots per vessel was increased to 60 in 1974 and to 100 in 1978. This limit continued through the 1987/1988 season. In 1988, the board required a 40-pot limit per vessel for GHLs between 300,000 and 400,000 pounds and a 100-pot limit for GHLs above 400,000 pounds. Based on information provided by the department, the board reduced the 40-pot limit to 20 pots in 1993. Current regulations provide for 20 to 50 pots per vessel based on a “sliding scale” system, which depends upon the allowable surplus harvest or GHL.

To reduce the capture of sublegal crab, all pots must have either 9.5-inch stretch mesh along one panel or have four 6.25-inch escape rings. In order to reduce “ghost fishing” by lost pots, regulations require degradable twine or a timed galvanic release device that will allow caught

crabs to escape after a short period of time. Tunnel height on standard side loading pots must be a minimum of 8 inches in the vertical dimension. Currently, about 80% of the vessels are using cones or pyramids. There are restrictions on pot storage before and after fishing seasons and each stored pot, or stack of pots, must be buoyed and marked. Ring nets were eliminated as legal gear for king crab in 1990. Marking requirements for pot buoys include sequentially numbered stickers, which are purchased from the department.

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." Major elements of the plan include:

1. provisions to maintain an adequate abundance of various size classes of males and females necessary to provide for sustained harvests and stock conservation;
2. application of a harvest rate based on both legal males and mature males;
3. a guideline harvest level based on stock conditions for each fishing district;
4. a minimum harvest threshold of legal males;
5. conduct of an orderly fishery; and
6. conservative management when information is lacking.

Additional elements used to manage the fishery are included in regulations concerning allocation between commercial and personal use fishers in Section 11-A, lawful gear, and closed waters. A mandatory call-in program was implemented for the 2002/2003 and 2003/2004 seasons after success with a voluntary call-in program in 2001/2002 season.

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 72 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.

2001/2002 SEASON SYNOPSIS

Red King Crab Survey Results

Analyses of results of the stock assessment survey in June and July of 2001 estimated the allowable surplus harvest, or GHF, at 302,000 pounds. Since the harvestable surplus is above the 300,000-pound regulatory threshold, it was determined that a commercial fishery could proceed. The GHF for this season represented a harvest rate of 24.3% of legal crab. Overall the estimated legal biomass of all stocks was 148% of the 1978–2001 average historic legal biomass.

The estimated legal biomass in the Seymour Canal (78%), Peril Strait (65%), and Lynn Canal (89%) areas were all well below the average historic legal biomass for their respective areas. Excursion Inlet had an estimated legal biomass at 147% of the average historic legal biomass for the area. Biomasses in Pybus Bay (195%), Gambier Bay (207%), the Juneau area (246%), and Port Frederick (210%) were all at least double the historic average for their respective areas.

Commercial Fishery Summary

Prior to the opening date of November 1, 2001, a news release was issued describing registration, reporting, and gear marking requirements. All permit holders were required to pre-register prior to fishing, and to complete mandatory logbooks during the fishery. A 20-pot limit per vessel restriction was in effect because the GHL (302,000 pounds) was less than 400,000 pounds.

The preseason news release for the fishery announced that the season would run from November 1, 2001 to November 14, 2001 with the following exceptions. Seymour Canal and Peril Strait areas would close after 7 days on November 7, 2001 because of poor stock conditions. Rodman Bay would be closed for the entire season due to poor stock conditions.

The commercial fishery was closed by emergency order on November 12, 2001 after 77 permit holders made 177 landings totaling 296,967 pounds (Table 2.1). Based on a sample of 105 landings, the average size was 160.1 mm in carapace length (Table 2.3) and the average weight was 7.65 pounds per crab (Table 2.4). Approximately 40.4% of the landed crab recruited to the fishery in 2001, and 43.0% recruited the prior year. Half of the total harvest came from District 11 (Table 2.2).

2002/2003 SEASON SYNOPSIS

Red King Crab Survey Results

Analyses of the results of the 2002 stock assessment survey estimated the allowable surplus harvest, or GHL at 250,000 pounds. Since this exceeded the regulatory threshold of 200,000 pounds, it was determined that a commercial fishery could proceed. This GHL represented a harvest rate of 25.5% of legal crab. Overall the estimated legal biomass of all stocks was 116% of the 1978-2002 historic average.

The estimated legal biomass in the Seymour Canal (22%), Peril Strait (57%), and Lynn Canal (49%) areas were all well below the historic legal biomass average for the respective areas. Legal biomasses in Pybus Bay (295%), Gambier Bay (181%), the Juneau area (155%), Excursion Inlet (189%) and Port Frederick (233%) exceeded the historic averages for their respective areas.

Commercial Fishery Summary

Prior to the opening date of November 1, 2002, a news release was issued describing registration, reporting, and gear marking requirements. All permit holders were required to pre-register prior to fishing, and to complete mandatory logbooks during the fishery. In addition, permit holders were required to call in during the season at specified times and report location and estimated harvest. A 20-pot limit per vessel restriction was in effect because the GHL (250,000 pounds) was less than 400,000 pounds.

The preseason news release for the fishery announced the season would run from November 1, 2001 to November 13, 2001 with the following exceptions.

Seymour Canal and Peril Strait areas would close after 7 days on November 7,

2001 because of poor stock conditions. Rodman Bay would be closed for the entire season due to poor stock conditions. Fishermen were told to expect an early closure in Section 11-A (Juneau area) with a 24- hour notice.

Section 11-A closed by emergency order on November 4, 2002. The area wide commercial fishery closed by emergency order on November 8, 2002 after 75 permit holders made 154 landings totaling 233,630 pounds (Table 2.1). Based on a sample of 66 landings, the average size was 161.4 mm in carapace length (Table 2.3) and the average weight was 7.87 pounds per crab (Table 2.4).

Approximately 41.4% of the landed crab recruited to the fishery in 2002, and 37.7% recruited the prior year. Seventy-one percent of the harvest came from Districts 10 and 11 (Table 2.2).

2003/2004 SEASON SYNOPSIS

Red King Crab Survey Results

Analyses of results of the 2003 stock assessment survey estimated the allowable surplus harvest, or GHIL at 225,000 pounds. Since this exceeded the 200,000-pound regulatory threshold, it was determined that a fishery could proceed. This GHIL represented a harvest rate of 29.4% of legal crab. Overall the estimated legal biomass of all stocks was 91% of the 1978–2003 historic average.

The estimated legal biomass was well below the historic legal biomass average in five of the eight areas surveyed—Gambier Bay (54%), Seymour Canal (51%), Peril Strait (35%), Lynn Canal (51%), and Port Frederick (41%). Pybus Bay (164%), the Juneau area (159%), and Excursion Inlet (127%) had legal biomass estimates above the respective historic legal biomass estimates for their respective areas but they were down from recent years.

Commercial Fishery Summary

All permit holders were required to pre-register prior to fishing, and to complete mandatory logbooks during the fishery. In addition, permit holders were required to call in during the season at specified times and report location and estimated harvest. A 20-pot limit per vessel restriction was in effect for the sixth consecutive season because the GHIL (225,000 pounds) was less than 400,000 pounds.

The preseason news release for the fishery stated that closures would be announced when the GHIL was achieved with the following exceptions. Port Frederick and Peril Strait areas would be closed for the entire season due to poor stock conditions. Seymour Canal would close after 4 days on November 4, 2003 because of poor stock conditions. Personal use fisheries were also closed in areas closed to commercial fishing.

Section 11-A closed by emergency order on November 4, 2003 and the remaining areas open to fishing closed on November 5, 2003. During the season, 67 permit holders made 93 landings totaling 193,759 pounds of red king crab (Table 2.1). Based on a sample of 53 landings, the average size was 159.9 mm in carapace length (Table 2.3) and the average weight was 7.67 pounds per crab (Table 2.4). About 49.4% of the landed crab recruited into the fishery in 2003, and 34.6% had been in the fishery for at least one year. Thus, the majority of the catch was comprised of crab that recruited into the fishery during the past two seasons. Eighty-four percent of the harvest came from Districts 10 and 11 (Table 2.2).

2004/2005 SEASON SYNOPSIS

Red King Crab Survey Results

Analyses of the results of the 2004 stock assessment survey estimated the allowable surplus harvest, or GHIL, at 80,505 pounds. Since this is well below the 200,000-pound regulatory

threshold it was determined that a commercial fishery would not proceed. The estimated legal biomass of all stocks was 70% of the 1978–2004 historic average.

The estimated legal biomass was well below the historic legal biomass average in six of the eight areas surveyed—Pybus Bay (87%), Gambier Bay (34%), Seymour Canal (28%), Peril Strait (58%), Lynn Canal (36%), and Port Frederick (47%). Only the Juneau area (132%), and Excursion Inlet (121%) had legal biomass estimates above the respective historic legal biomass estimates for their respective areas.

Subsequent to announcement of the season closure, the department became involved in a second "supplementary survey" at the request of the King and Tanner Task Force and other industry representatives. This involved a re-survey in early October 2004 of several areas that were previously surveyed by the department in June and July 2004. Major goals were to 1.) to determine if catch rates in the fall were significantly different than those observed in the summer, and 2.) collect information to better target department survey pots in areas of high density or abundance. The results of the fall survey revealed much lower catch rates than during the summer and demonstrated that conducting the survey during the fall would not be an improvement to the survey. The department concluded from the fall survey results that the summer survey did not fail to detect an abundance of red king crab due to a shifted distribution in the summer.

REFERENCES CITED

Clark, J. E., T. M. Koeneman, et al. (2001). Red King Crab (*Paralithodes camtschaticus*) abundance and estimated available harvest in Southeast Alaska for the 2001/2002 season using pot survey catches. Juneau, Alaska, Alaska Department of Fish and Game, Division of Commercial Fisheries. Regional Information Report 1J03-25.

Table 2.1.—Red king crab harvest, number of landings, and number of permits in Registration Area A (Southeast Alaska) by year or season, 1960 to present. The data from 1960–1969 include all three species of king crab (red, blue, and golden) from all of Southeast Alaska including Yakutat. Yakutat king crab is included in the 1969/1970 season

Year/Season ^a	Total catch	Number	
		Landings	Permits
1960	3,424		
1961	*	*	*
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
1969/1970	1,438,226	401	33
1970/1971	389,373	150	20
1971/1972	670,645	183	19
1972/1973	528,025	198	19
1973/1974	758,103	234	29
1974/1975	535,534	201	46
1975/1976	356,771	170	32
1976/1977	328,145	174	35
1977/1978	234,494	138	34
1978/1979	443,639	165	34
1979/1980	658,087	229	39
1980/1981	532,674	193	35
1981/1982	524,109	171	46
1982/1983	412,605	115	58
1983/1984	280,681	119	97
1984/1985	270,495	121	95
1985 through 1992		Fishery Closed	
1993/1994	202,384	180	83
1994/1995	256,267	246	84
1995/1996	357,815	203	73
1996/1997	428,549	218	79
1997/1998	308,322	187	76
1998/1999		Fishery Closed	
1999/2000	289,548	215	77
2000/2001		Fishery Closed	
2001/2002	296,967	177	77
2002/2003	233,630	154	75
2003/2004	193,759	93	67
2004/2005		Fishery Closed	

* Where number of permits is 2 or less, the information is considered confidential.

^a Data for years 1960 through the 1969/1970 season are taken directly from the last board report.

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

^c Total permits are the number of unique CFEC numbers the made landings in a season.

Table 2.2.—Red king crab harvest in thousands of pounds by district and season in Registration Area A (Southeast Alaska), 1969/1970 to present.

Season	District															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1970/1971						*		*	45.8	116.4	119.6	*	*	*	53.8	389.4
1971/1972								*	*	197.6	259.4	*	95.8	*	*	670.6
1972/1973	*					*		16.8	*	223.8	103.6	*	40.0	*		528.0
1973/1974					*	*	*	*	21.2	365.1	120.7	*	98.7	87.1	*	758.1
1974/1975	*					*	*	8.3	27.9	124.5	74.1	60.2	101.2	128.8	8.5	535.5
1975/1976					*	*		15.5	*	30.4	35.1	53.4	95.8	116.1	*	356.8
1976/1977			*		*	*		16.7	17.5	49.3	82.0	*	*	63.8	24.7	328.1
1977/1978	*				*	*		*		43.1	64.5	*	*	18.5	*	234.5
1978/1979								*		118.5	122.9	14.1	112.5	40.2	28.9	443.6
1979/1980	*				*	*	*	*	*	168.4	220.2	39.5	79.4	89.1	11.8	658.1
1980/1981	*					*	*	27.4	*	163.7	179.2	*	73.4	*	39.9	532.7
1981/1982					*	*	*	*	*	114.4	135.4	32.7	116.7	32.8	52.8	524.1
1982/1983					7.3		*	*	*	77.4	53.8	98.0	70.8	79.5	20.5	412.6
1983/1984	*		*		*	*	*	*	*	79.5	35.2	30.2	46.7	50.8	1.9	280.7
1984/1985	*		*					*	*	58.7	89.0	14.2	51.9	48.9	6.2	270.5
1985 through 1992	Fishery Closed															
1993/1994						*		*	2.4	29.6	76.9	38.9	22.7	10.3	20.9	202.4
1994/1995					*			*	*	69.5	113.5	24.8	21.8	13.4	6.6	256.3
1995/1996								*	*	169.7	142.2	*	13.1	18.5	6.3	357.8
1996/1997								*	1.5	176.7	206.2	2.2	18.3	18.0	*	428.5
1997/1998									1.4	76.7	184.2	*	*	25.3	8.0	308.3
1998/1999	Fishery Closed															
1999/2000								*	*	43.5	191.9	11.7	*	32.9	9.3	289.5
2000/2001	Fishery Closed															
2001/2002								*	83.0	147.9	5.9	*	41.6	15.5		297.0
2002/2003								*	69.2	96.1	10.0	*	41.6	11.4		233.6
2003/2004								*	64.0	98.2	4.1	0.0	19.8	7.5		193.8
2004/2005	Fishery Closed															

* Where number of permits is 2 or less, the information is considered confidential.

Table 2.3.—Summary of commercial red king crab length frequency and shell condition data collected during dockside sampling in Registration Area A (Southeast Alaska), 1970/1971 to present.

Season	Number of sampled		Carapace length (mm)			Recruitment				
	Boats	Crab	Average	Range	Recruits ^a	%PR+1 ^b	%PR+2 ^c	%PR+3 ^d	%PR+4 ^e	Skip molts ^f
1970/1971	29	2,264	161.0	138–201	40.2	39.6	18.3	1.9	0.0	28.5
1971/1972	10	742	160.2	134–203	47.7	33.0	14.9	4.1	0.3	24.4
1972/1973	30	3,032	158.7	133–205	53.5	32.5	11.5	2.4	0.1	20.5
1973/1974	15	1,438	161.6	140–208	27.6	52.5	17.6	2.1	0.2	39.7
1974/1975	20	2,181	166.3	137–200	27.6	47.4	21.3	3.8	0.0	18.6
1975/1976	21	1,969	160.3	135–207	49.0	29.6	16.6	4.7	0.2	22.2
1976/1977	18	1,460	160.6	115–204	50.1	33.0	11.9	4.5	0.6	21.4
1977/1978	32	3,161	156.7	136–203	29.7	40.2	20.4	9.5	0.2	67.9
1978/1979	18	1,712	155.4	137–202	61.5	28.7	8.5	1.1	0.1	22.9
1979/1980	30	3,082	156.1	137–193	55.5	31.0	11.6	1.9	0.0	29.1
1980/1981	49	4,103	156.3	134–196	53.0	34.7	10.8	1.4	0.0	29.5
1981/1982	37	3,425	158.8	123–199	47.1	35.0	15.4	2.5	0.0	30.6
1982/1983	30	2,821	159.4	137–200	46.0	33.6	15.5	4.9	0.0	30.5
1983/1984	42	3,521	158.4	137–196	51.9	33.9	11.7	2.6	0.0	24.9
1984/1985	36	3,641	159.6	139–196	48.3	37.9	12.3	1.5	0.0	22.6
1985–1992						Fishery Closed				
1993/1994	116	8,601	162.9	103–209	30.5	46.5	19.4	3.6	0.0	30.3
1994/1995	124	7,974	162.8	90–209	34.5	33.1	23.4	9.0	0.1	36.9
1995/1996	73	5,882	159.4	96–204	56.2	30.1	9.5	4.2	0.1	17.8
1996/1997	132	7,744	161.5	113–212	38.6	44.0	12.9	4.4	0.2	28.8
1997/1998	111	5,919	164.4	122–207	28.2	44.0	23.4	4.5	0.0	33.6
1998/1999						Fishery Closed				
1999/2000	136	6,320	161.1	135–199	44.5	29.7	17.9	7.9	0.1	34.1
2000/2001						Fishery Closed				
2001/2002	105	5,162	160.1	135–195	40.4	43.0	15.2	1.4	0.0	31.4
2002/2003	66	3,217	161.4	138–194	41.4	37.7	18.4	2.5	0.0	28.5
2003/2004	53	2,619	159.9	138–195	49.4	34.6	13.7	2.3	0.0	23.6
2004/2005						Fishery Closed				

^a Recruits = all new and soft shell crab ≥ 145 mm and ≤ 161 mm carapace length.

^b PR + 1 = all new and soft shell crab ≥ 162 mm and ≤ 178 mm, and old shell crab ≥ 145 mm and ≤ 161 mm, carapace length.

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

^d 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.

^e PR + 4 = all old and very old where carapace length ≥ 196 mm.

^f Skip molts = all old and very old crab.

Table 2.4.—Summary of commercial red king crab CPUE and average weight data collected during dockside sampling and interviews in Registration Area A (Southeast Alaska), 1970/1971 to present.

Season	Number			Average Catch/ pot	Range of Catch/pot	Weight (pounds)		Estimated no. Crab caught	Percent Catch sampled
	Boats interviewed	Pots lifted	Crab captured			Average	Range		
1970/1971	1					8.60	8.60–8.60	45,276	5.0
1971/1972									
1972/1973									
1973/1974									
1974/1975									
1975/1976	2					8.4	7.5–9.2	42,523	4.6
1976/1977	5					8.0	7.3–10.1	40,865	3.6
1977/1978	15					7.5	6.9–9.8	31,391	10.1
1978/1979	8					7.2	6.3–8.7	61,788	2.8
1979/1980	4					7.4	6.6–7.9	88,931	3.5
1980/1981	41	5,345	29,897	5.6	1.0–14.5	7.2	6.4–8.2	74,292	5.5
1981/1982	19	600	900	1.5		7.2	6.5–8.7	72,692	4.7
1982/1983	23	1,542	6,449	4.2	1.3–7.6	7.7	6.6–8.5	52,388	5.4
1983/1984	29	3,693	4,165	1.1	0.2–4.3	7.0	5.5–8.5	40,034	8.8
1984/1985	27	1,334	3,893	2.9	1.6–6.3	7.4	6.7–8.5	35,826	10.2
1985–1992					Fishery Closed				
1993/1994	114	10,158	17,749	1.8	0.0–6.2	8.1	5.8–9.6	25,110	34.3
1994/1995	120	9,087	15,063	1.7	0.0–7.8	8.0	6.2–10.3	31,914	25.0
1995/1996	73	5,350	16,676	3.1	0.5–9.6	7.5	5.5–8.7	47,900	12.3
1996/1997	129	11,958	36,449	3.1	0.4–11.5	7.8	6.3–9.6	54,662	14.2
1997/1998	111	8,236	24,079	2.9	0.3–12.0	8.3	5.7–9.8	37,103	16.0
1998/1999					Fishery Closed				
1999/2000	136	12,003	26,733	2.2	0.2–18.4	7.6	5.5–10.0	38,098	16.6
2000/2001					Fishery Closed				
2001/2002	105	8,445	27,709	3.3	0.4–10.0	7.7	6.1–8.6	38,819	13.3
2002/2003	66	4,213	14,489	3.4	0.5–10.8	7.9	6.6–9.2	29,686	10.8
2003/2004	53	3,350	16,666	5.0	1.4–14.5	7.7	6.3–8.9	25,262	10.4
2004/2005					Fishery Closed				

Table 2.5.—Blue king crab harvest, number of landings, and number of permits by season in Registration Area A (Southeast Alaska), 1976/1977 to present for all fisheries.

Year/Season	Total Catch	Number of Landings	Number of Permits
1976/1977	*	*	*
1977/1978	3,709	8	5
1978/1979	*	*	*
1979/1980	*	*	*
1980/1981	2,017	7	6
1981/1982	4,159	11	9
1982/1983	46,639	52	28
1983/1984	38,330	40	30
1984/1985	5,436	25	17
1985/1986	1,886	18	16
1986/1987	1,179	15	13
1987/1988	1,506	35	18
1988/1989	3,186	15	9
1989/1990	501	14	8
1990/1991	597	11	8
1991/1992	1,037	14	9
1992/1993	929	11	9
1993/1994	2,124	30	15
1994/1995	5,328	62	25
1995/1996	3,483	45	20
1996/1997	1,248	30	16
1997/1998	2,316	22	12
1998/1999	*	*	*
1999/2000	9,070	40	19
2000/2001	2,776	14	6
2001/2002	1,990	33	14
2002/2003	491	17	13
2003/2004	45	5	5

* Where number of permits is 2 or less, the information is considered confidential.

Figure 2.1. –Map showing red king crab fishing areas in Southeast Alaska.

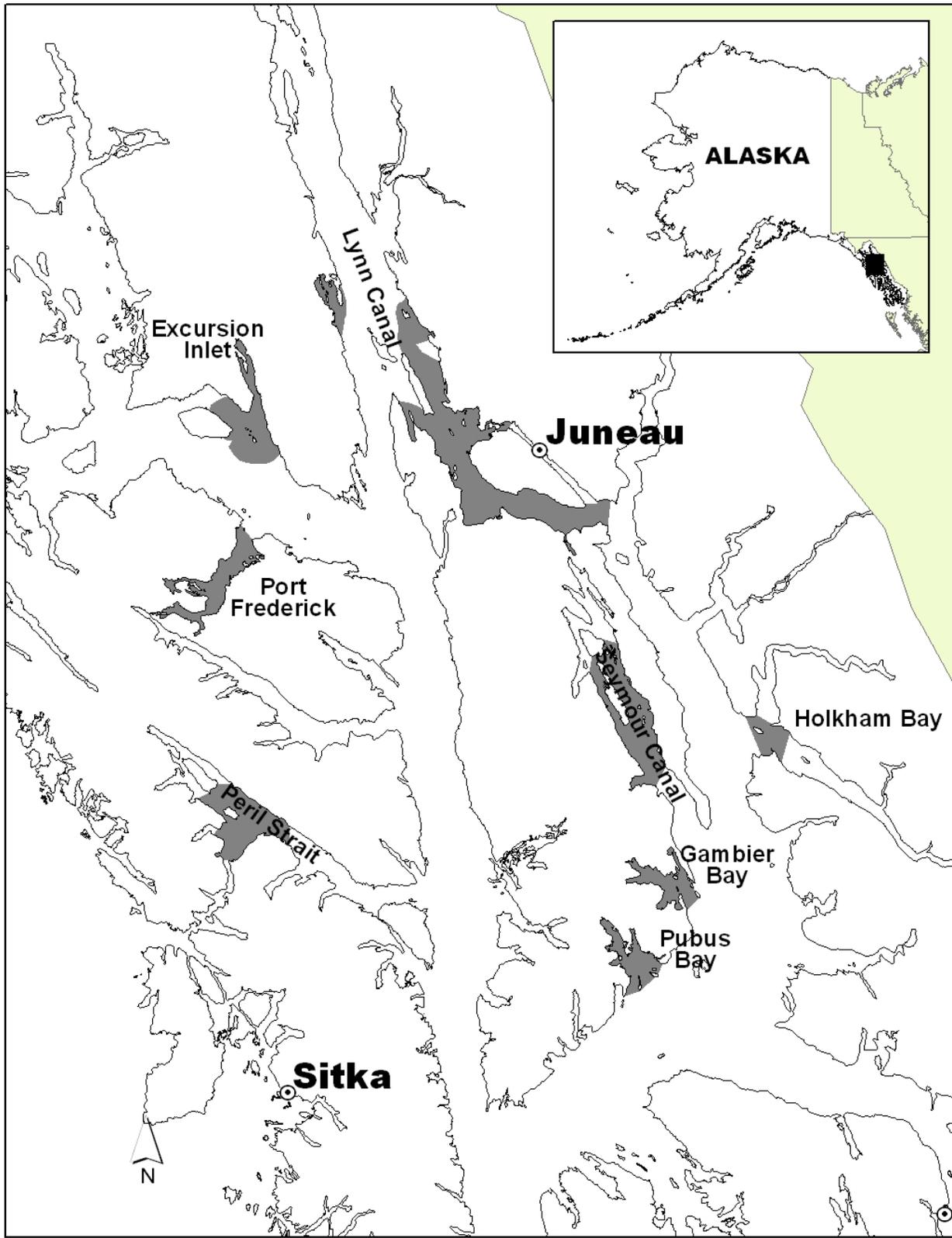


Figure 2.2. –Estimated biomass of mature and of legal male red king crab from 8 surveyed areas in Registration Area A, Southeast Alaska. The 8 surveyed areas are Pybus Bay, Gambier Bay, Seymour Canal, Peril Strait, Juneau Area, Lynn Canal, Port Frederick, and Excursion Inlet for 1979–2004 survey years. This figure is updated from (Clark, Koeneman et al. 2001).



2.15

SECTION 3: SOUTHEAST ALASKA GOLDEN KING CRAB FISHERIES

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INTRODUCTION

This report presents an overview of the commercial golden king crab fishery in Southeast Alaska (Registration Area A) with emphasis on the 2003/2004 fishing season and an outlook for the 2004/2005 season. Information is presented on historical harvest and effort, regulation development, and available dockside sampling data. Stock assessment surveys are not conducted for this fishery, but stock status can be roughly inferred using fishery logbook, dockside sampling, and onboard observer data.

Golden king crabs, *Lithodes aequispinus*, are taken from the deeper waters, between 100 and 350 fathoms, of northern Southeast Alaska. Few golden king crabs are harvested from the southern portion of Southeast Alaska. Important golden 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 golden king crab fishing conditions are more demanding than the red king crab, *Paralithodes camtschaticus*, or the Tanner crab, *Chionoecetes bairdi*, fisheries because of the difficulties associated with grounds more exposed to adverse weather conditions, greater depths, strong tidal exchanges, and heavy currents.

Commercial vessels participating in the golden 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-foot x 7-foot x 30-inch) and top loading conical or pyramid-style pots. Because of challenging fishing conditions fishers prefer heavier gear, and use different line and buoy train set-ups. Soak times are generally longer compared to red king or Tanner crab fishing.

Management of the commercial golden king crab fishery is based on a management plan and policies that have been reviewed and approved by the Alaska Board of Fisheries. Primary elements of the management plan are:

- Seasons that open concurrently with the Tanner crab fishery
- The harvest of only male crabs with a minimum legal carapace width
- Gear limits of 100 pots per vessel
- Separate stock management (5 fishing areas)
- Guideline harvest ranges based on historic harvest levels by fishing area that consider stock dynamics (level of recruitment)

FISHERY DEVELOPMENT AND HISTORY

Commercial Fishery History

The department began collecting species composition information from the commercial king crab harvest in Southeast Alaska in 1970. For information on the harvest levels before this time, see the report about red and blue king crabs in Southeast Alaska. Reliable golden king crab harvest data has been available since the 1972/1973 fishing season. From the 1972/1973 through the 1979/1980 seasons, harvest ranged from about 32,000 to almost 178,000 pounds by 20 or fewer permit holders (Table 3.1). Effort and harvest increased significantly after the 1979/1980 fishing season.

During the 1980/1981 through 1989/1990 seasons, the average number of permits fished was 65 with a high of 124. This effort level resulted in an average harvest of 824,383 pounds. At current prices, this would be worth about \$3.3 million. These relatively high harvests coincided with 4 years of good recruitment starting in 1983 and ending by 1988 (Table 3.4). Fishing effort peaked during the 1984/1985 season when 124 permits fished for a harvest of 848,818 pounds. The harvest peaked 2 seasons later during the 1986/1987 season when only 51 permits fished for a harvest of 1,016,011 pounds. Although effort and harvest declined through the 1995/1996 season when only 16,000 pounds was harvested they have increased since then in response to increasing recruitment, peaking with a harvest of 610,000 pounds in the 2001/2002 season and declining slightly since then.

The development of the golden king crab fishery in Southeast Alaska occurred in 5 phases. Initial development (first phase) occurred from in 1960 through the 1971/1972 fishing season. This development phase was characterized by fishers determining which fishing methods, gear types, depth ranges, geographic areas, and other factors yielded adequate harvests of golden king crab. Also during this phase, processing facilities developed product forms and studied marketing potential. Prices and effort were generally low. Harvest fluctuated, probably because red king crab was the primary target species during this phase. The entire fishery was managed as a single stock. Basic regulations included establishing a quota, gear limits, size limits, and other regulatory needs. These initial regulations were based on a short history of commercial exploitation, little scientific information, and experiences in other Alaska king crab fisheries. Many of these initial regulations changed dramatically as better information became available.

The second phase occurred during the 1972/1973 through 1979/1980 seasons and was characterized by relatively low effort levels but generally increasing harvest. Additional knowledge on gear requirements, fishing techniques, and geographic distribution of the species became available. Exvessel prices continued to be low. Due to concentrated effort and resulting harvest, it was necessary to reduce fishing time in District 10, and eventually to eliminate the year-round season.

The third phase began with the 1980/1981 fishing season and ended with the 1984/1985 fishing season. Effort gradually increased from 30 to 124 permits fished. A significant portion of the effort increase can be attributed to the evolving limited entry program for king and Tanner crabs in Southeast Alaska. Knowledge on gear design and fishing techniques developed to a point where it was sufficient to harvest the available stock throughout the range in Southeast Alaska. Fishing occurred throughout the year in some areas. This phase is important because it showed consistently increasing harvest that 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 and the gear limit was increased to 100 pots per vessel. Although fishing effort and resulting harvest were increasing, scientific information sufficient to properly manage stocks was not available.

The fourth phase began with the 1985/1986 fishing season and extended through the 1995/1996 fishing season. The peak harvest of slightly more than one million pounds occurred during the 1986/1987 season and has declined since due to lack of recruitment and overexploitation. The fishery was separated into 5 management areas with guideline harvest ranges established in each area in an attempt to prevent further overexploitation in any single area or serial depletion of a number of fishing areas. The department has used emergency order authority to close the fishery early each season, when data indicated that substantial recruitment had not entered the fishery

and stocks were not strong enough to support significant harvest. The effort and harvest declined for 7 seasons, to a low of 15,718 pounds in 1995/1996.

The fifth, and current phase, began with the 1996/1997 fishing season. Effort increased in response to improved prices with the development of a live market and harvest increased as a result of increases in the availability of recruit size crab. Anecdotal information from pot shrimp fishers in Frederick Sound and Clarence Strait during previous years indicated a very significant increase in the number of small golden king crab. By the 1996/1997 season the small crabs had grown to legal size, surviving at relatively high levels. Recruitment has remained fairly high since 1996/1997 leading a slow but consistent increase in seasonal harvest.

Dockside Sampling

Department personnel have collected shell condition and carapace length data from landings at various ports throughout the region since 1970 (Table 3.4). Length frequency data are used to estimate recruitment trends and relative contribution from the various recruit-classes of crab. Department personnel began collecting average weight data from landings in 1975 (Table 3.5). 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). Along with logbook data, this catch rate data may be used to estimate fishing mortality. Together, these three forms of dockside data are used to make triennial adjustments to the GHL.

REGULATION DEVELOPMENT

Fishing Seasons

Regulation development in the golden king crab fishery has generally paralleled that of the red king and Tanner crab fisheries. The limited biological information on golden king crab life history timing in Southeast Alaska suggests that molting and mating may occur throughout the year, with a slight peak in molt timing in late spring and early summer. Soft-shelled crabs, however, are frequently caught during the fishery starting in February. The presence of eggs in all stages of development throughout the year also 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 mid-February. The fishery currently starts on February 15, concurrently with the start of the commercial Tanner crab fishery, and continues until the season is closed by emergency order due to resource conservation concerns or the attainment of established guideline harvest ranges. In recent seasons, the fishery has closed between March and September, depending upon effort, harvests, harvest rates, and recruitment levels.

Sex and Size Limits

From its inception, the golden king crab fishery has been restricted to harvesting only male crabs in order to protect the reproductively important females. From 1961 through 1968, a minimum legal size of 6 ½ inches in carapace width (CW) was in place. The minimum legal size was established to protect sexually mature male king crabs from harvest during the early years of sexual maturity. The minimum legal size was increased to 7 inches or 178 mm CW in 1969. This corresponds to a carapace length of 151 mm (Koeneman and Buchanan 1985). 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 1993, the BOF developed a regulation allowing the department to open a fishery on male golden king crabs 6 ½ inches or greater in carapace width by emergency order in the Cape Ommaney and Clarence Strait areas.

A general standard of ‘size at maturity plus two molts of growth’ has been used to establish size limits for king crabs in Alaska (Otto 1984). This provides for several years of reproductive participation prior to commercial harvest. While size at maturity has not been directly determined for Southeastern Alaska, it has been variously estimated that golden king crab males mature at a minimum size of 114 mm carapace length (CL) in British Columbia (Jewett, Sloan et al. 1985), 110 mm CL in Prince William Sound (Paul and Paul 2001), and 130 mm CL in the Southern Bering Sea (Somerton and Otto 1986). Size at maturity decreases with latitude in the Bering Sea; this is thought to be a function of slower growth with colder water temperature. After two molts a 110 mm CL crab in Southeast Alaska would achieve a size of 151 mm CL or 178 mm CW and a 130 mm CL crab would achieve a size of 165 mm CL or 186 mm CW (Koeneman and Buchanan 1985). However some crabs of this size range will skip a molt. So if male golden king crabs in Southeast Alaska mature at 110 mm CL then the legal size complies with the standard of ‘size at maturity plus 2 molts’ but if the size at maturity is 130 mm CL as in the Southern Bering Sea then the current 7-inch (178 mm CW) size limit is slightly under the standard.

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. Crabs infected with this parasite are incapable of reproduction and may experience reduced growth (Hawkes, Meyers et al. 1986; Hawkes, Meyers et al. 1986; Hawkes, Meyers et al. 1987). Removal of infected crabs may improve stock reproduction and growth.

QUOTAS AND GUIDELINE HARVEST RANGES

In 1970, a quota of 1.5 million pounds was provided for king crabs (all species combined). In 1971, separate red and golden king crab fisheries were recognized with the adoption of distinct seasons, and a quota of 600,000 pounds was established for the golden king crab fishery. This quota remained in regulation through 1977. After 1977, guideline harvest ranges (GHRs) replaced quotas. The first GHR of 50,000 to 200,000 pounds was established in 1978. The GHR was increased to 200,000 to 500,000 pounds in 1981 based on industry recommendations. This GHR remained in regulation through the 1986/1987 fishing season. When stocks were strong and prices good, the GHRs were often exceeded from 1980 through 1998 because the department monitored the fishery primarily by fish tickets. Seasons were closed when the fish ticket data neared the GHR set pre-season. Relying solely on fish ticket data, however, may not include crabs caught and delivered in the prior week or crabs caught and still held on the vessels. Also, any crabs caught in unpulled and fished crab pots are excluded. This combination of factors led to reduced ability to manage for a GHR in-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 ground, separate GHRs were established in 1987. Initially only 3 areas (Frederick Sound, Icy Strait, and Lower Chatham Strait) were assigned GHRs. Five defined fishing areas and GHRs exist in regulation today (Figure 3.1):

Frederick Sound Area	0 to 250,000 pounds
Icy Strait Area.....	0 to 200,000 pounds
Chatham Strait Area.....	0 to 150,000 pounds
Cape Ommaney Area.....	0 to 50,000 pounds
Clarence Strait Area.....	0 to 25,000 pounds

However, since the 2001/2002 season the original 5 management areas have been managed as 7; Frederick Sound and Icy Strait areas have been split and managed as two sub areas each with their own GHRs as follows:

Frederick Sound Area

Frederick Sound Sub area (all waters of Section 11-D (Seymour Canal), all waters of District 10, all waters of District 9 east of a line from Kingsmill Point to Point Gardner, all waters of District 8 north of the latitude of Blaquiere Point, all waters of Section 6-A, and all waters of District 5 north of the latitude of Point Baker)	0 to 225,000 pounds
North Frederick Sound Sub area (all waters of Sections 11-B and 11-C).....	0 to 25,000 pounds

Icy Strait Area

Icy Strait Sub area (all waters of Sections 11-A, 13-C and 13-A in Peril Straits east of Point Kakul, and Districts 12 and 15).....	0 to 110,000 pounds
West Icy Strait Sub area (all waters of District 14).....	0 to 90,000 pounds
Chatham Strait Area.....	0 to 150,000 pounds
Cape Ommaney Area.....	0 to 50,000 pounds
Clarence Strait Area.....	0 to 25,000 pounds

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 the current 100 in 1978.

There is no minimum mesh size requirement for king crab pots although four 6-¼ inch escape rings or a panel of 9-inch stretch mesh must be installed on every king crab pot. Regulations also require biodegradable 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. Over the past 5 years, as the fishery has intensified and season length has decreased, the popularity of cone pots in the fishery has increased. They are more easily moved between areas and for the now frequent shorter soak times are said to be fairly competitive with the more traditional square pots.

Limited Entry

In January 1984 the Commercial Fisheries Entry Commission (CFEC) established a limited entry program for the king and Tanner crab pot fisheries in Southeast Alaska. The CFEC adopted a maximum effort level of 57 permits for the golden king crab fishery. Currently there are 74 permits eligible to participate in the golden king crab fishery. Some of these permits may not be eligible to fish once the adjudication process is completed.

2001/2002 SEASON SYNOPSIS

The department announced guideline harvest levels by fishing area for the 2001/2002 season through a news release. Harvest was monitored through fish tickets and dockside interviews during landings. Beginning this season Frederick Sound and Icy Strait were split into subareas in order to distribute harvest and effort more evenly in these large fishing areas. The Frederick Sound Area was split into North Frederick and Frederick Sound subareas while Icy Strait Area was split into West Icy and Icy Strait subareas. The respective area GHGs were split between the subareas according to historic harvest distribution.

A voluntary call-in program was begun this season in order to monitor progress towards the GHG. As GHGs were achieved, fishing seasons were closed by area using emergency orders. The earliest closure was of the Frederick Sound and North Frederick Sound on March 26. Icy Strait and West Icy Strait closed on April 10 followed by Chatham Strait on May 8. The last areas to close were Cape Ommaney and Clarence Strait on June 27. During the season, 45 permit holders fished and a total of 609,510 pounds of golden king crabs were caught from all fishing areas (Table 3.1). Most of the harvest occurred during February, March, and April (Table 3.2). Frederick Sound, Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.6–3.10.).

Dockside sampling data from commercial landings indicated that an overall 36 percent of the crabs were recruit crabs and the average size was 171.2 mm in carapace length. The average CPUE of 2.4 crab per pot lift was below the overall average of 2.8 crab per pot lift for all years (Table 3.5). The average weight of 6.9 pounds per crab was below the overall average of 7.25 pounds per crab for all years. About 42 percent of the crabs landed were postrecruit 1s (Table 3.4).

The department deployed observers on 4 vessels that volunteered to have ADF&G biologists onboard to sample the catch of sublegal and female crabs. Vessels with observers were asked to close the escape rings or 9-inch stretch mesh panel on 10 of their pots. This program provides objective data on the relative abundance and size composition of sublegal and female crabs in this fishery. Observer trips were made in the North Frederick Sound, Frederick Sound, and Chatham Strait areas with a total of 23 sampling days during the season.

2002/2003 SEASON SYNOPSIS

The department announced guideline harvest levels by fishing area for the 2002/2003 season through a news release. Fishing was monitored through fish tickets and dockside interviews during landings. Frederick Sound and Icy Strait were again managed as 2 subareas each. Weekly reporting of logbook data was mandatory during the 2002/2003 season and was used for inseason management. Making this previously voluntary reporting mandatory data further enhanced the Department's ability to target GHGs. Fishing seasons were closed by area using emergency orders. The earliest closure was North Frederick Sound on March 16. Frederick Sound, Icy Strait, and West Icy Strait closed on March 24 followed by Chatham Strait on July 11. The last fisheries to close were Cape Ommaney and Clarence Strait on October 1. During the season, 48 permit holders fished and a total of 562,395 pounds of golden king crab were caught from all fishing areas (Table 3.1). Most of the harvest occurred during February, March, and April (Table 3.2). Frederick Sound, Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.6–3.10.).

Dockside sampling data from commercial landings indicated that 36 percent of the crabs were recruit crabs and the average size was 170.6 mm in carapace length. The average CPUE of 2.5 crab per pot lift was below the overall average of 2.8 crab per pot lift for all years (Table 3.5). The average weight of 7.2 pounds per crab equals the overall average of 7.3 pounds per crab for all years. About 42 percent of the crabs landed were post recruit 1s (Table 3.4).

The department deployed observers on 3 vessels that volunteered to have ADF&G biologists onboard to sample the catch of sublegal and female crabs. Vessels with observers were asked to close the escape rings or 9-inch stretch mesh panel on 10 of their pots. This program provides objective data on the relative abundance of sublegal and female crabs in this fishery. Observer trips were made in the West Icy Strait, Frederick Sound, and Chatham Strait areas with a total of 18 sampling days during the season.

2003/2004 SEASON SYNOPSIS

The 2003/2004 golden king crab fishery opened concurrent with the commercial Tanner crab fishery on February 15, 2004. Because this is a relatively data poor fishery, with no fishery-independent survey information, trends in stock abundance are sometimes difficult to detect. Annually varying GHLS with little justification can confuse rather than enhance detection of trends. For this reason, the department decided to begin applying GHLS for a three-year period unless obvious trends emerge within the cycle. Thus the 2002/2003 GHLS were applied to the 2003/2004 season and will likely be applied again to the 2004/2005 season. This strategy was discussed at the 2003 King and Tanner Crab Task Force meeting, and the department announced guideline harvest levels by fishing area through a news release. Fishing was again monitored through fish tickets, dockside interviews, and a mandatory weekly call in of logbook data. Fishing seasons were closed by area using emergency orders. The earliest closure was West Icy Strait on March 3. Icy Strait closed on March 7 followed by North Frederick Sound on March 12 and Chatham Strait and Cape Ommaney on August 11. The last fishery to close was Clarence Strait on September 30. During the season, 45 permit holders fished and a total of 557,277 pounds of golden king crabs were caught from all fishing areas (Table 3.1). Most of the harvest occurred during February, March, and April (Table 3.2). Frederick Sound, Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.6–3.10.).

Dockside sampling data from commercial landings indicated that 39 percent of the crabs were recruit crabs and the average size was down slightly at 169.7 mm in carapace length. The average weight of 7.1 pounds per crab and the CPUE of 3.1 crabs per pot lift was above average (Table 3.5). Forty three percent (43%) of the crabs landed were post recruit 1s (Table 3.4).

The department deployed observers on 3 vessels that volunteered to have ADF&G observers onboard to sample the catch of sublegal and female crabs. Vessels with observers were allowed to close the escape rings or 9-inch stretch mesh panel on 10 of their pots. This program provides objective data on the relative abundance of sublegal and female crabs in this fishery. Observer trips were made in the North Frederick Sound, Frederick Sound, and Icy Strait (Lynn Canal) areas with a total of 16 sampling days during the season.

2004/2005 OUTLOOK

The strong golden king crab fishing in the late 1990s and early 2000s has been fueled by a pulse of recruitment entering the fishery during the 1997/1998 season. At this time, the percent of golden king crabs newly recruited to the fishery in the commercial harvest averaged 55% and the

average crab weight was 6.6 pounds (Table 3.4). Since that peak recruitment has declined to an average of 38% and 7.1 pounds over the past 3 seasons, but not to the 16.5% and 8.0 pounds seen in the 1989/1990 season. This suggests that there has been a fairly steady but moderate recruitment to the fishery. However, an increasing commercial catch per pot, and an increase in pre recruit catch rates from onboard observer sampling in Frederick Sound and Icy Strait suggests that a stronger pulse of recruitment may be coming.

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Table 3.1.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in Registration Area A by season (October through September), 1972/1973 to present.

Season	Total Harvest (Pounds)	Number of Landings	Number of Permits	Pounds per Landing
1972/1973	177,544	85	12	2,089
1973/1974	71,783	38	11	1,889
1974/1975	32,332	28	9	1,155
1975/1976	68,842	33	7	2,086
1976/1977	75,046	30	6	2,502
1977/1978	83,407	54	14	1,545
1978/1979	52,476	66	10	795
1979/1980	167,823	82	20	2,047
1980/1981	704,622	158	30	4,460
1981/1982	653,042	255	54	2,561
1982/1983	804,437	283	70	2,843
1983/1984	973,100	307	89	3,170
1984/1985	848,818	277	124	3,064
1985/1986	698,249	211	61	3,309
1986/1987	1,016,011	222	51	4,577
1987/1988	949,205	235	56	4,039
1988/1989	968,296	228	59	4,247
1989/1990	632,872	260	63	2,434
1990/1991	426,882	221	40	1,932
1991/1992	229,242	154	33	1,489
1992/1993	103,781	80	18	1,297
1993/1994	30,318	51	13	594
1994/1995	39,344	65	19	605
1995/1996	15,845	40	11	396
1996/1997	67,164	62	16	1,083
1997/1998	244,484	87	18	2,810
1998/1999	367,782	105	30	3,503
1999/2000	560,427	143	46	3,919
2000/2001	530,765	189	45	2,808
2001/2002	609,510	211	45	2,889
2002/2003	562,384	189	48	2,976
2003/2004	557,277	145	45	3,843

Table 3.2.—Commercial golden king crab harvest (in thousands of pounds) in Registration Area A by season (October through September) and month, 1972/1973 to present.

Season	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1972/1973	27.6	36.5	18.6	18.1	22.1	0.0	7.6	*	*	*	*	13.9
1973/1974	4.4	*	0.0	*	12.2	8.7	24.8	0.0	0.0	0.0	0.0	5.0
1974/1975	3.7	8.1	*	*	0.0	*	*	0.0	0.0	0.0	0.0	*
1975/1976	*	*	*	*	*	13.2	1.7	*	0.0	0.0	*	*
1976/1977	*	9.1	*	*	*	9.1	7.5	*	0.0	0.0	0.0	*
1977/1978	*	*	*	14.2	10.0	11.7	14.3	0.0	0.0	0.0	0.0	*
1978/1979	8.7	4.4	8.7	9.7	5.9	5.9	3.7	*	0.0	0.0	*	3.3
1979/1980	4.7	8.2	4.9	9.0	16.5	34.8	44.9	10.4	*	8.8	0.0	18.7
1980/1981	36.2	43.2	18.2	79.3	178.2	171.0	87.7	*	*	*	*	14.0
1981/1982	43.0	41.7	44.0	17.9	65.8	80.9	70.7	20.9	82.0	70.0	55.8	60.4
1982/1983	174.1	77.5	58.7	0.0	115.8	168.3	15.0	46.8	27.5	36.6	59.8	24.1
1983/1984	23.7	50.6	11.0	33.7	152.7	303.5	287.8	53.4	32.2	11.0	6.9	6.6
1984/1985	166.9	250.8	19.9	*	117.8	172.5	22.3	19.6	24.9	*	19.1	11.9
1985/1986	39.9	53.8	41.1	32.1	241.0	249.1	8.6	*	14.7	*	*	*
1986/1987	147.5	80.2	46.3	326.2	136.5	70.5	67.9	39.3	39.0	*	27.8	17.3
1987/1988	13.2	15.2	10.3	264.6	297.4	80.2	64.0	79.0	63.8	29.3	20.1	12.2
1988/1989	*	*	*	*	220.9	329.2	122.6	101.1	63.0	44.3	41.8	35.0
1989/1990	78.8	31.8	6.5	5.9	71.1	145.3	68.2	60.3	55.7	42.2	23.3	43.7
1990/1991	51.3	14.0	8.4	*	38.1	89.3	67.9	60.0	52.0	14.3	*	11.6
1991/1992	18.7	17.7	16.0	10.8	8.7	48.0	56.2	29.6	*	*	*	*
1992/1993	*	*	*	*	2.9	28.2	22.3	13.9	8.6	*	*	0.0
1993/1994	0.0	0.0	0.0	0.0	2.6	9.1	13.1	5.6	0.0	0.0	0.0	0.0
1994/1995	0.0	0.0	0.0	0.0	6.3	14.5	15.2	3.4	0.0	0.0	0.0	0.0
1995/1996	0.0	0.0	0.0	0.0	2.3	*	5.0	*	*	0.0	0.0	0.0
1996/1997	0.0	0.0	0.0	0.0	6.5	26.0	12.6	13.4	8.8	0.0	0.0	0.0
1997/1998	0.0	0.0	0.0	0.0	14.5	81.0	95.2	40.3	*	0.0	0.0	0.0
1998/1999	0.0	0.0	0.0	0.0	67.4	226.0	57.5	8.7	8.1	0.0	0.0	0.0
1999/2000	0.0	0.0	0.0	0.0	256.0	237.1	51.3	13.8	*	0.0	0.0	0.0
2000/2001	0.0	0.0	0.0	0.0	201.2	156.3	120.7	36.1	12.7	*	0.0	0.0
2001/2002	0.0	0.0	0.0	0.0	205.9	259.6	106.6	32.2	5.3	0.0	0.0	0.0
2002/2003	0.0	0.0	0.0	0.0	264.4	243.6	25.0	16.0	10.1	*	0.0	*
2003/2004	0.0	*	0.0	0.0	411.1	98.3	18.8	10.1	*	*	*	*

Table 3.3.—Commercial golden king crab harvest (in thousands of pounds) in Registration Area A by district and season (October through September), 1972/1973 to present.

Season	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1972/1973								*	1.5	128.6	19.0	*		*	*	177.5
1973/1974										50.4	17.1			*	*	71.8
1974/1975								*	17.2	14.4	*				*	32.3
1975/1976								*		*		*	*	*	*	68.8
1976/1977									*	*	*	*			*	75.0
1977/1978								*	*	74.4	7.3	*	*		*	83.4
1978/1979										39.5	6.7	1.3		*	*	52.5
1979/1980								*		61.3	21.8	61.8		*	21.5	167.8
1980/1981								1.2	*	204.6	29.8	169.7	*	236.9	55.9	704.6
1981/1982								6.1	48.8	248.2	48.8	92.9	6.2	152.6	49.4	653.0
1982/1983						13.9	*	*	109.3	186.5	44.6	228.7	12.9	151.7	39.3	804.4
1983/1984						3.2	*	5.4	135.4	222.7	24.6	438.2	*	46.5	91.7	973.1
1984/1985						*	14.1	*	192.3	375.9	34.5	153.3	2.5	52.8	13.7	848.8
1985/1986	*	*				18.2	*	4.6	234.0	324.4	35.6	23.3	*	24.8	25.5	698.2
1986/1987	*					10.1	*	*	609.3	298.8	43.8	*		1.5	16.2	1,016.0
1987/1988						*	*	*	298.0	318.6	36.9	195.7		16.4	67.0	949.2
1988/1989						*	*	10.3	413.6	338.8	9.1	140.5		37.5	12.0	968.3
1989/1990	*					*		*	231.3	146.1	6.9	206.0		30.2	9.2	632.9
1990/1991						*		*	213.3	83.2	18.5	82.9		19.4	8.7	426.9
1991/1992						*	*	*	137.8	13.1	21.0	38.1		9.2	4.0	229.2
1992/1993						*		*	74.7	6.7	11.2	*		*		103.8
1993/1994									15.9	3.8	5.6	*		*		30.3
1994/1995						*			22.3	*	9.0	2.8		*	*	39.3
1995/1996									10.3		3.1	*		*		15.8
1996/1997						*		*	*	3.9	15.7					67.2
1997/1998						*	*	*	150.9	18.6	21.0	13.0		*	*	244.5
1998/1999			*			*	*	*	190.8	57.8	13.1	37.4		52.1	*	367.8
1999/2000						*	*	*	236.0	168.1	11.8	34.6		101.1		560.4
2000/2001						*	*		246.4	114.6	11.6	104.5	*	41.2	2.9	530.8
2001/2002						*	*		174.4	218.5	23.4	121.0	*	50.1	9.9	609.5
2002/2003			*			*	*		156.8	153.5	35.6	165.8	*	45.1	*	562.4
2003/2004	*	*				*	*		184.0	104.9	38.6	144.4	*	53.0	17.0	557.3

*Where number of permits is 2 or less, the information is considered confidential.

Table 3.4.—Commercial golden king crab size frequency and shell condition data collected during dockside sampling in Registration Area A (Southeast Alaska) by season, 1969/1970 to present.

Season	Number of		Carapace length (mm)		Percent recruitment					% Skip Molts
	Boats Sampled	Crabs Sampled	Average	Range	Recruits	%PR+1	%PR+2	%PR+3	%PR+4	
1969/1970	4	72	173.5	154-202	30.6	44.4	22.2	2.8	0.0	12.5
1970/1971	18	1,138	174.6	142-214	25.6	49.0	20.7	4.0	0.7	12.2
1971/1972	21	1,705	175.1	150-211	19.9	47.6	27.4	5.1	0.1	23.5
1972/1973	11	1,040	174.7	149-208	24.3	50.2	21.6	3.9	0.1	13.0
1973/1974	8	604	173.0	146-210	26.8	39.4	28.8	4.7	0.3	28.8
1974/1975	2	201	169.5	151-204	40.3	47.8	10.0	2.0	0.0	11.9
1975/1976	9	837	172.2	145-208	35.1	43.2	18.5	3.1	0.1	10.7
1976/1977	2	153	168.8	152-205	46.4	39.2	12.4	2.0	0.0	16.3
1977/1978	7	678	169.9	149-201	23.0	36.5	31.4	9.1	0.0	59.2
1978/1979	6	498	171.0	145-201	35.4	39.6	23.2	1.8	0.0	20.6
1979/1980	6	478	169.8	145-203	37.7	35.6	19.0	7.6	0.2	32.8
1980/1981	20	1,354	171.6	149-206	31.7	45.8	18.6	3.9	0.0	20.2
1981/1982	6	533	176.4	148-214	24.1	43.8	23.9	7.4	1.0	18.2
1982/1983	18	1,567	169.8	146-204	35.7	43.1	17.7	3.5	0.1	24.0
1983/1984	10	703	169.6	150-196	40.9	41.3	15.2	2.6	0.0	15.8
1984/1985	12	1,368	165.3	148-196	58.3	31.9	9.0	0.7	0.0	16.0
1985/1986	17	1,765	166.6	148-198	51.1	40.4	7.7	0.8	0.0	12.4
1986/1987	43	4,609	168.0	143-210	42.2	41.4	13.1	3.3	0.0	22.5
1987/1988	63	5,408	173.4	148-214	20.9	48.1	24.4	6.7	0.0	26.4
1988/1989	76	7,120	172.7	142-210	25.8	46.5	23.7	4.0	0.0	24.0
1989/1990	86	7,880	176.7	146-211	16.5	45.9	31.4	6.2	0.1	22.4
1990/1991	80	7,108	175.4	147-214	23.0	40.5	28.3	8.0	0.2	24.7
1991/1992	61	5,157	172.8	146-213	31.2	38.2	22.1	8.2	0.4	26.9
1992/1993	18	1,454	171.8	148-211	35.0	40.9	18.6	5.5	0.1	20.5
1993/1994	13	1,080	171.1	133-206	30.7	52.7	14.2	2.4	0.0	16.2
1994/1995	13	1,037	171.1	137-208	34.0	43.6	16.9	5.4	0.2	22.1
1995/1996	15	351	172.2	146-208	36.1	40.5	19.7	3.8	0.0	12.7
1996/1997	19	1,585	165.9	143-206	54.6	33.8	10.2	1.4	0.0	16.0
1997/1998	31	2,390	166.1	147-212	37.9	45.3	15.1	1.7	0.0	34.6
1998/1999	35	2,401	166.74	145-210	46.3	44.0	8.8	1.0	0.0	20.4

Table 3.4–Continued

Season	Number of		Carapace length (mm)		Percent recruitment					% Skip Molts
	Boats Sampled	Crabs Sampled	Average	Range	Recruits	%PR+1	%PR+2	%PR+3	%PR+4	
1999/2000	59	4,154	166.86	138-203	45.5	45.0	9.2	0.3	0.0	18.4
2000/2001	85	5,717	168.94	143-206	34.9	45.9	18.1	1.2	0.0	25.8
2001/2002	71	4,858	171.2	148-210	35.7	42.1	19.1	3.0	0.0	17.7
2002/2003	76	5,494	169.74	137-204	39.5	43.2	15.9	1.5	0.0	14.3
2003/2004	60	2,854	170.53	145-206	39.2	41.1	16.7	3.0	0.1	16.7

^a Recruits = all new and soft shell crabs ≥ 151 mm and ≤ 167 mm carapace length.

^b PR +1 = all new and soft shell crabs ≥ 168 mm and ≤ 184 mm, and old shell crabs ≥ 151 mm and ≤ 167 mm, carapace length.

^c PR +2 = all new and soft shell crabs ≥ 185 mm and ≤ 201 mm, and old crabs ≥ 168 mm and ≤ 184 mm, and very old ≥ 151 mm and ≤ 167 mm, carapace length.

^d PR +3 = all new and soft shell crabs ≥ 202 mm and all old ≥ 185 mm and ≤ 201 mm, and very old ≥ 168 mm and ≤ 184 mm, carapace length.

^e PR +4 = all old and very old where carapace length ≥ 202 mm.

^f Skip molts = all old and very old crab.

Table 3.5.—Commercial golden king crab CPUE and average weight data collected during dockside sampling and interviews in Registration Area A (Southeast Alaska) by season, 1973/1974 to present.

Season	Number of			Average Catch Per Pot	Range of Catch/Pot	Weight (lb)		Estimated No. crabs Caught ^a	Percent Harvest Sampled ^b
	Boats Sampled	Pots Lifted	Crabs Captured			Average	Range		
1973/1974	1					6.9		10,388	5.8
1974/1975									
1975/1976	1					8.8		7,868	10.6
1976/1977									
1977/1978	2					7.5	7.2–7.6	11,166	6.1
1978/1979									
1979/1980	1					8.8		19,180	2.5
1980/1981	9					7.8	6.6–8.8	90,919	1.5
1981/1982	2	50	1,368	27.4		7.4	6.5–7.8	88,729	0.6
1982/1983	15	1,697	3,482	2.1	1.1–5.3	7.1	6.5–7.9	114,105	1.4
1983/1984	8	300	900	3.0		7.1	6.3–7.6	137,833	0.5
1984/1985	12					6.4	5.7–7.3	131,803	1.0
1985/1986	17	2,471	11,743	4.8	1.6–7.5	6.6	6.0–8.5	106,038	1.7
1986/1987	40	9,023	35,064	3.9	1.6–16.4	6.9	6.2–8.5	148,029	3.1
1987/1988	62	14,365	52,275	3.6	0.1–12.7	7.3	6.5–10.6	129,609	4.2
1988/1989	78	23,811	83,295	3.5	0.4–9.0	7.2	5.8–8.7	133,190	5.4
1989/1990	90	18,068	40,560	2.2	0.3–8.7	8.0	6.5–9.4	78,597	10.0
1990/1991	80	14,544	29,877	2.1	0.3–8.8	7.8	6.5–11.0	54,798	13.0
1991/1992	61	9,850	19,072	1.9	0.2–6.6	7.4	6.3–9.8	30,812	16.7
1992/1993	18	2,507	6,627	2.6	0.5–4.9	7.4	6.4–8.2	14,101	10.3
1993/1994	13	1,425	2,771	1.9	0.7–3.4	7.2	6.5–8.3	4,234	25.5
1994/1995	13	1,389	2,164	1.6	0.5–2.7	7.3	6.6–9.2	5,427	19.1
1995/1996	15	835	208	0.3	0.0–1.1	7.2	6.0–8.5	2,204	15.9
1996/1997	19	2,782	5,284	1.9	0.3–3.3	6.6	5.9–8.0	10,161	15.6
1997/1998	30	4,665	17,503	3.8	0.1–6.7	6.6	5.8–7.7	37,269	6.4
1998/1999	37	7,143	33,901	4.8	1.0–10.0	6.5	5.9–7.4	56,236	4.3
1999/2000	59	14,999	57,871	3.9	0.6–10.0	6.7	4.8–7.9	83,896	5.0
2000/2001	85	16,204	48,403	3.0	0.4–7.5	7.2	6.1–8.5	73,923	7.7
2001/2002	76	14,514	35,442	2.4	0.6–5.1	6.9	6.2–8.3	87,826	6.3
2002/2003	71	14,055	34,377	2.5	0.8–6.0	7.2	6.2–8.7	78,730	6.2
2003/2004	60	13,041	40,174	3.1	0.3–6.4	7.1	6.1–9.5	78,269	3.7

^a Calculated by dividing fish ticket weight data by dockside sampling average weight per crab data.

^b Calculated by dividing number of crabs sampled for length frequency by estimated number of crabs harvested.

Table 3.6a.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the combined Frederick Sound and North Frederick Sound management subareas by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	162,808	54	5	3,015
1972/1973	147,642	69	8	2,140
1973/1974	67,354	31	8	2,173
1974/1975	29,002	24	8	1,208
1975/1976	*	*	*	*
1976/1977	*	*	*	*
1977/1978	81,814	50	11	1,636
1978/1979	45,116	47	6	960
1979/1980	82,005	53	12	1,547
1980/1981	219,792	59	11	3,725
1981/1982	293,924	113	16	2,601
1982/1983	240,319	76	24	3,162
1983/1984	271,081	92	30	2,947
1984/1985	427,454	113	54	3,783
1985/1986	418,755	99	32	4,230
1986/1987	486,810	81	32	6,010
1987/1988	409,744	66	33	6,208
1988/1989	499,751	100	40	4,998
1989/1990	189,561	108	42	1,755
1990/1991	159,956	118	25	1,356
1991/1992	58,864	62	20	949
1992/1993	26,998	44	13	614
1993/1994	15,825	43	10	368
1994/1995	18,588	46	14	404
1995/1996	6,525	29	10	225
1996/1997	28,550	50	15	571
1997/1998	96,691	42	14	2,302
1998/1999	172,492	40	20	4,312
1999/2000	311,263	65	28	4,789
2000/2001	208,373	86	32	2,423
2001/2002	290,972	116	34	2,508
2002/2003	252,990	88	29	2,875
2003/2004	253,274	76	31	3,333

* When the number of permits participating is 2 or less, information is confidential.

Table 3.6b.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the new Frederick Sound management subarea by season (October through September), 1971/1972 to present.

Season	Total harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	148,391	49	5	3,028
1972/1973	130,544	61	7	2,140
1973/1974	50,393	21	6	2,400
1974/1975	28,296	22	8	1,286
1975/1976	*	*	*	*
1976/1977	*	*	*	*
1977/1978	74,465	40	6	1,862
1978/1979	41,042	39	6	1,052
1979/1980	64,257	32	7	2,008
1980/1981	213,212	48	10	4,442
1981/1982	251,930	85	10	2,964
1982/1983	211,995	61	21	3,475
1983/1984	254,407	78	23	3,262
1984/1985	397,881	92	42	4,325
1985/1986	392,323	71	23	5,526
1986/1987	449,202	61	22	7,364
1987/1988	393,464	48	25	8,197
1988/1989	491,786	83	35	5,925
1989/1990	184,111	90	37	2,046
1990/1991	143,597	97	19	1,480
1991/1992	38,487	35	12	1,100
1992/1993	16,248	19	7	855
1993/1994	10,277	13	4	791
1994/1995	9,656	12	4	805
1995/1996	*	*	*	*
1996/1997	12,994	23	9	565
1997/1998	76,803	27	11	2,845
1998/1999	160,072	29	17	5,520
1999/2000	299,585	47	21	6,374
2000/2001	196,810	61	25	3,226
2001/2002	267,637	99	29	2,703
2002/2003	226,905	72	23	3,151
2003/2004	233,655	53	24	4,409

* When the number of permits participating is 2 or less, information is confidential.

Table 3.6c.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the new North Frederick Sound management subareas by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	*	*	*	*
1972/1973	*	*	*	*
1973/1974	16,961	10	4	1,696
1974/1975	*	*	*	*
1975/1976				
1976/1977	*	*	*	*
1977/1978	7,349	10	6	735
1978/1979	*	*	*	*
1979/1980	17,748	21	6	845
1980/1981	*	*	*	*
1981/1982	41,994	28	7	1,500
1982/1983	28,324	15	7	1,888
1983/1984	16,674	14	10	1,191
1984/1985	29,573	21	16	1,408
1985/1986	26,432	28	11	944
1986/1987	37,608	20	12	1,880
1987/1988	16,280	19	11	857
1988/1989	7,965	17	7	469
1989/1990	5,450	18	6	303
1990/1991	16,359	32	10	511
1991/1992	20,377	32	11	637
1992/1993	10,750	25	9	430
1993/1994	5,548	30	8	185
1994/1995	8,932	35	12	255
1995/1996	2,960	23	10	129
1996/1997	15,556	27	10	576
1997/1998	19,888	16	6	1,243
1998/1999	*	*	*	*
1999/2000	11,678	18	11	649
2000/2001	11,563	27	11	428
2001/2002	23,335	22	10	1,061
2002/2003	26,085	16	7	1,630
2003/2004	19,619	26	10	755

* When the number of permits participating is 2 or less, information is confidential.

Table 3.7.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Chatham Strait management area by season (October through September), 1974/1975 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1974/1975	*	*	*	*
1975/1976				
1976/1977				
1977/1978				
1978/1979				
1979/1980				
1980/1981				
1981/1982	*	*	*	*
1982/1983	89,870	22	9	4,085
1983/1984	78,271	12	4	6,523
1984/1985	112,704	24	11	4,696
1985/1986	163,694	37	13	4,424
1986/1987	412,789	86	16	4,800
1987/1988	181,679	39	8	4,658
1988/1989	224,211	42	7	5,338
1989/1990	184,327	44	6	4,189
1990/1991	111,348	42	5	2,651
1991/1992	52,419	29	5	1,808
1992/1993	*	*	*	*
1993/1994	*	*	*	*
1994/1995	*	*	*	*
1995/1996	*	*	*	*
1996/1997	*	*	*	*
1997/1998	70,709	19	4	3,722
1998/1999	73,934	17	5	4,349
1999/2000	79,208	28	6	2,829
2000/2001	126,579	34	10	3,723
2001/2002	113,426	43	10	2,638
2002/2003	78,284	47	15	1,666
2003/2004	55,107	33	7	1,670

* When the number of permits participating is 2 or less, information is confidential.

Table 3.8a.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the combined Icy Strait and West Icy Strait management subareas by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	*	*	*	*
1972/1973	29,902	16	4	1,869
1973/1974	*	*	*	*
1974/1975	*	*	*	*
1975/1976	5,542	12	4	462
1976/1977	*	*	*	*
1977/1978	*	*	*	*
1978/1979	7,360	19	6	387
1979/1980	85,818	29	11	2,959
1980/1981	484,830	99	23	4,897
1981/1982	308,979	129	40	2,395
1982/1983	420,924	163	54	2,582
1983/1984	584,421	187	64	3,125
1984/1985	223,269	104	67	2,147
1985/1986	82,557	49	23	1,685
1986/1987	45,228	36	18	1,256
1987/1988	287,778	115	37	2,502
1988/1989	191,084	85	26	2,248
1989/1990	243,611	108	29	2,256
1990/1991	111,313	61	20	1,825
1991/1992	51,730	39	11	1,326
1992/1993	8,189	10	4	819
1993/1994	5,092	8	4	637
1994/1995	4,307	12	8	359
1995/1996	*	*	*	*
1996/1997				
1997/1998	39,378	18	6	2,188
1998/1999	92,335	36	7	2,565
1999/2000	135,817	30	18	4,527
2000/2001	149,279	72	23	2,073
2001/2002	181,357	65	21	2,790
2002/2003	224,044	71	26	3,156
2003/2004	234,203	51	24	4,592

* When the number of permits participating is 2 or less, information is confidential.

Table 3.8b.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the new Icy Strait management subarea by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	*	*	*	*
1972/1973	*	*	*	*
1973/1974	*	*	*	*
1974/1975	*	*	*	*
1975/1976	*	*	*	*
1976/1977	*	*	*	*
1977/1978	*	*	*	*
1978/1979	6,835	17	5	402
1979/1980	85,568	28	11	3,056
1980/1981	247,940	73	18	3,396
1981/1982	154,018	78	27	1,975
1982/1983	271,729	92	33	2,954
1983/1984	537,907	139	43	3,870
1984/1985	170,458	70	49	2,435
1985/1986	57,730	30	16	1,924
1986/1987	43,773	27	12	1,621
1987/1988	271,422	101	30	2,687
1988/1989	153,588	65	21	2,363
1989/1990	213,443	88	21	2,425
1990/1991	91,963	52	18	1,769
1991/1992	42,542	33	10	1,289
1992/1993	2,960	9	4	329
1993/1994	*	*	*	*
1994/1995	3,669	10	6	367
1995/1996	*	*	*	*
1996/1997				
1997/1998	14,619	10	5	1,462
1998/1999	40,208	18	6	2,234
1999/2000	34,706	10	6	3,471
2000/2001	108,058	53	18	2,039
2001/2002	131,277	56	19	2,344
2002/2003	178,938	60	22	2,982
2003/2004	181,154	47	23	3,854

* When the number of permits participating is 2 or less, information is confidential.

Table 3.8c.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the new West Icy Strait management subarea by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1971/1972	*	*	*	*
1972/1973	*	*	*	*
1973/1974	*	*	*	*
1974/1975				
1975/1976	*	*	*	*
1976/1977				
1977/1978				
1978/1979	*	*	*	*
1979/1980	*	*	*	*
1980/1981	236,890	26	10	9,111
1981/1982	152,441	50	23	3,049
1982/1983	151,715	72	32	2,107
1983/1984	46,514	48	28	969
1984/1985	52,811	34	24	1,553
1985/1986	24,827	19	9	1,307
1986/1987	1,455	10	7	146
1987/1988	16,356	16	12	1,022
1988/1989	37,496	21	7	1,786
1989/1990	30,168	21	11	1,437
1990/1991	19,350	18	9	1,075
1991/1992	*	*	*	*
1992/1993	*	*	*	*
1993/1994	*	*	*	*
1994/1995	*	*	*	*
1995/1996	*	*	*	*
1996/1997				
1997/1998	*	*	*	*
1998/1999	52,127	22	4	2,369
1999/2000	101,111	21	14	4,815
2000/2001	41,221	25	10	1,649
2001/2002	50,080	25	8	2,003
2002/2003	45,106	39	16	1,157
2003/2004	53,049	22	12	2,411

* When the number of permits participating is 2 or less, information is confidential.

Table 3.9.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Cape Ommaney management area by season (October through September), 1971/1972 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1974/1975	*	*	*	*
1975/1976				
1976/1977				
1977/1978				
1978/1979				
1979/1980				
1980/1981				
1981/1982	*	*	*	*
1982/1983	19,124	4	7	4,781
1983/1984	30,756	4	9	7,689
1984/1985	61,644	10	13	6,164
1985/1986	*	*	*	*
1986/1987	47,136	7	17	6,734
1987/1988	54,264	7	21	7,752
1988/1989	46,076	4	14	11,519
1989/1990	8,208	2	4	4,104
1990/1991	44,260	4	24	11,065
1991/1992	61,007	5	31	12,201
1992/1993	20,193	2	8	10,097
1993/1994	*	*	*	*
1994/1995				
1995/1996				
1996/1997				
1997/1998	23,013	2	7	11,507
1998/1999	14,694	2	7	7,347
1999/2000	25,407	5	19	5,081
2000/2001	37,560	4	14	9,390
2001/2002	11,848	6	14	1,975
2002/2003	5,630	2	9	2,815
2003/2004	*	*	*	*

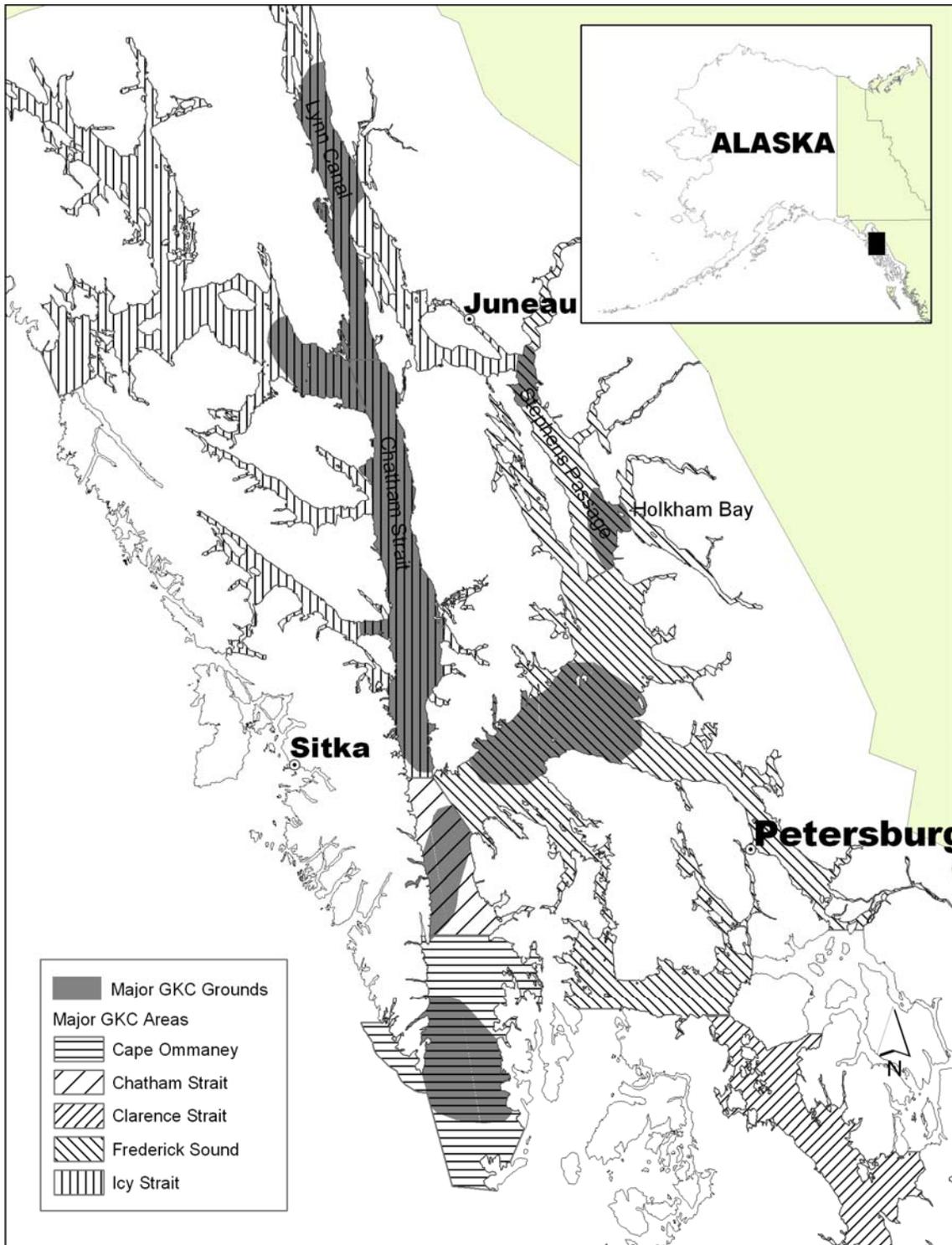
* When the number of permits participating is 2 or less, information is confidential.

Table 3.10.—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Clarence Strait management area by season (October through September), 1982/1983 to present.

Season	Total Harvest (pounds)	Number of		Pounds per Landing
		Landings	Permits	
1982/1983	15,960	12	4	1,330
1983/1984	*	*	*	*
1984/1985	21,594	22	5	982
1985/1986	25,232	24	4	1,051
1986/1987	*	*	*	*
1987/1988	*	*	*	*
1988/1989	*	*	*	*
1989/1990	*	*	*	*
1990/1991				
1991/1992	*	*	*	*
1992/1993	*	*	*	*
1993/1994				
1994/1995	*	*	*	*
1995/1996	*	*	*	*
1996/1997	*	*	*	*
1997/1998	*	*	*	*
1998/1999	*	*	*	*
1999/2000	*	*	*	*
2000/2001	*	*	*	*
2001/2002	*	*	*	*
2002/2003	*	*	*	*
2003/2004	*	*	*	*

* When the number of permits participating is 2 or less, information is confidential.

Figure 3.1.—Map showing major golden king crab (GKC) areas and fishing grounds in Southeast Alaska, Registration Area A.



SECTION 4: SOUTHEAST ALASKA TANNER CRAB FISHERIES

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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. *C. bairdi* and the closely-related snow crab, *C. opilio*, support significant Alaska commercial fisheries, but only *C. bairdi* is known to be present in Registration Area A (Southeast Alaska) of Region I. The Southeast Alaska fishery occurs primarily in the more northern waters of the region.

Until the late 1980s, most of the participants in this fishery used pot gear and smaller vessels between 35 to 50 feet in length, although there were also a few vessels up to about 80 feet. Since then, the intensifying fishery has promoted the use of larger vessels by pot fishers and the entry of more small-boat participants using ring nets. Almost all the pot vessels have live-tanking capability. Winter crabbing for Tanner and other crabs is generally pursued as a secondary, though seasonally important, source of income.

Currently, lighter cone or pyramid nesting pots that occupy less deck space are more often 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 golden king crab, with the use of conical or pyramid pots favored for Tanner crab.

The commercial season currently begins on February 15. This is not the optimal biological harvest timing for this species as it overlaps one of the two mating periods. It is most likely a time of peak catchability, however, because mature males are aggregated for mating. The primiparous Tanner crab mating period begins in mid January and continues through July (Munk, Payne et al. 1996), this is followed by the male molt in late March and early April (Stone 1999) and finally by egg hatch and mating of multiparous females in May (Munk, Payne et al. 1996).

Current regulations in Southeast Alaska allow harvest of only male Tanner crabs 5 1/2 inches (140 mm) or greater in carapace width. Male Tanner crabs become reproductively mature at a size of 80 mm CW (Paul 1992) but the size of functional reproductive maturity is probably closer to 100 mm CW (Stone, Masuda et al. 2003). After a single molt, a 100 mm CW crab would grow to 128 mm CW; and after a second molt to 158 mm CW (Stone, Masuda et al. 2003). The intermolt period is unknown for Tanner crab but probably exceeds a year for large clawed Tanner crabs. Tanner crabs in Southeast Alaska begin to be large clawed as small as 100 mm CW and by 140 mm CW virtually all animals are large clawed. Thus, the current size limit of 140 mm CW allows males at least 1, possibly 2 years of reproductive activity prior to their entering the fishery.

Thus, the management strategy is to protect males for at least 2 years of breeding and subsequently to allow harvest of that surplus to the additional reproductive needs of the population. A rough harvest rate of 60% of legal was targeted historically when inseason management by depletion modeling of catch rate data was possible. A 'guideline harvest level' (GHL) of 2 million pounds has been in effect since the 1999/2000 season.

Principal management objectives for this fishery are to attain the allowable harvest level, to minimize sorting of juveniles and females, and to avoid fishing during molting and mating periods. As shortened seasons have led to aggregation of the fleet on the most productive 'core'

fishing grounds, a recent objective has been to redistribute effort back into less productive ‘non-core’ fishing areas. In order to accomplish this, for the past 3 fishing seasons, different season lengths have been set for ‘core’ and ‘no core’ areas pre-season. This is a significant departure from the historic regional approach to Southeast Tanner crab management.

FISHERY DEVELOPMENT AND HISTORY

Commercial fishery history

Pot fishery

Although Tanner crab landings have been reported in Southeast Alaska since the early 1960s, they were not deliberately targeted until the early 1970s. Well into the mid-1970s, crab fishers commonly discarded Tanner crabs incidentally caught with red king crab.

The harvest of Tanner crab in Southeast Alaska in the 1970s averaged 1.5 million pounds (Table 4.1). The 1970s were characterized by gradual fishery development and corresponding managerial response. Seasons during the 1970s averaged 9.7 months in length. Historically, most of the harvest from the major fishing grounds was taken from January through April of each year regardless of the length of the season (Table 4.2).

Southeast Tanner crab harvest in the 1980s averaged 1.6 million pounds. As fishing pace increased over this period, season length shortened to an average of 1.6 months. During the 1981/1982 season, when 74 vessels landed a record 3.3 million pounds 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 0.73 million pounds. Increasing demand for Tanner crab product, an earlier season opening in Southeast Alaska than in other registration areas to the north and west, open registration, and the record landing in 1981/1982 attracted 97 vessels to the fishery in the 1982/1983 season. Many larger crab vessels on their way to Kodiak and Bering Sea fisheries fished in Southeast Alaska first. The 1982/1983 season was closed after two weeks by an emergency order based on onboard observer catch rate information collected during the first few weeks of the fishery from the Icy Strait fishing grounds. Both the fishing effort and exploitation rates were extremely high. Management could not respond effectively to the huge influx of effort into the Icy Strait fishery. Although the fishery was closed by emergency order after the shortest season on record up to that time, the stocks were depressed in District 14 for many subsequent years. There was no fishery in calendar year 1983. During the BOF shellfish meeting early in the year the board changed the season opening date in Southeast Alaska to February 10 in order to match the rest of the state. This action, in itself, discouraged larger vessels from fishing in Southeast Alaska during the 1983/1984 season because more lucrative grounds to the north and west would be opening at the same time.

Inseason management in the 1980s was conducted using depletion modeling. In this method, declines in the catch rate from fish ticket data were used to estimate exploitation rate (the percent of legal crab harvested) inseason. The fishery was then closed after the target exploitation rate was achieved. This method relies on multiple landings by the same vessel during the course of the season. Since vessels land crab about once per week this management strategy is best applied to fisheries of at least 21 days length. The limitation in the speed at which catch data could be obtained from the fleet also complicated inseason management of seasons shorter than about 21 days. The last season in which a fishery lasted 21 or more days was 1989/1990. The 1990/1991 season, which opened for 18 days, was barely long enough to allow this kind of management.

The harvest of Tanner crab in the 1990s increased to an average of 2.0 million pounds. During this period, the fishery continued to intensify and seasons further shortened to an average of 11.1 days. In association with these shortened seasons, effort became increasingly concentrated on the most productive fishing grounds. Many marginal grounds were ignored as searching for productive areas became increasingly difficult to justify economically with a very short season. Limiting preseason prospecting to more than 30 days in advance of the fishery exacerbated this concentration of effort. Nonetheless, the fleet adapted to short seasons in many ways. The use of tenders, the frequency of leasing larger vessels, crew size, pot pulling frequency, and bait volumes all increased. Thus, the fishery continued to intensify despite the extremely short seasons. The only factor that mitigated the intensity of this fishery was the increasing GHL of the golden king crab fishery.

During the 1990s, inseason management by depletion modeling was no longer possible because the season was too short. Thus, beginning with the 1995/1996 season, the closure date was announced preseason based upon the estimated length of time to harvest 2 million pounds if stock abundance were average. Recognizing the risk of this harvest strategy, the department initiated a Tanner crab stock assessment survey in 1997. The goal of the survey is to establish preseason GHLs based on catch-survey estimates of stock biomass. The objective of setting and targeting abundance-based preseason GHLs is to allow harvest to be maximized while minimizing the risk of recruitment failure.

The harvest of Tanner crab in Southeast Alaska since the 1999/2000 season has averaged 0.9 million pounds. During this period, the season length has averaged 5.75 days.

The Tanner crab survey time series is now long enough to support catch-survey modeling and be used quantitatively in management. This modeling is currently in progress and could be used in management as early as the 2005/2006 season. Until modeling of data is complete and estimates of abundance are attainable, management by preseason determination of season length will continue. Because survey and commercial catch rate data indicate that stock abundance has been well below average for the past 4 seasons, seasons have been set to intentionally harvest below the 2 million pound GHL in order to conserve brood stock. In addition, a new spatial component to management has been employed for the 2002, and 2003 seasons in an attempt to redistribute some fishing effort away from core (traditionally productive) areas and into non-core fishing areas. The major goal of this approach is to reduce excessively high harvest rates in core areas.

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 only limited issuance of permits for pot gear. Use of ring nets is most attractive when the abundance and price of crab is high because their efficiency is limited and their use is labor intensive.

The number of ring net crab fishers reporting landings increased from five in the 1984/1985 season to peak at 92 in the 1989/1990 season, and gradually declining to 44 by the 1993/1994 season. The total climbed again to 109 for the 1999/2000 season in expectation of higher prices. In the 2003/2004 season, only 29 ring net permit holders reported landings.

Total ring net harvest increased from 1,451 pounds in the 1984/1985 season to 101,045 pounds, or 5.0 percent of the total harvest, during the 1989/1990 season. During the 1990 winter meeting, the board passed a number of restrictive regulations intended to cap the ring net portion of the total Tanner harvest at a maximum of four percent. Since adoption of these restrictions, ring net harvests were consistently below this level until recent years. Ring net harvest has since fluctuated between 33,544 and 88,921 pounds, exceeding the four percent cap in the 1996/1997, 1999/2000, and 2000/2001 seasons respectively at 4.3%, 5.3%, and 5.8% of the total harvest. To avoid again exceeding the 4% regulatory limit, the ring net season was shortened to 5 days relative to a 6-day pot season for the 2001/2002 season. The subsequent 2 pot and ring net seasons were again identical. The percent ring net harvests for the most recent three seasons have all been below the 4% limit (Table 4.1).

Stock Assessment Survey

In response to management's need for a tool to set GHs preseason based on an assessment of stock strength, the department began preseason stock assessment surveys in 1997. Development of the survey has been gradual, in October 1997 two areas, Icy Straits, and the backside of Douglas Island were surveyed; in 1998 Holkham Bay was added, in 1999 Glacier Bay was added, and finally in 2001 Thomas Bay, Port Camden, and an additional strata in Holkham Bay were added. The Tanner crab survey currently provides a preseason index of abundance for these six major fishing grounds. In addition Tanner crab catch rates in the red king crab survey of Excursion Inlet, Gambier Bay, Lynn Canal, Peril Strait, Port Frederick, Pybus Bay, and Seymour Canal are also considered. Harvest from Tanner crab survey areas alone accounts for 54% on the average of the annual commercial Tanner crab harvest for 1994/1995 through 2003/2004 seasons. When the harvest from red king crab survey areas with substantial Tanner populations is also taken into consideration the total Tanner crab harvest from surveyed areas rises to 73%. The goal of the survey is to estimate the legal and mature Tanner crab population biomass preseason using a catch-length model (Zheng, Murphy et al. 1996). Preseason GHs will then be set by applying an appropriate harvest rate to the biomass estimate.

Port Sampling and Onboard Sampling Program

Extensive port sampling is conducted inseason. Separate sampling goals are set for each of 3 major areas. These areas are: the Icy Strait Area which consists of District 14, the Lynn Canal/Upper Stephens Passage Area which is combined Districts 11 and 15, the Frederick Sound/Lower Stephens Passage Area, consisting of the combined Districts 8, 9, and 10, and Other Grounds which includes all other areas. Size and shell condition data are taken for legal male crab as they are delivered to processors. Average weight of crabs from each sampled delivery is determined. Skippers are interviewed to collect fishing location and effort information. From width and shell age frequency information, the recruit composition of the harvest can be determined.

Limited onboard sampling was conducted sporadically in the 1980s to collect specific inseason information needed for management. Since then, available personnel have concentrated more on collecting port sampling information.

Logbook and Mandatory Reporting Programs

Mandatory logbooks detailing daily fishing activities and catch per pot were initiated in 1993/1994 in order to obtain better inseason estimates of exploitation rate. Starting in the 1995/1996 season daily reporting was attempted to expedite transfer of catch data from the fishing fleet to the resource managers. Reporting was conducted by VHF radio marine operator calls, cellular phones, satellite phones, single side-band radio, and via relay from catcher boats through tenders to processors. Although the program was continued for two seasons, it was dropped beginning in the 1997/1998 season. The primary reason for discontinuing daily reporting was that compliance was low and seasons had shortened to the point where inseason management was no longer being conducted. The low compliance was at least partially because the communication technology available could not assure confidentiality, but also because there was no enforcement as there was no regulation requiring daily reporting.

At the 2002 meeting of the Board of Fisheries a regulation allowing the department to require mandatory inseason reporting of logbook data was established. The intent of this regulation was to allow the department to develop the tools for inseason management of the Southeast Tanner crab fishery should effort reduction regulations be subsequently established, slowing the fishery sufficiently to again allow inseason management. In order to test whether inseason management was currently possible, reporting was required on the second day of each of the 2003 and 2004 seasons. Postseason, this data was summarized and used to simulate inseason management. Call-in compliance was moderate; in 2003, 45 out of 67 (67%) while in 2004, 48 of 68 (71%) of the fishers called in at the required time. Fairly accurate predictions of the core season harvest were produced from the call-in data. This indicates that inseason region wide management for a 7-day season with 72-hr notice of a closure is now possible. However, it is unlikely that a high level of accuracy could be achieved by calling a closure based upon a single days call-in data. Similar or better accuracy and higher fleet satisfaction would likely be achieved by preseason determination of season length with the possibility of an inseason extension if catch rates warranted. The preseason determination would be based upon examination of survey data and the previous seasons cumulative catch curves, the inseason adjustment would be based upon call-in of logbook data.

Experimental Fishing

Exploratory Tanner Crab Fisheries

In 1988, in response to shorter seasons and requests by crab fishers, the board adopted regulations for exploratory Tanner and red king crab fisheries so the fishing fleet could help the department assess the status of small stocks that were not fished during the short, regular seasons. In areas from which low harvests or no landings had been reported during the regular fishery, fishing was allowed from July 1 through March 31, under conditions of a special permit. The board also established procedures for managing these fisheries.

In general, these fisheries were scheduled during periods of the year to minimize overlapping with traditional fisheries for red king and Tanner crab. A major assumption was that these fisheries would be of such low intensity that mortality associated with fishing during known molting and mating periods would be minimal. Special permits and logbooks 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, harvests were poor, and no major unexploited populations 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.

Deepwater Chionoecetes Species Fisheries

Upon request by crab fishers interested in exploratory fishing for deepwater species related to *Chionoecetes bairdi*, the department issued permits for *C. tanneri* and managed a fishery by emergency order from September 16, 1983 through October 31, 1983, and December 5, 1983 through January 24, 1984. Harvest levels did not support development of an economically viable fishery at that time. Requests for permits for *C. tanneri* and *C. angulatus* recurred in 1995, permits were issued for the period from March 5, 1995 through April 30, 1995, and the fishery was managed by emergency order. The fleet expended more effort and more areas were fished, but results were discouraging. The number of crab per pot, pots pulled per hour, and crab meat-fullness were low, precluding the development of a viable fishery. A single permit was issued in 2000, once again with minimal harvest. Interest in this fishery was again expressed in 2003 and a permit was issued, however, no fishing was conducted.

Bitter Crab Syndrome

During the 1984/1985 season processors handling crab from the extreme north end of Southeast Alaska, notably Lynn Canal, were receiving complaints from consumers of bitter tasting meat from some section-packed crab. Most management staff thought it was associated with a normal pre-molt condition in Tanner crab since the fishery during that historical period partially extended into the initial phases of the annual molt in some areas. However, a few samples of crab blood collected during the 1985/1986 season revealed that the bitterness was closely correlated with presence and concentration of a systemic parasite. This systemic parasite is a highly specialized dinoflagellate of the genus *Hematodinium* (Meyers, Short et al. 1990).

Symptoms associated with bitter crab disease (BCD) had been reported since at least the early 1980s, with some anecdotal references to off-tasting Tanner crabs dating back to the mid-1970s. It has since been reported from most major fishing grounds in Southeast Alaska and sporadically from other areas as well (Meyers 1991). Its definitive identification in Bering Sea Snow crab *C. opilio* stocks, with its economic implications, has accelerated research on *Hematodinium*.

Hematodinium infects all sizes and both sexes of Tanner crab and seems to kill them within one to 1.5 years. It severely reduces the vitality and reproductive capacity of crabs, with egg clutches of infected females being greatly reduced in size (Meyers 1993). The mechanism and seasonal timing of transmission remains unknown (Eaton, Love et al. 1991; Love 1991; Love, Rice et al. 1993). The disease may be spread by free-living, infective spores released by dying crabs, or vegetative stage organisms passively transmitted during periods of crab aggregation, such as immediately before and during seasonal mating periods.

Crabs in later stages of infection cannot be marketed because of the astringent taste and soft, chalky texture of the meat. These crabs can be identified on the fishing grounds by external symptoms such as the abnormal pink or pale coloration of their abdomens and the ventral sides of their walking legs. Infected crabs continue to be transported out of the areas in which they are caught because of the regulatory requirement to retain infected crabs. This appears to have contributed to the spread of this disease.

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 dead loss (mostly attributable to disposed diseased crab) or specifically indicated bitter crab, simply suggest the actual 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 disinfections before marine disposal, or hard freezing before marine disposal. Viability of the resource is still being risked by continuing transport and handling of infected crab.

The state has attempted or considered regulatory means to minimize the risks associated with catch and retention of infected crabs. Part of District 15 was closed in 1988 to prevent fishing on crabs heavily infected with bitter crab disease. This resulted in reduced fishing opportunity for golden king crab and a total closure has not been imposed on the fishery since then.

In the 1992/1993 season, product transfer restrictions were imposed on vessels fishing in District 15. Any Tanner crabs caught in District 15 could only be shipped live out of the District if they were transferred onto tenders within the District and water from holding tanks on the tenders were not discharged while the crabs were being transported to on-shore processors located in other districts. This requirement was intended to reduce handling of bitter crab and minimize the risk of spreading the infection to stocks between high incidence districts and processors. Enforcement of the restriction was difficult. There have been no similar restrictions to fishing in District 15 since that season.

A very general proposal for development of a fishery to evaluate the feasibility of an earlier season to improve marketability of bitter crab was approved by the board in 1990. The plan was repealed at the following Board of Fisheries meeting because it was determined that this fishery would not be manageable and would not provide the information for which it was intended.

The bitter crab problem does not appear to be diminishing. High percentages of bitter crab, in excess of 40% are observed from some districts and the parasite appears to be expanding its distribution to heretofore-uninfected areas.

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 crab in Southeast Alaska.

Fishing Seasons and Periods

The season for Tanner crab in Southeast Alaska was first set in 1963 at January 1 through December 31. The season was shortened in some areas in 1969, largely to facilitate management of the red king crab fishery. In 1974 the season was closed by emergency order on May 15.

In 1974, the season starting date was changed to September 1. 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 3.0 million pounds. In 1982 the season was closed by emergency order

in mid-December after two weeks of fishing, because of unprecedented effort and heavy concentration in District 14. In early 1983 the season starting date was changed to February 10.

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 food and bait herring fishery in which many crab fishers participated or tendered herring. Since 1989 the season starting date has been February 15 and the length of the season has progressively shortened to about a week.

Sex and Size Limits

A minimum size of 5½ inches (140 mm) or greater in carapace width was implemented in 1976 for males and persists to the present. This size permits nearly all males at least one, and possibly two seasons of reproductive activity prior to attaining legal size.

Quotas and Guideline Harvest Ranges

A Guideline Harvest Level (GHL) of 1,750,000 pounds was first set in 1976. It was revised downward to a GHR of 750,000 to 1,500,000 pounds in 1978. In 1979 the GHR was revised to 750,000 to 2,500,000 pounds. In response to 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 million pounds in 1985. This range was sufficient to provide a relatively stable harvest until the 1997/1998 season when an unanticipated shift in effort to non-traditional fishing grounds south of Petersburg and west of Wrangell pushed the total season harvest to over 2.7 million pounds. If the increased harvest from non-traditional grounds were discounted from the total harvest, the harvest from traditional districts would have totaled a little more than 2.0 million pounds. Following the Board of Fisheries meeting in 1990, the GHL was changed to a maximum allowable harvest of 2.0 million pounds. At the 1999 Board of Fisheries meeting, the maximum allowable harvest was changed to a guideline harvest level of 2.0 million pounds. Although the average Tanner crab harvest in Southeast Alaska for the 1990s was 2.0 million pounds, the harvest for the 4 years since 1999/2000 has averaged 0.9 million pounds. Simultaneous declines in survey catch rate data indicates that this is due to real declines in abundance. This suggests that although it is probably an attainable harvest level when recruitment is strong, 2 million pounds is not a sustainable annual harvest level.

Inseason management tools

Daily harvest logbooks have been mandatory since the start of the 1993/1994 season. Logbooks were one of the last remaining options left to managers trying to conduct inseason management. At the 1996 meeting of the BOF the department was directed to assess the feasibility of using daily radio reports of catch and effort from all crab pot fishers in the 1995/1996 and 1996/1997 seasons to support continuing inseason management based on real-time catch data. The reporting requirement was dropped after two seasons due to technological challenges and low compliance. At the 2002 meeting of the BOF a regulation was established giving the department the authority to require inseason reporting of Tanner crab logbook data. Cell and satellite phone technology have now advanced to the point where the marine operator was discontinued in 2004, having been deemed unnecessary by the United States Coast Guard.

Fishing Gear

Pots

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. Scuba diving gear was legalized in 1966.

Shrimp beam trawls were specified as legal gear and diving was rescinded in 1969. Although legal, trawl gear was rarely, if ever, used in this fishery during this period. Tanner crab 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" part of the 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.

A major revision of the shellfish regulations was undertaken in 1975. Starting in 1976, escape panels incorporating a biodegradable seam 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 have been required since 1979 to facilitate enforcement of pot limits. In 1985, two 4 3/4 inch diameter escape rings were required in each Tanner crab pot to reduce retention and sorting of small males and females and a moratorium on new pot permits was implemented. In 1987 escape rings were to be located within eight inches of the bottom of pots. Due in part to shorter soak times becoming prevalent in the fishery, the escape ring requirement was repealed in 1988.

Between the mid-1980s and 1990 use of ring nets grew because pot permits were under moratorium. In 1990 the board adopted a comprehensive set of regulations to control the increasing use of ring net gear by people who did not receive limited entry permits for the pot fishery. The number of ring nets was limited to 20 per vessel, and ring net marking requirements were defined. Ring nets were also defined in more detail, with limits set on their size, and longlining of ring nets was prohibited. The allowable ring net harvest was capped at four percent of the total harvest. 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 or personal use fishing.

At the 1996 meeting of the BOF the department had recommended reducing the pot limit to 50. The BOF adopted an 80-pot limit; this was implemented starting in the 1997 season.

At the 2002 meeting of the BOF escape rings or panels of large mesh to permit the escapement of female and sublegal Tanners were again required in Tanner crab pots in Registration Area A only.

Gear storage and operation of other pot gear

Since 1981 in-water pot storage was permitted for 72 hours after the season closure. In 1984 fishing with pots or storing pots in the water during the 10 days before the start of the season was prohibited. In 1985, the preseason fishing prohibition was lengthened to 14 days. Also in 1985 post-season pot storage was extended to 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 preseason, in-water storage period was allowed with some restrictions. Since 1987 preseason gear storage for a period of 10 days before the start of the season has been permitted under some conditions.

Beginning with the 1999/2000 season, vessels and persons registered for the commercial Tanner crab fishery could not fish with any commercial, sport, subsistence, or personal use gear except for commercial Dungeness and shrimp pot gear for 30 days prior to the start of the season.

Limited Entry

In response to a request by locally based vessel operators and processors, the Commercial Fisheries Entry Commission (CFEC) initiated a permit moratorium for the king and Tanner crab fisheries in Southeast Alaska on January 1, 1984.

The CFEC 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 1985/1986 season because many prospective entrants to the 1984/1985 fishery had exercised the two-year option on permit renewals and obtained their permits prior to January 1, 1984, which was the cutoff date for the moratorium on new permit issuance. Moreover, the CFEC was forced by their regulatory guidelines to set the maximum number of permits to be allowed at 83, which was a relatively high level. This has proved to have long-term implications, such as progressively shortened seasons as the efficiency of the fleet improved.

The Tanner crab pot fishery in Southeast Alaska was the first Tanner fishery in the state to be placed under limited entry. As of November 2004, a total of 93 permits have been issued, of those 67 are permanent permits, and an additional 26 are interim-use permits that are still being evaluated for inclusion under the permanent 83-permit limit. Ring net gear (CFEC permit category T10) is also legal in Southeast Alaska and is not under limitation.

Registration and Delivery requirements

In 1974, Southeast Alaska and Yakutat were combined into a single nonexclusive registration area. In 1975 pre-season hold inspections and vessel registrations were required. A pre-season registration deadline was in effect in 1978. A registration deadline of 30 days prior to the season start was implemented in 1979. Also in 1979, the hold inspection requirement was dropped because it was considered unnecessary in Southeast Alaska and Yakutat.

Southeast Alaska was designated a superexclusive registration area during the spring BOF meeting in 1985. This was in reaction to the 1982/1983 season and 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. Vessels registered to fish for Tanner crab in Southeast Alaska cannot fish in any other registration area in Alaska for Tanner crab during the same registration year (August 1–July 31).

In 1986 the BOF adopted a regulation to restrict the boundaries of Registration Area A to those waters of the state between Dixon Entrance and Cape Fairweather. A new registration area, Registration 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, which was first published in the 1988 shellfish regulation book.

It is unclear when the 30-day registration deadline was repealed but it was put back into regulation beginning in 2000.

In 1981 crab had to be delivered within 24 hours of the close of the season. In 1983 fishers had 72 hours to deliver crabs after the season closure. In 1986 this period was shortened to 24 hours.

2001/2002 SEASON SYNOPSIS

The 2001/2002 season opened at 12:00 noon AST, on February 15, 2002. In a preseason news release, the department set the season length at six days for pot fishers with the closure scheduled for noon on February 21. The ring net fishers were allowed to fish for five days ending at 12:00 noon on Wednesday, February 20, 2002. The reason for the shorter ring net fishery relative to the pot fishery is that the ring net harvest is capped at 4% of the total harvest and had exceeded that cap in the two previous seasons. Based on preseason survey and past fisheries' performance, the department roughly estimated that an opening of six days would result in a harvest of 1.2 to 1.7 million pounds. Daily logbooks remained mandatory and fishers were required to submit logbooks to the Department with each fish ticket.

District 16 was closed for rebuilding in the 2002 commercial Tanner crab season.

At the end of the opening 892,123 pounds of marketable crab plus 72,713 pounds of reported dead loss, for a total of 964,836 pounds, had been caught. As in the past, the major discard class was bitter crab, which accounted for 68,829 pounds of the total dead loss. It was probable that the actual bitter crab catch was much higher, since an unknown amount were sorted and discarded on the fishing grounds. At almost \$1.72/pound, marketable product was worth at least \$1,534,452 exvessel. The economic loss represented by the dead loss was conservatively set at \$125,066.

A total of 148 pot and ring net permits were fished during the season. The 91 pot permit crab fishers landed 935,026 pounds of crab, of which 863,636 pounds were marketable. A total of 29,810 pounds, or about 3.1% of the total Tanner crab harvest, was reported landed by 57 ring net permit holders. Marketable crab comprised 28,487 pounds of the total ring net harvest and 1,323 pounds were deadloss, of which 1,238 pounds were due to bitter crab.

A summary of the harvest by fishing area indicated that about 841,389 pounds (87.2%) of the total season's harvest was taken from the three major fishing areas; Icy Strait, Lynn Canal/Stephens Passage, and Frederick Sound (Table 4.3).

The top six of the 9 onshore processors accounted for almost 99% of the total regional production this season. Forty percent of the harvest was processed in Petersburg, with purchases also reported by plants in Juneau, Sitka, Hoonah, and Wrangell. Two catcher sellers fishing with ring-nets and one fishing with pots reported sales.

Aerial surveys were conducted on February 19, 2002 in Districts 11, 12, 14 and 15. Preseason stock assessment surveys were conducted in Stephens Passage, Icy Strait, Glacier Bay, Port Camden, Thomas Bay, and Holkham Bay during October of 2001.

Port Sampling Data

Port sampling information summarized for the registration area indicated that the overall size of crab harvested averaged 152.9 mm CW, or 2.6 pounds, down from the previous 3 seasons (Tables 4.4 and 4.5). The percent of the catch that was newly recruited crabs was 65%, up from the previous 3 seasons 57% but significantly lower than the 1996/1997 high of 71% (Tables 4.4 and 4.5). Catch per unit effort was estimated at 10.6 crabs per pot, the lowest since the 1983/1984 fishery (Table 4.5).

Crabs from Icy Strait were larger, with an average size of 153.8 mm CW or 2.7 lb and the percent recruit of 78.6% was lower than the previous season (Tables 4.6 and 4.7). In contrast

Lynn Canal crabs were smaller, with an average size of 152.8 mm CW or 2.6 lb with a higher percent recruit of 56.7% than recent seasons (Tables 4.8 and 4.9). Nonetheless, the Lynn Canal percent recruit is lower than any other area. This consistently low percentage of recruit of Lynn Canal relative to other areas may be explained by relatively low fishing pressure due to a lack of fleet interest because of the high percentage of bitter crab in the area. Average size for Frederick Sound area Tanners was 153.9 mm CW or 2.7 lb, slightly lower, while percent recruit was correspondingly higher at 60%, than recent seasons (Tables 4.10 and 4.11).

2002/2003 SEASON SYNOPSIS

The 2002/2003 season opened at 12:00 noon AST, on February 15, 2003. For the first time this season, a spatial management strategy was used to more evenly distribute fishing pressure. With recent short seasons the fleet had been forced to concentrate effort on the most productive 'core' fishing areas. Spatial analyses of harvest rates confirmed that this had resulted in differential harvest pressure. Thus, 'core' and 'non-core' fishing areas were described; core areas were defined as areas with historically significant harvest of Tanner crab and recent high harvest rates, the rest of the area was termed non-core. Additional fishing time was provided in non-core areas. Several areas, namely Gambier Bay, Hobart Bay, Port Houghton and Windam Bay were excluded from the non-core areas as it was thought that providing additional fishing time in those areas would adversely affect juvenile red king crabs. Spatial definitions of core and non-core areas as well as season lengths of five days for core and 10 for non-core areas were announced in a preseason news release. Tanner pot and ring net fisheries were closed by emergency order in the core fishing areas after five fishing days at 12:00 noon on February 20, 2003. The Tanner pot and ring net fisheries remained opened an additional five days in non-core areas closing at 12:00 noon on February 25, 2003.

District 16 remained closed for the 2003 commercial Tanner crab season.

Based on the preseason survey and recent fishery catch rates, the department estimated that an opening of five days in the 'core' areas would result in a harvest between 0.5 and 1.3 million pounds. In order to test the predictive value of inseason information, inseason reporting was required twice during the fishery. Daily logbooks remained mandatory and fishers were required to submit logbooks to the Department with each fish ticket.

At the end of both the 'core' and 'non-core' fishing periods, 694,740 pounds of marketable crab, plus 84,751 pounds of deadloss, for a total of 802,770 pounds had been caught. As in the past, the major discard class was bitter crab, which accounted for 81,474 pounds of the total deadloss. It is probable that a large amount of the bitter crab was sorted and discarded on the fishing grounds but not reported as 'discard at sea'. At almost \$2.10/pound, marketable product was worth at least \$1,507,840 exvessel. The economic loss represented by the deadloss was conservatively set at \$177,977.

Temporally, pot fisher's harvest in the first 5-days of the fishery, the core period totaled 694,740 or 90% of the total. In the last five days of the fishery, the 'non-core period', an additional 80,247 pounds of Tanner crab were harvested by pot fishers. Spatially, approximately 638,155 pounds or 82% of crab were harvested in the 'core' areas while 136,832 pounds or 18% were from 'non-core' areas.

A total of 111 pot and ring net permits reported landings during the season. The 67 pot permit crab fishers landed 775,223 pounds of crab, of which 692,537 pounds were marketable. A total

of 27,547 pounds, or about 3.4% of the total Tanner crab harvest, was reported landed by 44 ring net permit holders. Marketable crab comprised 25,482 pounds of the total ring net harvest and 2,065 pounds were dead loss, of which 2,052 pounds were due to bitter crab.

A summary of the harvest by fishing area indicated that about 730,055 pounds or 91% of the total season's harvest was taken from the three major fishing areas; Icy Strait, Lynn Canal/Stephens Passage, and Frederick Sound (Table 4.3).

Six of ten shore-based processors processed 99% of the crab harvested this season. Petersburg and Juneau based processors processed the major portion of the harvest, with purchases also reported by plants in Sitka and Hoonah.

Aerial surveys were flown over most of the fishing grounds in Districts 11, 12, 14 and 15 on February 18, 2003 to document effort and location of fishing vessels. Preseason stock assessment surveys were conducted in Stephens Passage, Icy Strait, Glacier Bay, Port Camden, Thomas Bay, and Holkham Bay in October 2002.

Port Sampling Data

The overall percentage of crabs harvested that were recruits increased to 68.1%, while the average size decreased to 152.7 mm CW or 2.5 pounds/ during the 2003 season (Tables 4.4 and 4.5). Catch per unit effort was estimated at 12.1 crabs per pot, up from the previous two seasons (Table 4.5).

The average crab size in the Icy Strait area, at 153.3 mm CW and 2.6 pounds, and percentage of crabs that were recruits of 75.4% was virtually unchanged from the previous season (Tables 4.6 and 4.7). The average size of crabs in Lynn Canal remained small at 155.4 or 2.5 pounds, while the percentage of recruit continued to increase to 65.3% the highest in recent seasons suggesting that harvest pressure in Lynn Canal area is increasing despite the high bitter crab prevalence (Tables 4.8 and 4.9). Frederick Sound area crabs were also virtually unchanged in size from the previous season at 153.7 mm CW and 2.6 pounds, although the percent recruit continued to increase to 67.7% (Tables 4.10 and 4.11).

2003/2004 SEASON SYNOPSIS

The 2003/2004 season opened at 12:00 noon AST, on February 15, 2004. A core/non-core spatial management strategy was again used. The Tanner pot and ring net fisheries were closed by emergency order in the 'core' fishing areas after five fishing days at 12:00 noon on February 20, 2004 while pot and ring net fisheries in 'non-core' areas remained opened an additional five days, closing at 12:00 noon on February 25, 2004. The 'core' and 'non-core' areas remained the same as for the 2002/2003 season and were again described in the preseason news release.

District 16, which closed for rebuilding during 2002 and 2003 seasons, opened to test stock recovery in 2004, consistent with the Yakutat Tanner crab fishery which also opened for a short period to test for stock recovery this season. However, there were no reported landings.

As preseason survey information indicated that stocks remained low the season length was again set conservatively and harvest was not expected to reach the two million pound GHL. Inseason reporting was required twice during the fishery to test the predictive value of inseason information. Daily logbooks remained mandatory and fishers were required to submit logbooks to the Department with each fish ticket.

A grand total of 832,143 pounds of crab were harvested during the 2004 season. This consisted of 751,806 pounds of marketable commercial; 23 pounds of personal use; 9,386 pounds of dead loss; 83 pounds of discard; and 70,868 pounds of bitter crab. As in the past, an unknown additional amount of bitter crab were sorted and discarded on the fishing grounds. At \$2.10/pound, marketable product was worth at least \$1,578,793 exvessel. The economic loss represented by the deadloss, discard and bitter crab was conservatively set at \$168,708.

The pot fisher's harvest in the first 5 days, the core-period, totaled 740,846 or 91% of the total. In the last five days of the fishery, the non-core period, 70,786 pounds of Tanner crab were harvested. Approximately 80% or 648,040 pounds of the pot fishers' harvest came from the core areas while 20% or 163,592 pounds came from non-core areas.

A total of 98 pot and ring net permits reported landings during the season. The 68 pot permit crab fishers landed 811,899 pounds of crab, of which 732,840 pounds were marketable. A total of 20,244 pounds, or about 2.4% of the total Tanner crab harvest was reported landed by 30 ring net permit holders. Marketable crab comprised 18,966 pounds of the total ring net harvest and 1,278 pounds were dead loss, of which 1,262 pounds were due to bitter crab.

A summary of the harvest by fishing area indicated that about 749,960 pounds, 90%, of the total season's harvest was taken from the three major fishing areas; Icy Strait, Lynn Canal/Stephens Passage, and Frederick Sound (Table 4.3).

Four of eight on-shore processors handled 99% of the regional production this season. The major portion of the harvest was processed in Petersburg, with purchases also reported by plants in Juneau and Hoonah. Two ring-net and one pot gear catcher-seller also reported sales.

Aerial surveys were flown over northern and central Tanner crab fishing grounds on February 15 and 17, 2004 to document effort and location of fishing vessels. In the north, effort was concentrated near Pleasant Island, the backside of Douglas Island, and in Excursion Inlet. In the central area, major concentrations of vessels were observed in Holkham Bay.

Preseason stock assessment surveys were conducted in Holkham Bay, Stephens Passage, Icy Strait, Port Camden and Glacier Bay in October 2004.

Port Sampling Data

The overall crab size during the 2004 season, at 152.1 mm CW, continued its decline since the 1999/2000 season, likewise the percent of recruits, continued the increase begun in the 2001/2002 season (Tables 4.4 and 4.5). Catch rate was estimated at 12.9 crabs per pot, higher than the previous 3 years (Table 4.5).

Icy Strait crabs size was the smallest since the 1995 season with an average carapace width of 150.7 mm CW and 2.5 pounds, a corresponding increase was seen in the percent recruit which at 85.2% was the highest since the 1995 season (Tables 4.6 and 4.7). The catch rates were higher than the previous 3 years at 16.4 crab/pot. This suggests a pulse of recruitment is entering the Icy Strait fishery. The size of Lynn Canal area crabs continued its decline to 152.7 mm CW or 2.4 pounds while the percent recruit leveled off at 65.8%. However, the Lynn Canal area had a relatively low catch rate of 12.5 crabs/pot (Tables 4.8 and 4.9). Frederick Sound crab size and percent recruit leveled off at 153.5 mm CW and 2.6 pounds, and 66.8% recruit (Tables 4.10 and 4.11). The Frederick Sound area catch rate was likewise similar to the previous season at 13.5 crabs/pot.

2004/2005 SEASON OUTLOOK

With the maturation of its stock assessment program, the Southeast Tanner crab fishery is in the process of transitioning from qualitative to a more quantitative management strategy. The regulatory start date for the 2005 Southeast Tanner crab season is February 15, 2005. During this season, as for the past two seasons, a spatial management component will be in effect, allowing harvest opportunity in core and non-core areas. Core areas will be open for four days and non-core area will be open for nine day. The core area period has been reduced by one day compared to last season to attempt to allow rebuilding of the stock.

Southeast Tanner crab stocks are currently in a rebuilding status. The 2.0 million pound regulatory GHL has not been targeted since the 2000 season or achieved since the 1999 season. Preliminary modeling of two independent data sources, depletion modeling of logbook data and catch-survey modeling of survey and fish ticket data both indicate that harvest rates for these seasons have remained high, at 60–75% legal (Clark pers. comm.). Recent regulations governing harvest strategy of Tanner crab in the Kodiak and Eastern Bering Sea areas establish a stair stepped-harvest rate that depends on thresholds in abundance. These regulations are based upon recommendations from modeling of a long time series of fish ticket and survey information (Zheng and Kruse 1999). In the Kodiak area harvest rates of either 10–20% molting mature or 30% of legal males whichever is more are used. Likewise in the Eastern Bering Sea a stair-stepped harvest rate of 10–20% of molting mature males or 50% of legal males whichever is less is indicated. The molting mature male is defined as 100% of new shells and 15% of old shelled males >112 mm CW). This indicates that even with extremely curtailed seasons, recent harvest levels for the Southeast Tanner fishery are well above the harvest caps suggested in either Kodiak or the Eastern Bering Sea. A slightly higher harvest rate for the Southeast Tanner crab fishery may be appropriate, as recruitment here appears less volatile and crab growth is greater (Stone, Masuda et al. 2003) but consistently harvesting at such a high rate is risky and may account for the current poor stock status.

We will continue development of the stock assessment program to better allow managers to determine appropriate harvest rates and to set pre-season GHs. A long-term strategy to assure the health of the stock should include effort restrictions to slow the pace of this fishery in order to allow inseason management with GHs by fishing area.

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Table 4.1.—Traditional commercial Tanner crab pot and ring net harvest by permit, number of landings, pounds, and pounds per permit in Registration Area A, 1968/1969 to present.

Season	Pot Fishery				Ring Net Fishery					Combined Gear Total
	Permits	Landings	Pounds	Total Harvest	Permits	Landings	Pounds	Pounds per Permit	Percent Total Harvest	Pounds
1968/69	29	78	176,572	6,089						176,572
1969/70	31	347	660,337	21,301						660,337
1970/71	12	72	167,378	13,948						167,378
1971/72	25	274	656,661	26,266						656,661
1972/73	31	354	1,600,748	51,637						1,600,748
1973/74	52	419	1,309,673	25,186						1,309,673
1974/75	51	244	863,751	16,936						863,751
1975/76	32	369	2,149,397	67,169						2,149,397
1976/77	55	381	2,563,775	46,614						2,563,775
1977/78	44	337	2,142,409	48,691						2,142,409
1978/79	38	313	1,559,769	41,047						1,559,769
1979/80	51	354	1,773,655	34,778						1,773,655
1980/81	58	418	2,020,071	34,829						2,020,071
1981/82	72	438	3,301,909	45,860						3,301,909
1982/83	95	173	1,106,080	11,643	*	*	*	*	< 0.1	1,106,459
1983/84	100	333	1,604,864	16,049						1,604,864
1984/85	77	261	1,127,833	14,647	5	6	1,451	290	0.1	1,129,284
1985/86	71	296	1,003,826	13,952	11	22	2,609	237	0.3	1,006,435
1986/87	67	260	1,120,373	16,722	7	11	3,601	514	0.3	1,123,974
1987/88	71	315	1,317,887	18,562	13	51	12,598	969	0.9	1,330,485
1988/89	76	241	1,582,648	20,568	63	142	62,621	994	3.8	1,645,269
1989/90	77	257	1,884,781	23,857	92	180	101,045	1,098	5.0	1,985,826
1990/91	75	198	2,184,844	29,131	36	88	56,749	1,576	2.5	2,241,593
1991/92	82	256	2,059,069	25,111	41	111	49,568	1,209	2.4	2,108,637
1992/93	83	219	1,529,152	18,424	51	100	33,544	658	2.1	1,562,696
1993/94	81	248	1,957,932	24,172	44	92	37,146	844	1.9	1,995,078
1994/95	91	241	2,414,037	26,528	82	185	73,576	897	3.0	2,487,613
1995/96	95	222	1,953,790	20,731	73	131	50,303	693	2.5	2,004,391
1996/97	94	226	1,818,884	19,350	70	184	81,764	1,171	4.3	1,900,648
1997/98	93	232	2,615,043	28,119	93	214	86,279	928	3.2	2,701,322
1998/99	94	193	2,086,802	22,200	86	173	77,329	899	3.6	2,164,131
1999/00	92	176	1,615,487	17,560	109	180	88,921	816	5.3	1,704,408
2000/01	81	158	1,221,668	15,082	80	130	74,012	925	5.8	1,295,680
2001/02	83	144	935,026	11,265	57	69	29,810	523	3.1	964,836
2002/03	67	136	775,223	11,570	44	56	27,547	626	3.4	802,770
2003/04 ^a	69	120	811,899	11,767	29	48	20,244	698	2.4	832,143

* Where number of permits participating is 2 or less, information is confidential.

^a Most recent season data is considered preliminary.

Table 4.2.—Traditional commercial Tanner crab harvest in thousands of pounds, by month and season in Registration Area A, 1968/1969 to present.

Season	Sep	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	277.0	209.2	338.3	393.8	695.3	458.0	112.1	Closed	Closed	Closed	2,563.8
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	607.9	282.4	37.5	Closed	Closed	Closed	1,773.7
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	1,106.5	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	1,106.5
1983/84	Closed	Closed	Closed	Closed	Closed	866.0	727.5	Closed	Closed	Closed	Closed	Closed	1,604.9
1984/85	Closed	Closed	Closed	Closed	Closed	529.4	599.9	Closed	Closed	Closed	Closed	Closed	1,129.3
1985/86	Closed	Closed	Closed	Closed	Closed	575.8	425.7	Closed	Closed	Closed	Closed	Closed	1,006.4
1986/87	Closed	Closed	Closed	Closed	635.4	488.6	Closed	Closed	Closed	Closed	Closed	Closed	1,124.0
1987/88	Closed	Closed	Closed	Closed	787.7	542.8	Closed	Closed	Closed	Closed	Closed	Closed	1,330.5
1988/89	Closed	Closed	Closed	Closed	Closed	1,087.9	552.8	Closed	Closed	Closed	Closed	Closed	1,645.3
1989/90	Closed	Closed	Closed	Closed	Closed	1,233.4	740.7	Closed	Closed	Closed	Closed	Closed	1,985.8
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	1,995.1
1994/95	Closed	Closed	Closed	Closed	Closed	2,487.1	Closed	Closed	Closed	Closed	Closed	Closed	2,487.1
1995/96	Closed	Closed	Closed	Closed	Closed	2,020.4	Closed	Closed	Closed	Closed	Closed	Closed	2,004.4
1996/97	Closed	Closed	Closed	Closed	Closed	1,900.6	Closed	Closed	Closed	Closed	Closed	Closed	1,900.6
1997/98	Closed	Closed	Closed	Closed	Closed	2,701.3	Closed	Closed	Closed	Closed	Closed	Closed	2,701.2
1998/99	Closed	Closed	Closed	Closed	Closed	2,164.1	Closed	Closed	Closed	Closed	Closed	Closed	2,164.1
1999/00	Closed	Closed	Closed	Closed	Closed	1,704.4	Closed	Closed	Closed	Closed	Closed	Closed	1,704.4
2000/01 ^a	Closed	Closed	Closed	Closed	Closed	1,295.7	Closed	Closed	Closed	Closed	Closed	Closed	1,295.7
2001/02	Closed	Closed	Closed	Closed	Closed	964.8	Closed	Closed	Closed	Closed	Closed	Closed	964.8
2002/03	Closed	Closed	Closed	Closed	Closed	802.8	Closed	Closed	Closed	Closed	Closed	Closed	802.8
2003/04 ^a	Closed	Closed	Closed	Closed	Closed	832.1	Closed	Closed	Closed	Closed	Closed	Closed	832.1

* Where number of permits participating is 2 or less, information is confidential.

^aMost recent season data is considered preliminary.

Table 4.3.—Traditional commercial Tanner crab harvest in pounds by season, by fishing area in Registration Area A, 1971/1972 to present.

Season	Lynn Canal/ Upper Stephens Passage ^a		Icy Strait ^b		Frederick Sound/ Lower Stephens Passage ^c		Other ^d		Total
	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	Pounds	% of S.E. Harvest	
1971/72	13,440	2.1	310,803	47.3	200,854	30.6	131,564	20.0	656,661
1972/73	177,661	11.1	505,203	31.6	443,106	27.7	474,778	29.7	1,600,748
1973/74	377,190	28.8	404,347	30.9	396,400	30.3	131,736	10.1	1,309,673
1974/75	19,116	2.2	371,115	43.0	289,758	33.6	183,762	21.3	863,751
1975/76	782,127	36.4	505,089	23.5	406,565	18.9	455,616	21.2	2,149,397
1976/77	599,719	23.4	1,034,642	40.4	529,849	20.7	399,565	15.6	2,563,775
1977/78	394,041	18.4	762,491	35.6	648,802	30.3	337,075	15.7	2,142,409
1978/79	308,765	19.8	655,043	42.0	511,769	32.8	84,192	5.4	1,559,769
1979/80	330,221	18.6	391,185	22.1	899,658	50.7	152,591	8.6	1,773,655
1980/81	321,594	15.9	682,011	33.8	641,945	31.8	374,521	18.5	2,020,071
1981/82	380,304	11.5	2,102,755	63.7	428,259	13.0	390,591	11.8	3,301,909
1982/83	96,505	8.7	816,016	73.8	108,918	9.8	85,020	7.7	1,106,459
1983/84	298,975	18.6	656,496	41.0	468,461	29.2	180,932	11.3	1,604,864
1984/85	366,496	32.5	223,404	19.8	365,395	32.4	173,989	15.4	1,129,284
1985/86	421,236	41.9	182,316	18.1	282,490	28.1	120,393	12.0	1,006,435
1986/87	410,674	36.5	242,010	21.5	317,528	28.3	153,762	13.7	1,123,974
1987/88	458,190	34.4	239,194	18.0	459,709	34.6	173,392	13.0	1,330,485
1988/89	476,600	29.0	349,098	21.2	629,771	38.3	189,800	11.5	1,645,269
1989/90	386,754	19.7	621,277	31.3	709,685	35.7	268,110	13.6	1,985,826
1990/91	442,952	19.8	798,460	35.6	617,839	27.6	382,342	17.1	2,241,593
1991/92	617,235	29.3	822,562	39.0	442,200	21.0	226,640	10.8	2,108,637
1992/93	452,466	29.0	490,117	31.4	433,002	27.7	187,111	12.0	1,562,696
1993/94	253,543	12.7	517,397	26.0	881,669	44.2	342,469	17.2	1,995,078
1994/95	409,187	16.5	715,656	28.8	1,051,899	42.3	310,871	12.5	2,487,613
1995/96	314,961	15.7	725,970	36.2	704,231	35.1	258,931	12.9	2,004,391
1996/97	293,328	15.4	673,305	35.4	490,581	25.8	443,434	23.3	1,900,648
1997/98	418,743	15.5	692,620	25.6	517,500	19.2	1,072,459	39.7	2,701,322
1998/99	339,264	15.7	691,595	32.0	559,075	25.8	574,197	26.5	2,164,131
1999/00	468,373	27.5	440,239	25.8	536,957	31.5	258,839	15.2	1,704,408
2000/01	412,435	31.8	298,607	23.0	391,751	30.2	192,887	14.9	1,295,680
2001/02	346,676	35.9	265,940	27.6	228,773	23.7	123,447	12.8	964,836
2002/03	311,273	38.8	226,527	28.2	192,255	23.9	72,715	9.1	802,770
2003/04 ^a	237,442	28.5	263,518	31.7	249,000	29.9	82,183	9.9	832,143

^a Includes all of District 15 and Subdistricts 111-30 through 111-99.

^b Includes all of District 14.

^c Includes all of District 10, Subdistricts 111-01 through 111-29, and Subdistricts 108-40 through 108-69.

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

Table 4.4.—Summary of traditional commercial Tanner crab size frequency and shell condition data collected during dockside sampling in Registration Area A, 1970/1971 to present.

Season	Number of Sampled		Carapace Width (mm)		Recruitment	
	Boats	Crab	Average	Range	% Recruits ^b	% Postrecruits ^c
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
1995/96	120	15,085	153.7	132–189	67.0	33.0
1996/97	124	13,123	152.4	132–196	71.2	28.8
1997/98	151	11,345	153.8	127–190	67.3	32.7
1998/99	121	9,306	154.2	125–193	60.1	39.9
1999/00	135	9,345	154.9	129–193	60.9	39.1
2000/01	116	9,096	154.7	134–197	57.1	42.9
2001/02	126	9,194	152.9	118–197	65.2	34.8
2002/03	111	7,864	152.7	133–190	68.1	31.9
2003/04 ^a	96	6,925	152.1	131–189	68.9	31.1

^a 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.

^b Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^c Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old shell crab ≥ 140 mm carapace width.

Table 4.5.—Tanner crab catch rate and weights in Registration Area A, 1974/1975 to present. Data were collected during dockside sampling and interviews.^a

Season	Number of		Crab Captured	Avg. Catch Per Pot	Range of Catch/Pot	Weight (lb)		Estimated No. Crab Harvested ^b	Percent of Harvest Sampled ^c
	Boats Interviewed	Pots Lifted				Average	Range		
1974/75	1					3.2	3.2–3.2		
1975/76									
1976/77	18	58	1,400	24.1	24.1–24.1	2.6	2.2–3.0	992,862	0.4
1977/78	27	270	6,268	25.2	16.0–43.1	2.7	2.3–3.1	799,406	0.6
1978/79	12	386	5,469	19.8	17.2–22.4	2.6	1.6–2.9	599,911	0.6
1979/80	3	160	1,643	10.3	10.3–10.3	2.8	2.8–2.8	636,401	0.7
1980/81	5	300	4,560	15.2	15.2–15.2	2.8	2.1–3.2	721,454	0.6
1981/82	33	6,277	132,535	26.2	5.3–71.6	2.3	2.0–2.6	1,417,128	0.5
1982/83	39	2,043	26,152	15.0	4.9–29.2	2.5	2.1–3.0	450,342	1.3
1983/84	16	620	6,050	10.5	6.9–14.0	2.5	2.3–2.7	643,194	0.4
1984/85	22	2,070	25,455	11.6	3.9–17.4	2.6	2.3–3.0	435,351	0.7
1985/86	51	7,127	75,552	12.7	1.8–30.7	2.4	1.8–3.1	414,705	1.3
1986/87	59	14,192	135,615	12.3	2.9–32.0	2.5	2.1–2.9	451,395	1.6
1987/88	95	22,745	225,850	11.7	2.4–33.0	2.4	2.0–2.7	559,027	2.0
1988/89	99	26,387	350,878	15.2	0.4–33.0	2.5	2.1–3.1	655,909	1.5
1989/90	109	31,517	366,514	11.7	1.0–34.6	2.5	2.1–3.0	820,253	1.6
1990/91	122	39,168	568,956	15.3	1.3–40.3	2.6	2.1–3.0	872,215	1.5
1991/92	105	32,421	354,003	11.7	0.3–30.0	2.7	2.1–3.1	789,752	1.5
1992/93	89	27,471	299,288	11.1	2.5–31.7	2.5	2.1–3.0	617,666	1.8
1993/94	101	48,905	772,609			2.4	1.9–2.9	821,822	2.0
1994/95	152	56,061	938,582			2.5	2.0–3.0	995,041	1.8
1995/96	120	17,874	262,601	14.7	0.5–56.8	2.6	2.1–3.2	758,603	1.9
1996/97	124	21,130	370,121	14.8	0.4–65.8	2.5	2.1–3.1	760,259	1.7
1997/98	148	28,592	547,527	19.2	0.4–91.6	2.7	2.0–3.1	1,029,162	1.8
1998/99	121	25,736	420,029	17.2	0.3–60.6	2.6	2.1–3.3	823,499	1.1
1999/00	137	25,467	321,886	12.9	0.3–62.5	2.7	2.1–6.2	634,243	1.6
2000/01	116	26,821	324,890	11.9	0.2–32.6	2.7	2.2–3.4	484,269	1.8
2001/02	126	28,194	282,369	10.6	0.3–64.9	2.6	2.1–3.1	371,091	2.5
2002/03	111	20,469	213,415	12.1	0.2–44.6	2.5	1.8–3.0	321,108	2.4
2003/04 ^a	96	19,223	242,538	12.9	0.5–41.3	2.5	2.1–3.1	332,857	2.1

^a Summary tables of all dockside sampling data includes data from Tables 4.6, 4.8, and 4.10 plus data collected that could not be assigned to a fishing area.

^b Calculated by dividing fish ticket weight data from Table 4.5 by dockside sampling average weight per crab data.

^c Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

Table 4.6.—Tanner crab catch rate and average weight in Icy Strait, 1975/1976 to present. Data were collected during dockside sampling and interviews.

Season	Number of			Avg. Catch/Pot	Range of Catch/Pot	Weight (lb)		Estimated No. Crab Harvested ^a	Percent of Harvest Sampled ^b
	Boats Interviewed	Pots Lifted	Crab Captured			Average	Range		
1975/76	2					1.9	1.7–2.1	271,553	0.0
1976/77	2					2.1	2.0–2.2	492,687	0.0
1977/78	2					2.8	2.8–2.9	270,387	0.3
1978/79									
1979/80									
1980/81									
1981/82	21	5,074	118,704	29.5	5.3–71.6	2.3	2.0–2.6	910,284	0.3
1982/83	34	1,556	22,758	18.4	4.9–29.2	2.5	2.1–2.8	339,384	1.0
1983/84	8					2.5	2.4–2.7	260,514	0.3
1984/85	2					2.3	2.3–2.3	97,845	0.3
1985/86	1	98	811	8.3	8.3–8.3				
1986/87	4	1,087	11,342	12.1	6.0–20.8	2.4	2.3–2.5	102,114	0.5
1987/88	10	2,712	27,371	10.9	5.0–25.0	2.2	2.1–2.4	106,783	1.1
1988/89	17	5,812	69,339	13.3	0.4–26.7	2.3		153,113	1.2
1989/90	25	8,812	113,893	13.3	4.3–34.6	2.5	2.4–2.7	248,511	1.0
1990/91	34	11,683	153,781	14.1	4.2–40.3	2.4	2.3–2.6	329,942	1.1
1991/92	26	8,901	106,340	11.8	1.0–21.5	2.7	2.6–2.9	301,305	1.0
1992/93	30	9,676	102,557	10.9	2.5–26.7	2.6	2.3–3.0	188,507	2.2
1993/94	24					2.5	2.1–2.9	208,764	1.5
1994/95	39					2.5	2.2–3.1	290,917	1.6
1995/96	29	6,379	100,386	15.7	1.7–56.8	2.7	2.3–3.2	272,311	1.2
1996/97	32	9,662	142,227	15.3	0.9–65.8	2.5	2.3–2.8	269,415	1.4
1997/98	27	9,025	142,542	15.8	0.4–56.8	2.6	2.4–3.0	262,592	0.9
1998/99	25	5,359	104,753	22.2	1.1–45.9	2.7	2.4–3.1	256,146	0.7
1999/00	22	4,193	67,231	17.8	1.0–62.5	2.7	2.1–3.0	163,051	1.0
2000/01	16	4,554	55,540	13.0	3.6–25	2.5	2.2–2.7	119,443	1.0
2001/02	21	6,817	77,220	12.3	2.0–27.3	2.7	2.3–2.9	98,496	1.6
2002/03	12	2,687	36,261	12.1	1.9–28.4	2.6	2.2–2.8	87,126	1.0
2003/04	16	3,280	49,214	16.4	3.6–41.3	2.5	2.3–3.0	105,407	1.1

^a Calculated by dividing fish ticket weight data for Icy Strait from Table 4.3, by dockside sampling average weight per crab data.

^b Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

Table 4.7.—Icy Strait summary of traditional commercial Tanner crab size frequency and shell condition, 1971/1972 to present. Data was collected during dockside sampling.

Season	Number of Sampled		Carapace Width (mm)		Recruitment	
	Boats	Crab	Average	Range	% Recruits ^a	% Postrecruits ^b
1971/72	1	87	154	127–183	75.6	24.4
1972/73						
1973/74						
1974/75						
1975/76						
1976/77 ^c	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
1995/96	29	3,162	152.8	137–185	80.3	19.7
1996/97	32	3,859	151.6	133–186	80.5	19.5
1997/98	29	2,153	154.1	130–190	79.6	20.4
1998/99	26	2,158	155.2	133–187	76.8	23.2
1999/00	22	1,743	154.7	135–189	75.7	24.3
2000/01	16	1,197	151.8	138–183	84.1	15.9
2001/02	21	1,563	153.8	137–182	78.6	21.4
2002/03	12	843	153.3	136–178	75.4	24.6
2003/04	16	1,210	150.7	135–182	85.2	14.8

^a Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^b Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≥ 140 mm carapace width.

^c The first season that legal size was 5 1/2-inch (140 mm) carapace width.

Table 4.8.—Tanner crab catch rate and average weight in Lynn Canal/Stephens Passage, 1976/1977 to present. Data was collected during dockside sampling and interviews.

Season	Number of			Avg. Catch Per Pot	Range of Catch/Pot	Weight (lb)		Estimated No. Crab Harvested ^a	Percent of Harvest Sampled ^b
	Boats Interviewed	Pots Lifted	Crab Captured			Average	Range		
1976/77	10	58	1,400	24.1	24.1	2.6	2.5–3.0	228,652	1.1
1977/78	8	270	6,268	25.2	16.0–43.1	2.7	2.6–2.9	145,941	1.0
1978/79	6	386	5,469	19.8	17.2–22.4	2.7	2.6–2.8	115,211	1.1
1979/80	1	160	1,643	10.3	10.3–10.3				
1980/81									
1981/82	4	762	8,744	12.1	12.1–12.2	2.4	2.3–2.4	161,831	0.3
1982/83	8	487	3,394	10.5	5.5–13.7	2.4	2.4–2.5	39,911	3.3
1983/84	2					2.6	2.5–2.7	114,524	0.2
1984/85	6	875	8,832	10.2	3.9–14.0	2.6	2.5–2.7	141,504	0.6
1985/86	29	3,577	48,103	15.2	5.9–30.7	2.4	1.8–3.1	173,348	1.8
1986/87	37	5,000	64,115	14.0	5.0–32.0	2.5	2.1–2.8	161,032	2.8
1987/88	43	7,507	80,893	12.6	3.0–33.0	2.4	2.0–2.7	183,247	2.9
1988/89	41	7,355	94,795	14.2	4.5–37.4	2.6	2.2–3.1	178,389	2.0
1989/90	33	7,509	89,562	11.6	3.1–32.4	2.5	2.1–2.8	157,619	2.5
1990/91	14	2,555	28,802	12.2	2.0–25.3	2.6	2.5–2.8	168,434	0.6
1991/92	35	6,481	89,249	15.3	0.3–30.0	2.7	2.2–3.1	224,686	1.7
1992/93	22	6,163	68,767	11.4	4.3–19.4	2.7	2.2–3.0	170,742	1.6
1993/94	5					2.4	2.2–2.6	106,085	1.2
1994/95	30					2.5	2.2–3.0	161,734	2.6
1995/96	23	784	7,881	10.1	3.2–17.3	2.7	2.1–3.1	114,762	3.3
1996/97	26	1,820	51,099	28.1	13.2–48.3	2.7	2.3–3.1	109,335	2.2
1997/98	34	3,952	83,997	21.3	11.4–49.3	2.8	2.3–3.0	151,680	4.8
1998/99	18	2,187	56,616	28.8	13.6–60.6	3.0	2.9–3.3	113,088	1.2
1999/00	22	1,676	58,193	25.1	2.0–52.3	2.8	2.5–3.2	167,276	1.0
2000/01	30	5,235	76,503	13.1	0.8–29.7	2.8	2.4–3.2	147,298	1.5
2001/02	40	6,035	76,043	14.0	1.0–64.8	2.6	2.3–3.1	133,337	2.2
2002/03	34	4,470	77,538	18.7	2.5–43.6	2.5	2.2–2.9	124,509	2.0
2003/04	30	5,957	71,850	12.5	2.9–37.3	2.4	2.2–2.8	98,934	2.2

^a Calculated by dividing fish ticket weight data for Lynn Canal/Stephens Passage from Table 4.3, by dockside sampling average weight per crab data.

^b Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

Table 4.9.—Lynn Canal/Stephens Passage summary of traditional commercial Tanner crab size frequency and shell condition, 1970/1971 to present. Data was collected during dockside sampling.

Season	Number of sampled		Carapace width (mm)		Recruitment	
	Boats	Crab	Average	Range	% Recruits ^a	% Postrecruits ^b
1970/71	1	99	157	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 ^c	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
1995/96	23	3,317	155.9	136–186	54.1	45.9
1996/97	26	2,364	155.6	134–196	55.0	45.0
1997/98	35	2,679	158.3	136–189	50.7	49.3
1998/99	18	1,275	159.9	125–193	46.4	53.6
1999/00	23	2,157	158.4	129–188	47.0	53.0
2000/01	30	2,129	158.1	136–197	39.3	60.7
2001/02	40	2,993	152.8	118–197	56.7	43.3
2002/03	34	2,545	155.4	133–190	65.3	34.7
2003/04	30	2,219	152.7	131–189	65.8	34.2

^a Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^b Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old shell crab ≤ 140 mm carapace width.

^c The first season that the regulatory size was 5 1/2-inch (140 mm) carapace width.

Table 4.10.—Frederick Sound summary of traditional commercial Tanner crabs CPUE and average weight, 1974/1975 to present. Data was collected during dockside sampling and interviews.

Season	Number of			Avg. Catch/ pot	Range of Catch/pot	Weight (lb)		Estimated No. of crab Harvested ^a	Percent of Harvest Sampled ^b
	Boats Interviewed	Pots Lifted	Crab Captured			Average	Range		
1974/75	1					3.2	3.2		
1975/76									
1976/77	4					2.6	2.4–2.8		
1977/78	14					2.7	2.5–3.1		
1978/79	5					2.5	1.6–2.9		
1979/80	1					2.8	2.8		
1980/81									
1981/82	5					2.4	2.2–2.5	176,967	1.2
1982/83	4					2.7	2.4–3.0	40,947	2.0
1983/84	4					2.4	2.3–2.6	193,579	0.4
1984/85	7					2.7	2.3–3.0	134,336	0.8
1985/86	15	2,879	21,651	6.6	1.8–10.0	2.5	2.1–2.7	115,115	1.3
1986/87	10	3,423	36,051	11.7	2.9–22.2	2.5	2.1–2.9	128,035	0.9
1987/88	22	7,478	67,096	10.3	2.4–26.0	2.4	2.2–2.6	190,676	1.2
1988/89	30	8,957	150,506	18.8	4.5–42.7	2.4	2.3–2.8	242,605	1.4
1989/90	42	13,577	149,824	10.9	1.0–30.0	2.5	2.2–3.0	268,599	1.7
1990/91	35	13,188	209,884	16.1	5.7–38.6	2.6	2.1–3.0	230,171	1.8
1991/92	26	10,387	93,663	8.7	2.0–20.0	2.7	2.3–3.0	158,191	1.6
1992/93	19	6,449	75,307	12.0	3.3–31.7	2.5	2.1–2.8	176,736	1.4
1993/94	44					2.4	1.9–2.9	363,335	1.7
1994/95	45					2.5	2.0–3.0	414,133	1.4
1995/96	40	6,404	109,007	13.2	0.5–31.7	2.7	2.1–2.9	265,764	2.1
1996/97	35	6,704	79,087	11.3	6.4–34.7	2.6	2.1–2.9	192,117	1.8
1997/98	27	3,760	87,759	23.3	0.5–52.2	2.5	2.2–3.1	203,979	1.4
1998/99	21	6,812	107,573	19.2	1.1–53.1	2.5	2.1–2.9	223,630	0.7
1999/00	49	11,251	146,822	14.9	0.5–50.0	2.6	2.2–3.3	206,522	1.8
2000/01	39	8,859	99,509	14.0	0.2–32.6	2.8	2.3–3.3	139,911	2.1
2001/02	33	7,159	65,093	9.9	0.6–29.5	2.7	2.1–3.1	84,731	2.9
2002/03	33	7,598	67,856	13.3	0.5–44.6	2.6	1.8–3.0	73,944	3.3
2003/04	35	6,990	87,222	13.5	0.7–34.0	2.6	2.2–3.1	95,769	2.7

^a Calculated by dividing fish ticket weight data for Frederick Sound from Table 4.5, by dockside sampling average weight per crab data.

^b Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

Table 4.11.—Frederick Sound summary of traditional commercial Tanner crab size frequency and shell condition, 1971/1972 to present. Data was collected during dockside sampling.

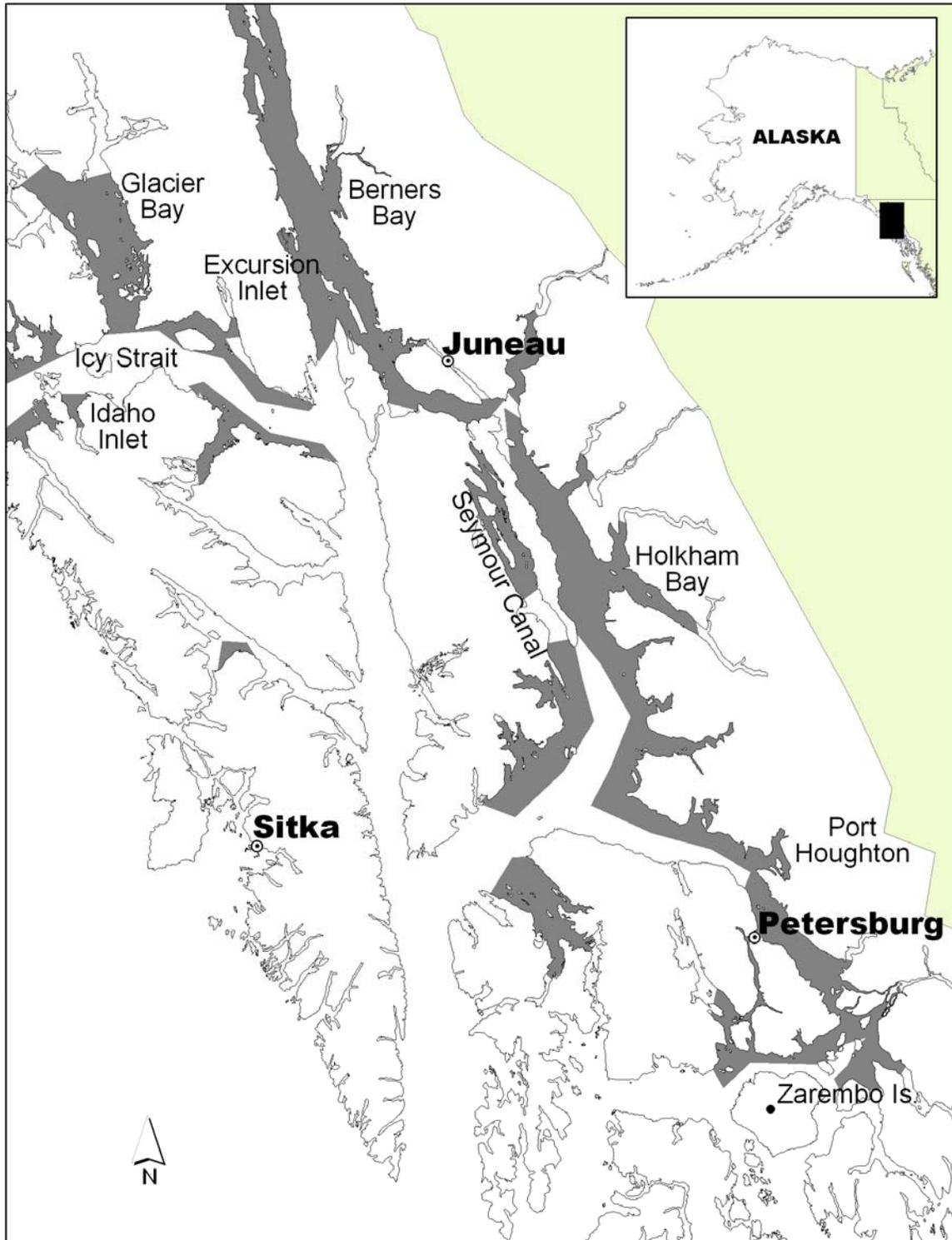
Season	Number of sampled		Carapace width (mm)		Recruitment	
	Boats	Crab	Average	Range	% Recruits ^a	% Postrecruits ^b
1971/72	2	148	147.4	121–180	60.0	40.0
1972/73	3	429	156.9	128–183	73.4	26.6
1973/74	9	1,658	153.0	111–190	68.7	31.3
1974/75	4	412	158.8	127–190	58.7	41.3
1975/76	3	304	154.3	135–183	75.3	24.7
1976/77 ^c	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
1995/96	40	5,549	154.1	135–188	66.9	33.1
1996/97	35	3,394	153.4	132–195	67.3	32.7
1997/98	31	2,444	153.1	127–186	71.6	28.4
1998/99	21	1,798	154.1	135–188	67.8	32.2
1999/00	49	3,572	154.8	131–193	66.4	33.6
2000/01	39	3,448	155.1	134–188	58.3	41.7
2001/02	33	2,422	153.9	132–192	60.1	39.9
2002/03	33	2,443	153.7	134–185	67.7	32.3
2003/04	35	2,608	153.5	134–187	66.8	33.2

^a Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^b Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≤ 140 mm carapace width.

^c The first season that the regulatory legal size was 5 1/2-inch (140 mm) carapace width.

Figure 4.1. –Map showing major Tanner fishing grounds in Southeast Alaska.



SECTION 5: YAKUTAT RED AND BLUE KING CRAB FISHERIES

by

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INTRODUCTION

This section describes the commercial red and blue king crab fisheries in the Yakutat area (Registration Area D). Red king crab, *Paralithodes camtschaticus*, and blue king crab, *P. platypus*, are harvested in small numbers during a season from October 24 through December 31. Harvest is limited by low abundance of both species in the Yakutat area.

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

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

FISHERY DEVELOPMENT AND HISTORY

Harvest and effort in this fishery has been relatively low and intermittent. Since 1972, there have been reported harvests during 21 seasons, with a maximum of 4 participating vessels, and resulting harvests have averaged only 3,000 pounds. The highest seasonal harvest on record totals less than 20,000 pounds during the 1980/1981 season. Both red and blue king crabs have been landed. The harvest peak in the 1980s is of primarily red king crabs while more recent seasons harvests, peaking in the early 1990s have consisted of a larger proportion of blue king crabs.

REGULATION DEVELOPMENT

Fishing Seasons

Starting in 1962, a legal season throughout the entire calendar year was established by regulation. This season was established as January 1 through December 31. 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 pounds combined from Registration Areas A and D. In 1971 the season was from September 1 through January 31 or until 400,000 pounds of red king crabs were taken in areas A and D combined. The season remained the same but the harvest ceiling was raised to 600,000 pounds in 1974. The season was shortened in 1981 to October 1 to January 31 and in 1983 to November 15 to January 24. In 1984 the season was changed to October 10 to January 24 and once more in 1985 to November 15 to January 24. Finally, the existing fishing season of October 24 to December 31 was established at the March 1999 meeting of the Alaska Board of Fisheries (BOF) and became effective in August of 1999, in time for the 1999/2000 season that opened on October 24, 1999.

Sex and Size Limits

From its inception, this fishery has been restricted to harvesting only male crabs in order to protect the reproductively important female crabs. The minimum legal size was 6 1/2 inches in carapace width from 1960 to 1971, and changed to 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 pounds was provided for king crabs, all species (red, blue, and golden) combined, for Southeast Alaska and Yakutat. The first red and blue king crab quota was set in 1971 at 400,000 pounds per season for Southeast Alaska and Yakutat, combined. This was increased to 600,000 pounds in 1974, and then incorporated into a Guideline Harvest Range (GHR) of 300,000 to 600,000 pounds in 1979. In 1982, the current GHL of 40,000 pounds was established specifically for Registration Area D. Harvest has never approached this level however.

Fishing Gear

Starting in 1962, only pots could be used in the Yakutat king crab fishery. In 1969, pot storage requirements were developed. 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 5 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 beginning in January 1, 1983. Pot storage requirements were changed so that all gear needed to be removed from the water within 7 days of the closure of the 1983/1984 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 Russell Fjord. In 1988 escape panels were required to be fastened with no greater than 30-count thread.

RECENT SEASON SYNOPSES

Yakutat Red and Blue King Crab Fishery

The Yakutat red and blue king crab season was open from October 24 to December 31 during each of the past 3 seasons. The GHL was not achieved and it was not necessary to use emergency order authority to close any of the past three fishing seasons. The long-term average harvest since the 1977/1978 season is approximately 3,000 pounds. There were some seasons when no harvests were reported (Table 5.1). The harvest since the 2000/2001 season has ranged from 391 pounds in 2000/2001 to 0 pounds for the past 2 seasons. While 3 permit holders delivered crab during the 2000/2001 season, no vessels registered or fished during the past 2 seasons. Stock assessment surveys are not conducted in the Yakutat area.

2003/2004 SEASON OUTLOOK

Yakutat Red and Blue King Crab Fishery

Fishing opportunities are provided by regulation. Past fishing efforts and harvests have been limited, and resulted in harvests far below the GHL. Despite the fact that the season has remained open, there has been no effort or harvest over the past 2 seasons. There are currently no vessels fishing during the 2003/2004 season. It may be necessary to declare this fishery collapsed.

Table 5.1.—Red and blue king crab harvest, number of landings and number of permits by season in Registration Area D, 1972/1973 to present.

Season	Harvest, pounds			Permits ^a	Landings ^b
	Blue	Red	Total		
1972/1973	*	*	*	*	3
1973/1974	0	0	0	0	0
1974/1975	*	*	*	*	2
1975/1976	0	0	0	0	0
1976/1977	0	0	0	0	0
1977/1978	*	*	*	*	7
1978/1979	*	*	*	*	3
1979/1980	1,415	12,500	13,915	4	17
1980/1981	0	18,652	18,652	3	5
1981/1982	*	*	*	*	8
1982/1983	0	4,118	4,118	4	14
1983/1984	874	374	1,248	4	4
1984/1985	0	0	0	0	0
1985/1986	*	*	*	*	2
1986/1987	0	0	0	0	0
1987/1988	0	0	0	0	0
1988/1989	0	0	0	0	0
1989/1990	0	0	0	0	0
1990/1991	*	*	*	*	5
1991/1992	697	519	1,216	3	8
1992/1993	*	*	*	*	4
1993/1994	6,420	958	7,378	3	8
1994/1995	1,899	275	2,174	3	7
1995/1996	1,874	2,402	4,276	3	18
1996/1997	1,266	3,201	4,467	3	17
1997/1998	3,264	944	4,208	3	13
1998/1999	1,861	192	2,053	4	10
1999/2000	*	*	*	*	2
2000/2001	267	124	391	3	4
2001/2002	0	0	0	0	0
2002/2003	0	0	0	0	0
2003/2004 ^c	0	0	0	0	0

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

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

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

* Where number of permits is 1 or 2, the information is considered confidential.

SECTION 6: SOUTHEAST ALASKA TANNER CRAB FISHERIES

by

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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 Alaska fisheries, but of the two, only *C. bairdi* is known to be present in Registration Area D (Yakutat) of Region I.

The Yakutat fishery occurs in both the relatively protected major bays in the area, Icy Bay and Yakutat Bay, as well as in 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 encompass state waters within three miles, and District 189 includes waters under state management jurisdiction between three and 200 miles.

Yakutat is a nonexclusive registration area for Tanner crab, which means that a vessel fishing there may also fish in other nonexclusive 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.

Despite many indications of poor recruitment and low abundance, continued fishing was permitted throughout the late 1990s so that harvest data with which to assess stock condition was available. It was thought that a low level of fishing activity was tolerable as long as it did not significantly exceed that of recent seasons. However, a period of low harvest level persisted since the early 1980s to 2000. Since continued fishing on reduced brood stock could increase the recovery period, a decision was made to close the fishery until stock recovery could be demonstrated. The Yakutat Tanner crab stock was designated as a 'Collapsed and Recovering Fishery' (ADF&G 1999) in preparation for the January 2000 Alaska Board of Fisheries (BOF) meeting.

During the open seasons from 1995/1996 through 1999/2000, the fishery had 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 had 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 fished in any given season.

Lightweight cone or pyramid-shaped pots had been more commonly used than the heavier, 7-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 a January 15–May season. Also, a guideline harvest ceiling of 1,000,000 pounds, 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.

Port sampling of Tanner crab from Yakutat has been limited by the widespread, low-level nature of the fishery and limited staffing and funding. Available information demonstrates that Yakutat crabs 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 crabs in Yakutat than other areas. Seasonal effort and total catch in the last decade have been order of magnitude less than the 1970s harvests.

FISHERY DEVELOPMENT AND HISTORY

It was not until the early 1970s that significant Tanner crab fisheries developed in the Yakutat area (Table 6.1). As the overall market for Tanner crabs slowly grew, landings from the Yakutat area also rose, averaging about 1,500,000 pounds per season between the 1972/1973 and 1979/1980 seasons. Following the record 2,435,000-pound catch during the 1979/1980 season the harvest steadily declined through most of the 1980s. Peak catches consistently occurred between the months of February and April (Table 6.2), although the season had extended from September 1 to May 15 during most of the early years of the fishery.

During the 1970s, 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 the area was heavily fished (Table 6.3). Many of these vessels also participated in shellfish fisheries in other areas of Alaska.

The stocks could not sustain the levels of harvest of the 1970s and crashed between the 1979/1980 and 1980/1981 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. Catch during the 1980s averaged about 130,000 pounds per season. Many of the larger vessels left the fishery. Those remaining were forced by regulation to switch to top-loading conical or pyramidal pots. By the 1983/1984 and 1984/1985 seasons, 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 6.3).

In the 1985/1986 season, two larger crabbers entered the fishery. The larger vessels experienced uniformly poor catches despite extensive exploratory fishing. In the 1986/1987 season, 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 the 1987/1988 season, only one large vessel and several of the smaller vessels fishing around Yakutat Bay reported any landings. In the 1988/1989 season, 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 fished in this area.

During the 1989/1990 season, only a few local vessels, limited to the waters of Yakutat Bay, participated in the fishery. From the 1989/1990 season to the closure in 1999/2000 season, the consistent fishing pattern was 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. Catch averaged 80,000 pounds annually.

Because the Tanner crab stocks in the Yakutat area have not recovered since the crash in the early 1980s, the fishery was designated as 'collapsed and recovering' at the January 2000 board meeting.

REGULATION DEVELOPMENT

Fishing Seasons and Periods

Fishing seasons in Yakutat started in the 1973/1974 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 1979/1980 and 1980/1981 seasons were shorter, closing by emergency order on April 20 in the 1979/1980 season and by regulation on May 1, 1981, respectively. Stocks began crashing in the 1980/1981 season, and subsequent changes to the season resulted in reduced fishing time. In 1981/1982 and 1982/1983, 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 1983/1984 season and ending on May 1, 1984. Increasing catch resulted in adoption of a 1984/1985 season that extended from January 15 to May 1, 1985. This season has remained in effect through the present.

Sex and Size Restrictions

Size restrictions permitting harvest of only male crabs over 5.5 inches in carapace width were first implemented in the 1976/1977 season and have remained the same since then.

Quotas and Guideline Harvest Ranges

A 3,000,000-pound Guideline Harvest Ceiling (GHC) was instituted in 1976/1977 in response to the rapidly escalating fishery. It was amended to a Guideline Harvest Range (GHR) in 1978/1979, of between 500,000 and 3,000,000 pounds. This range remained unchanged through the 1983/1984 season. The range was revised for the 1984/1985 season to 200,000 to 1,000,000 pounds. This was further revised for the 1986/1987 season to ceiling of 1,000,000 pounds and has remained unchanged since. The last revision essentially reduced the lower end of the GHR to zero pounds and provided for closures if stock conditions did not support any harvest.

Gear Restrictions

There were no gear restrictions during the 1973/1974 season. Between the 1974/1975 and 1976/1977 seasons, pots, ring nets, and shrimp trawls were legal. In 1976/1977, 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 1977/1978, 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 5 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 1980/1981, 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 1982/1983 season to reduce halibut by-catch. Consequently, some vessels that had been using side-loading king crab pots with Tanner boards were discouraged from entering the fishery. Two, 4¾-inch diameter escape rings were required for each pot during the 1984/1985 season. Starting in 1985/1986, gear storage was restricted to a period of seven days after the season closure. Escape rings were repealed for the

1988/1989 fishery. Ring nets were prohibited starting with the 1991/1992 fishery, as a consequence of board action restricting their use in the state to Southeast Alaska.

Other Restrictions

Starting in 1979/1980, formal hold inspections and certifications were repealed. Starting in 1985/1986, preseason 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.

2001/2002 AND 2002/2003 SEASON SYNOPSES

The Yakutat Tanner crab fishery remained closed for the 2001/2002 and 2002/2003 seasons.

2003/2004 SEASON SYNOPSES

During the 2003/2004 season the fishery was re-opened for a 14-day fishing period within the waters of Yakutat Bay and 30-day period elsewhere to test for recovery. Although participation was very limited there was no evidence of stock recovery.

2004/2005 OUTLOOK

The Yakutat Tanner fishery will remain closed for the 2004/2005 commercial season with regulatory opening date of January 15, 2005. Although there was very limited effort, the brief fishery conducted during the 2003/2004 season did not provide any evidence of stock recovery of the Yakutat Tanner crab fishery since its closure in the 1999/2000 season. Our only other sources of information at present are the ADF&G Sport Fish division Statewide personal use and sport harvest survey, the bycatch of juvenile Tanner crab from the Yakutat scallop observer program, and anecdotal information from crabbers passing by Yakutat who set personal use pots. None of these sources suggest a recovery either.

While it is probable that the collapse of the Yakutat Tanner crab fishery is due at least partially to over harvest, and excessive handling of the non-legal portion of the stock (ADF&G 1999), the changing oceanography of the Gulf of Alaska has also been implicated. Variations in recruitment of other Gulf of Alaska shellfish stocks have been related to oceanographic conditions (Zheng and Kruse 2000). Nonetheless, there is also an underlying relationship between brood stock abundance and recruitment (Zheng and Kruse 1998), especially when populations are low. Our best management practice until stock recovery is apparent will be careful maintenance of existing brood stock populations.

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- Zheng, J. and G. H. Kruse (2000). Recruitment patterns of Alaskan crabs in relation to decadal shifts in climate and physical oceanography. ICES Journal of Marine Science 57:438–451.

Table 6.1.—Commercial Tanner crab catches in pounds, number of vessels, pounds per permit, number of landings and pounds per landing in Registration Area D, 1972/1973 season to present.

Season	Catch in Pounds	Number of Permits	Pounds per Permit	Number of Landings	Pounds per Landing
1972/1973	222,441	7	31,777	22	10,110
1973/1974	1,872,357	11	170,214	110	17,021
1974/1975	1,972,752	13	151,750	60	32,879
1975/1976	1,762,589	5	352,518	35	50,359
1976/1977	966,650	7	138,093	15	64,443
1977/1978	1,003,116	8	125,390	103	9,738
1978/1979	1,691,941	15	112,796	107	15,812
1979/1980	2,435,123	23	105,875	114	21,360
1980/1981	642,608	14	45,901	84	7,650
1981/1982	71,302	7	10,186	32	2,228
1982/1983	151,621	10	15,162	55	2,756
1983/1984	11,142	4	2,786	13	857
1984/1985	3,665	5	733	15	244
1985/1986	2,379	5	476	9	264
1986/1987	48,877	*	*	*	*
1987/1988	*	*	*	*	*
1988/1989	155,528	5	31,106	23	6,762
1989/1990	76,816	5	15,363	27	2,845
1990/1991	41,709	6	6,952	42	993
1991/1992	38,615	4	9,654	29	1,331
1992/1993	116,718	5	23,344	37	3,154
1993/1994	364,365	11	33,124	75	4,858
1994/1995	107,010	14	7,644	76	1,408
1995/1996	27,828	7	3,975	40	695
1996/1997	16,302	7	2,329	33	494
1997/1998	9,559	4	2,390	26	368
1998/1999	8,528	5	1,706	23	371
1999/2000	*	*	*	*	*
2000/2001 ^a	Closed	Closed	Closed	Closed	Closed
2001/2002	Closed	Closed	Closed	Closed	Closed
2002/2003	Closed	Closed	Closed	Closed	Closed
2003/2004	*	*	*	*	*

^a The fishery closed early this season.

* Where numbers of vessels participating is 2 or less, information is confidential.

Table 6.2.—Commercial Tanner crab catch in thousands of pounds by month and season in Registration Area D, 1972/1973 to present.

Season	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1972/1973	0.0	*	*	0.0	0.0	0.0	0.0	*	122.9	*	0.0	17.9	222.4
1973/1974	0.0	0.0	0.0	0.0	*	*	313.8	990.2	558.0	Closed	Closed	Closed	1,872.4
1974/1975	0.0	0.0	0.0	0.0	*	*	592.1	839.4	481.9	Closed	Closed	Closed	1,972.8
1975/1976	0.0	0.0	0.0	*	*	*	661.8	456.7	*	Closed	Closed	Closed	1,762.6
1976/1977	0.0	0.0	0.0	0.0	*	*	486.1	*	0.0	Closed	Closed	Closed	966.7
1977/1978	0.0	*	14.5	31.6	161.7	206.0	254.2	279.0	53.1	Closed	Closed	Closed	1,003.1
1978/1979	*	*	0.0	*	63.7	185.1	412.8	766.3	238.1	Closed	Closed	Closed	1,691.9
1979/1980	0.0	10.2	16.4	27.9	56.9	524.1	1,220.9	578.7	Closed	Closed	Closed	Closed	2,435.1
1980/1981	0.0	0.0	0.0	*	6.2	181.9	392.7	60.8	0.0	Closed	Closed	Closed	642.6
1981/1982	Closed	Closed	Closed	Closed	0.0	0.0	16.4	47.1	7.8	Closed	Closed	Closed	71.3
1982/1983	Closed	Closed	Closed	Closed	Closed	50.2	73.9	27.5	0.0	Closed	Closed	Closed	151.6
1983/1984	Closed	Closed	Closed	Closed	Closed	*	5.8	3.6	0.0	Closed	Closed	Closed	11.1
1984/1985	Closed	Closed	Closed	Closed	0.0	0.0	0.0	3.7	0.0	Closed	Closed	Closed	3.7
1985/1986	Closed	Closed	Closed	Closed	*	*	1.1	*	0.0	Closed	Closed	Closed	2.4
1986/1987	Closed	Closed	Closed	Closed	0.0	*	48.2	*	*	Closed	Closed	Closed	*
1987/1988	Closed	Closed	Closed	Closed	0.0	*	*	*	*	Closed	Closed	Closed	*
1988/1989	Closed	Closed	Closed	Closed	*	*	70.3	36.8	47.1	Closed	Closed	Closed	155.5
1989/1990	Closed	Closed	Closed	Closed	*	29.2	37.5	7.4	0.0	Closed	Closed	Closed	76.8
1990/1991	Closed	Closed	Closed	Closed	*	8.7	14.1	15.9	0.0	Closed	Closed	Closed	41.7
1991/1992	Closed	Closed	Closed	Closed	0.0	18.9	13.4	5.8	0.0	Closed	Closed	Closed	38.6
1992/1993	Closed	Closed	Closed	Closed	0.0	*	66.2	31.6	15.7	Closed	Closed	Closed	116.7
1993/1994	Closed	Closed	Closed	Closed	7.6	207.3	109.4	31.0	9.1	Closed	Closed	Closed	364.4
1994/1995	Closed	Closed	Closed	Closed	54.0	35.7	7.3	2.6	0.0	Closed	Closed	Closed	107.0
1995/1996	Closed	Closed	Closed	Closed	13.0	6.7	4.3	3.9	0.0	Closed	Closed	Closed	27.8
1996/1997	Closed	Closed	Closed	Closed	*	4.7	1.9	4.4	*	Closed	Closed	Closed	16.3
1997/1998	Closed	Closed	Closed	Closed	*	4.5	*	*	*	Closed	Closed	Closed	9.6
1998/1999	Closed	Closed	Closed	Closed	*	*	*	2.7	Closed	Closed	Closed	Closed	8.5
1999/2000 ^a	Closed	Closed	Closed	Closed	*	Closed	Closed	Closed	Closed	Closed	Closed	Closed	*
2000/2001	Closed	Closed	Closed	Closed	Closed	Closed	0.0						
2001/2002	Closed	Closed	Closed	Closed	Closed	Closed	0.0						
2002/2003	Closed	Closed	Closed	Closed	Closed	Closed	0.0						
2003/2004	*	*	*	*	*	*	*	*	*	*	*	*	*

^a The fishery closed early this season.

* Where numbers of permits participating is 2 or less, information is confidential.

Table 6.3.—Commercial Tanner crab, catch in thousands of pounds by district and season in Registration Area D, 1972/1973 season to present.

Season	District				Total
	181	183	189	191	
1972/1973	120.2	102.2	0.0	0.0	222.4
1973/1974	963.3	292.6	616.0	0.0	1,872.4
1974/1975	1,330.0	*	*	428.0	1,972.8
1975/1976	1,448.5	*	*	*	1,762.6
1976/1977	513.9	452.7	0.0	0.0	966.7
1977/1978	0.0	1,003.1	0.0	0.0	1,003.1
1978/1979	718.0	404.6	0.0	544.0	1,692.0
1979/1980	1,330.1	154.0	112.8	838.2	2,435.1
1980/1981	164.0	151.0	65.4	262.3	642.6
1981/1982	0.0	51.2	0.0	*	71.3
1982/1983	8.4	83.8	*	*	151.6
1983/1984	0.0	11.1	0.0	0.0	11.1
1984/1985	0.0	3.7	0.0	0.0	3.7
1985/1986	0.0	2.4	0.0	0.0	2.4
1986/1987	*	*	0.0	0.0	*
1987/1988	0.0	*	0.0	*	*
1988/1989	*	7.9	*	*	155.6
1989/1990	27.9	*	0.0	*	76.8
1990/1991	16.2	25.6	0.0	0.0	41.7
1991/1992	*	*	0.0	0.0	38.6
1992/1993	*	*	0.0	0.0	116.7
1993/1994	320.6	28.6	15.2	0.0	364.4
1994/1995	77.4	29.6	0.0	0.0	107.0
1995/1996	10.2	17.6	0.0	0.0	27.8
1996/1997	*	*	0.0	0.0	16.3
1997/1998	0.0	9.6	0.0	0.0	9.6
1998/1999	0.0	8.5	0.0	0.0	8.5
1999/2000 ^a	0.0	*	0.0	0.0	*
2000/2001	Closed	Closed	Closed	Closed	0.0
2001/2002	Closed	Closed	Closed	Closed	0.0
2002/2003	Closed	Closed	Closed	Closed	0.0
2003/2004	*	*	*	*	*

^a The fishery closed early this season.

* Where numbers of permits participating is 2 or less, information is confidential.

Table 6.4.—Tanner crab size frequency and shell condition in Yakutat Area D, 1974/1975 to present. Data collected during dockside sampling.

Year	Number of sampled		Carapace width (mm)		Recruitment	
	Boats	Crab	Average	Range	% Recruits ^a	% Postrecruits ^b
1974/1975	3	516	141.4	110–174	87.3	12.7
1975/1976	11	1,079	140.7	96–179	39.3	60.7
1976/1977 ^c	0	0				
1977/1978	9		145.1	122–171	65.0	35.0
1978/1979	15	1,616	147.8	128–172	57.3	42.7
1979/1980	22	2,509	147.3	131–174	22.5	77.5
1980/1981	22	2,505	147.3	107–172	2.7	97.3
1981/1982	1	99	146.6	137–165	75.0	25.0
1982/1983	17	1,894	145.9	131–173	81.9	18.1
1983/1984	1	100	149.9	139–170	44.9	55.1
1984/1985	0	0				
1985/1986	0	0				
1986/1987	4	520	144.0	130–166	14.3	85.7
1987/1988	2	548	145.4	136–169	59.2	40.8
1988/1989	6	611	148.4	135–177	35.8	64.2
1989/1990	5	779	147.0	137–174	4.1	95.9
1990/1991	0	0				
1991/1992	4	0	148.5	137–178	8.7	91.3
1992/1993	0					
1993/1994	4	654	147.0	436–171	71.1	28.9
1994/1995	0	0				
1995/1996	0	0				
1996/1997	0	0				
1997/1998	0	0				
1998/1999	0	0				
1999/2000	2	206	147.7	139–175	88.3	11.7
2000/2001 ^a	Closed	Closed	Closed	Closed	Closed	Closed
2001/2002	Closed	Closed	Closed	Closed	Closed	Closed
2002/2003	Closed	Closed	Closed	Closed	Closed	Closed
2003/2004	0	0				

^a Recruits = all new and soft shell crab ≥ 140 mm and ≤ 164 mm carapace width.

^b Postrecruits = all new and soft shell crab ≥ 165 mm and old and very old crab ≥ 140 mm carapace width.

^c The first season that the regulatory legal size was 5 1/2-inches (140 mm) carapace width.

Table 6.5.—Summary of commercial Tanner crab CPUE and average weight in Yakutat Area D, 1975/1976 to present. Data collected during dockside sampling and interviews.

Season	Number of			Average Catch/pot	Range of Catch/pot	Weight (lb)		Estimated no. of Crab caught ^a	Percent of Catch sampled ^b
	Boats Interviewed	Pots lifted	Crab captured			Average	Range		
1975/1976	11					1.9	1.7–2.1	947,628	0.1
1976/1977 ^c	2					2.1	2.0–2.2	460,310	
1977/1978	4					2.2	2.0–2.5	451,854	0.5
1978/1979	7	3,810	160,164	34.1	20.1–48.6	2.3	2.3–2.4	729,285	0.2
1979/1980	21	8,802	322,624	40.9	7.7–79.0	2.3	2.1–2.4	1,082,277	0.2
1980/1981	12	3,688	51,765	17.8	10.2–27.1	2.3	2.1–2.7	280,615	0.9
1981/1982	0								
1982/1983	16					2.1	1.9–2.2	72,895	2.6
1983/1984	0								
1984/1985	1					2.4		1,521	
1985/1986	0								
1986/1987	3	1,460	18,629	15.5	10.0–19.8				
1987/1988	2	840	17,850	23.3	18.6–28.0	2.1			
1988/1989	5	705	12,429	9.8	1.4–38.1	2.1		74,061	0.8
1989/1990	4	142	1,621	11.3	7.9–16.3	2.2	2.1–2.3	35,076	2.2
1990/1991	0								
1991/1992	5	597	8,335	7.6	1.2–16.6	2.3		16,168	3.5
1992/1993	0								
1993/1994	0								
1994/1995	0								
1995/1996	0								
1996/1997	0								
1997/1998	0								
1998/1999	0								
1999/2000	2	*	*	*	*	*	*	*	*
2000/2001 ^a	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
2001/2002	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
2002/2003	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
2003/2004	0								

^a Calculated by dividing fish ticket weight data by dockside sampling average weight per crab data.

^b Calculated by dividing number of crab sampled for size frequency by estimated number of crab catch.

^c The first season that the regulatory legal size was 5 1/2-inches (140 mm) carapace width.

* Where numbers of permits participating is 2 or less, information is confidential.

**SECTION 7: SOUTHEAST PERSONAL USE KING CRAB
FISHERY**

by

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INTRODUCTION

This report discusses the Southeast Alaska personal use king crab fishery, with special attention focused on the Section 11-A (Juneau Area) personal use fishery. Harvest and management actions in the commercial fishery are also discussed as they relate to the personal use fishery. This report provides background information on general regulation development, recent allocation guidelines, management tools available, recent management actions, and catch and effort statistics.

The personal use king crab fishery developed from the subsistence fishery. Current management of the Southeast Alaska stocks is accomplished using a mixture of commercial and personal use regulations. The Section 11-A fishery is conducted according to a management and allocation plan adopted by the Board of Fisheries during the 1995/1996 meeting cycle and modified in subsequent Board of Fisheries sessions. Commercial fish ticket data are available to determine commercial harvests. Personal use permits in Section 11-A, creel census data, sport fishery mail-out survey data, and phone survey results provide estimates of the non-commercial harvest of the king crab resource.

Initially, non-commercial king crab fishing by Alaska residents occurred under subsistence regulations. Regulation changes affecting the non-commercial fishery occurred in various portions of the commercial, subsistence, and personal use regulations. The changes involve urban and rural preference in subsistence regulations, development of the personal use regulations, closed waters in the commercial regulations, and development of the management and allocation plan in the commercial regulations. Prior to 1988, the urban versus rural definitions occurred in the subsistence regulations. In Southeast Alaska the cities of Juneau, Sitka, and Ketchikan were classified as urban areas with all other locations classified as rural areas. The Alaska Board of Fisheries subsequently provided for a personal use fishery in the urban areas to replace the lost subsistence opportunities. Personal use fishing under [5 AAC 77.001 (f)], means “the taking, attempting to take or possession of finfish, shellfish or aquatic plants by an individual for consumption as food or use as bait by that individual or his immediate family.”

The Alaska Board of Fisheries has not recognized customary and traditional subsistence use of king crab resources in Southeast Alaska. Currently all non-commercial utilization occurs under personal use regulations. Given the limited king crab resource available, there has been no allocation for sport users.

In Section 11-A, present management provides for a split in the available harvest among more than 2,000 personal use households and approximately 30 commercial permit holders. Personal use harvests in Section 11-A peaked in 2003/2004 with a harvest of 11,880 crabs; a similar harvest level of 10,799 crabs was achieved in 1993/1994 but the long-term average is 6,800 crabs. Continued controversy between personal and commercial uses centers on the harvest allocation and fishing area.

REGULATORY HISTORY

The regulatory structure and allocation guidelines used in the management of the commercial and personal use fisheries in Southeast Alaska have significantly increased in complexity in recent years. This has occurred concurrently with increasingly detailed management of these fisheries by time and area (Table 1). Prior to 1970, there were no time or area closures and

regulations were limited to size, sex, and gear restrictions. From 1970 through the 1984/1985 seasons, the number of days opened to commercial harvests was successively reduced and some of the waters near Juneau were closed to the commercial fishery. Personal use harvests were limited to 6 crabs per person per day in 1971 and personal use gear was to be clearly marked.

The commercial fishery was closed from the 1985/1986 through 1992/1993 seasons due to low regionwide stock abundance. A moratorium was imposed on new permits beginning in 1985/1986 and commercial regulations were altered to reflect a more conservative approach to management of the commercial fishery. Restrictive conservation measures were discussed, but not implemented in the subsistence or personal use fisheries. However, personal use gear was limited to 5 pots per person or 10 pots per vessel in 1985/1986. When survey data indicated that stocks were once again strong enough to support commercial fishing, the allocation controversy intensified. In 1993 additional portions of Section 11-A were closed to commercial fishing by emergency order by direction of Commissioner Rosier. In 1995, the portions of Section 11-A initially closed by emergency order were added into the commercial fishing regulations. However, the controversy over stock strength and allocation of Juneau area king crab stocks persisted, even as stocks increased to high levels.

The Alaska Board of Fisheries initiated a management and allocation plan for red king crab in Section 11-A, beginning with the 1996/1997 season. Commercial Fishing Regulation 5 AAC 34.111 allocated 45 percent of the available harvest to the commercial fishery with a season from November 1 until closed by emergency order, 46 percent to the summer personal use fishery from July 1 to September 30, and 9 percent to the winter personal use fishery from October 1 to March 31. One of the reasons the board separated personal use allocation into summer and winter seasons was to provide crabs for dive fishers who traditionally harvest during the winter when crabs migrate into shallow waters. This allocation plan was revised in March 1999 to an allotment of 40 percent, 50 percent, and 10 percent of the available harvest to the commercial, summer personal use, and winter personal use fisheries respectively. The entire commercial fishery share was to be reallocated to the personal use fishery if the regionwide commercial fishery was not opened [5 AAC 34.111 Section 11-A Red and Blue King Crab Management and Allocation Plan (b)(4)].

Specific areas of Southeast Alaska have been closed by the department to both commercial and personal use harvests in recent seasons due to low abundance of both legal and non-legal segments of the red king crab stocks. The red king crab stock assessment survey provides information on the abundance and overall condition of all segments of the red king crab populations in 9 principal areas of harvests. Recently populations in Peril Strait, Port Frederick and Seymour Canal have been identified as stocks in need of more restrictive conservation actions and these areas have been closed to commercial and personal use fisheries for one or more years or had shortened seasons.

SECTION 11-A

Management and Harvest Trends

There is no reliable data on personal use king crab harvests prior to the 1993 season. Since that time, personal use harvests have been estimated by returns from the statewide mail out sport fish survey (SWHS) and creel survey programs. In Section 11-A, harvests are also monitored by a personal use permit program and by periodic phone surveys. These data indicate that the personal use harvest in the Section 11-A area increased significantly from the late 1980s to a

peak harvest of 10,799 crabs in the 1993/1994 season (Table 7.2). Restrictions in the number of crabs per person and pots per boat and resumption of commercial fishing in the area resulted in a decrease in personal use harvest to 5,540 crabs by the 1995/1996 season. An allocation plan was implemented in 1996/1997. Recent increases in personal use harvests to almost 12,000 crabs in the 2003/2004 season are due to an increase in the abundance of legal red king crabs in the Juneau Area and commercial fishery closures and reallocation to personal use fishers. Documented personal use harvests in other areas of the region peaked at 5,300 crabs in the 1998/1999 season, but the recent closure of the Peril Strait area has resulted in these harvests declining to about 15 percent of the peak harvest.

The region wide commercial fishery reopened in the 1993/1994 season and has been opened each season since then except for the 1998/1999, 2000/2001, and 2004/2005 seasons. From 1993/1994 through 2003/2004, an average of 17 permits participated in the commercial fishery in Section 11-A and 63 total permits in the Southeast Region as a whole. There was a dramatic increase in effort and catch rates in the 2001/2002 through 2003/2004 Section 11-A fisheries, with 29 and 31, and 30 permits fishing in the Juneau area. The commercial fishery has accounted for about 39 percent of the total harvest in Section 11-A for years when the commercial fishery was opened, or about 33 percent of the total harvest over all years since 1993/1994. Regionwide, the commercial fishery has accounted for about 78 percent of the total harvest in years when the commercial fishery was opened, or about 73 percent of the total harvest over all years since 1993/1994.

Personal Use Permits and Daily Bag Limits

Permit procedures and daily possession limits have been revised each season in an effort to more precisely achieve allocation objectives (Table 3). In the 1996/1997 season, separate summer and winter individual permits were issued for the personal use king crab fishery. A daily bag and possession limit of three crabs per individual was implemented with no seasonal limit. In the 1997/1998 season, household permits replaced individual permits to simplify the permitting and reporting process. The daily bag and possession limit was decreased to two crabs per person in order to keep the fishery open for the entire season. A combined summer/winter limit of 20 crabs per household permit, or 10 crabs per household when the household was a single person, was put in effect for the 1998/1999 fishery. The purpose of the seasonal bag limit was to ensure that anyone wanting to fish in the winter season could do so without fear that the season would close early. This same type of permit was continued for the 1999/2000 season.

No inseason adjustments to daily and seasonal limits were made in the 2004/2005 season although allocation goals changed. The summer fishery opened with a daily limit of 2 crabs/person and a seasonal limit of 20 crabs per household. It was determined in early September that the available harvest for the commercial fishery did not meet the 200,000 lb regionwide threshold level and the fishery would not open [5 AAC 34.113]. The allowable commercial harvest for Section 11-A was then reallocated to the personal use fishery. This allowed the summer personal use fishery to stay open for the entire season, closing on September 30, 2004. The winter fishery re-opened on October 1, 2004 with a daily limit of 1 crab/permit and a seasonal limit of 20 crabs per household (Table 7.3).

The total number of summer permits issued has continued to increase since the 1997 season (Table 7.4). The increase from 1,452 in 1997 to 2,282 permits in 2004 equates to a 157 percent increase in permit numbers. The number of permits returned ranges from 65 percent of the issued

permits in the 1997/1998 season to 93.8 percent in the 2001/2002 season and averaged 91.7 percent over the last 3 years. Total personal use harvest is estimated by expanding the reported catch rates on returned permits across half of the non-returned permits (assuming that the other half were permits with no harvest). The total estimated personal use harvests range from 6,612 crabs to 11,880 crabs (Table 7.4). The majority of crabs are harvested by pot gear in the summer season, with 10 to 20 percent of the winter harvest being taken by divers and up to 17 percent with rings.

Guideline Harvest Level, Harvest, and Gear

The Guideline Harvest Level (GHL) for Section 11-A each year has been based on red king crab stock assessment survey estimates of crab abundance and the allocation guideline specified by the Board of Fisheries. A total of over 1,900 survey pots have been set in the Juneau area (including Barlow Cove and Eagle River areas) since 1979. Currently, approximately 100 pots are set each year to measure the relative abundance of both legal and non-legal red king crab. An estimate of the total abundance of legal and mature male crabs is obtained from the survey catch data. The target harvest from the Juneau area is set as 20 percent of the mature abundance (which is approximately 30 percent of the legal abundance). This quantity of crabs is then allocated to the commercial, summer personal use, and winter personal use fisheries based on regulatory allocation guidelines.

For the Juneau area, the total allowable harvest has ranged from 8,300 crabs in the 1997/1998 season to nearly 18,000 crabs in 2001/2002 (Table 7.5). The ability to accurately attain the allocated harvest varies and generally requires intensive management oversight. Personal use harvests have ranged from 48 percent to 164 percent of the specified allocation. The total harvest in the summer fishery has been within 7 percent of the total 1996/1997 through 2004/2005 allocation. The total winter personal use harvest for 1996/1997 through 2003/2004 seasons has exceeded its allocation by 38 percent.

Commercial fishery harvests total 85 percent of the total allocated harvest and 125 percent of allocations for open seasons from 1996/1997 through 2004/2005. Achieving the GHL in individual years has varied from 78 to 229 percent of the allocation but has improved greatly in the most recent 3 open seasons with the implementation of a call-in program for the 2001/2002 season.

Management Considerations

Management of both the personal use and commercial fisheries in Section 11-A requires significant staff effort and resources to achieve target harvest levels. This is due to a number of factors, including increasing interest in personal use fishing, increases in commercial effort and intensity in Section 11-A, and allocation guidelines that are difficult to achieve. For example, management of the 2003/2004 fisheries required 1 phone survey in the summer and another 3 in the winter to monitor harvests in the personal use fishery, staff time to monitor commercial catch rate and estimate cumulative catch from the daily call-in program for boats in Section 11-A, 2 aerial surveys to monitor the distribution of effort, and intensive oversight of fish ticket data and tender reports.

Personal use effort is variable and depends on weather and catch rates. The mild weather in October and November of 1997 resulted in a large amount of effort in the beginning of the winter fishery and an early closure on December 29 instead of March 31. Because permits are

required to be returned at the end of the season with catch and effort information completed, these data are not available to assist with inseason management. In order to obtain inseason catch estimates and determine if the harvest is approaching the allocation, the department has used two methods of estimation: dockside creel surveys conducted by the sport fish division for the summer fishery only, and random phone surveys. Both types of surveys provide inseason information for use in emergency order closures.

The reallocation of commercial harvest to the personal use fisheries when the regionwide commercial fishery is not opened significantly increases the complexity of attaining allocation goals. The red king crab survey is conducted from mid-June through July. These data are entered into a database, reviewed and checked for errors, and then input into a catch-survey analysis to estimate the abundance of different segments of the population in 8 separate areas. Overall stock condition, catch history, and a number of other factors may lead to adjustments to target harvests from these areas. The determination of the allowable harvest for the commercial fishery is usually made in late August or early September. Because over 50 percent of the summer personal use harvest occurs in July and over 90 percent by the end of August, meaningful adjustments in either possession or gear limits to harvest additional crabs are not possible. However, management of the winter personal use fishery to harvest the relatively small number of additional crabs is relatively straightforward.

The high abundance of red king crab in Section 11-A in recent years has resulted in dramatic increases in commercial effort and intensity. In 1994/1995, 31 commercial boats harvested almost 6,100 crabs in 17 days. Effort decreased to only 6 boats harvesting 673 crabs in 4 days by the following year. This increased to 16 boats harvesting 11,353 crabs in 9 days in 1999/2000. This season was characterized by a number of boats retaining their crabs onboard until a closure was announced and unobserved increases in effort and harvest rates in the last days of the fishery. This resulted in harvests totaling over two times the target GHL for Section 11-A. In the 2003/2004 commercial fishery, a total of 30 boats aggressively fished for the GHL of 6,462 crabs. Management actions including multiple aerial surveys, and daily call-in of logbook data, resulted in accurate projection of a closure date and a commercial harvest that was only 536 crabs over the GHL.

OTHER AREAS

Management and Harvest Trends

Personal use harvests in waters outside of Section 11-A are poorly documented and almost certainly underestimated. Currently, the only source of information is the Sport Fish Division statewide harvest survey. This survey is sent annually to a randomly selected sample of 14,000 residents and non-residents who purchase fishing licenses. A comparison of the SWHS with the Section 11-A personal use permit suggests that it underestimates the annual personal use harvest by at least 200% (Table 7.6). Assuming that this holds true for other areas of Southeast Alaska, the average annual king crab SWHS personal use harvest estimate of 7,257 crabs can be expanded to 15,022 crabs which, using an average weight of 7.5 pounds, results in an average region-wide annual personal use harvest of approximately 112,665 pounds of red, blue, and golden king crab.

Over the years, various personal use closures have been implemented in areas where the survey indicates that stock status is poor. These are always associated with simultaneous commercial closures of the area (Table 7.1). The first such personal use closures were of Pybus Bay and Peril

Strait areas in October of 1998. Pybus Bay re-opened in October of 1999, but Peril Strait remained closed. Subsequently in September of 2000 both Pybus Bay and Seymour Canal areas closed, and Peril Strait remained closed. In 2001 Pybus Bay, Seymour canal, and Dedman Reach-Ushk Bay re-opened on September 6, 2001 while Rodman Bay remained closed. In 2002 Rodman Bay remained closed. In September of 2003 Peril Strait and Port Frederick closed to personal use fishing. In September of 2004 Seymour Canal also closed to personal use king crab fishing and Peril Strait and Port Frederick remained closed.

In some areas, such as Deadman Reach of Peril Strait, personal use harvests may exceed commercial harvests and are partially responsible for declines in abundance. A better understanding the impacts of personal use fisheries on areas outside of the Juneau area is pivotal for more responsive management of these stocks.

Table 7.1.—Abbreviated history of regulatory changes and management actions concerning time and area closures in the commercial and personal use red and blue king crab fisheries in Section 11-A and other Southeast Alaska areas.

Season	Personal Use in 11-A	Personal Use in Other Southeast Areas	Commercial fishery in 11-A	Commercial fishery in other Southeast Areas
Before 1970	No closed times and areas		No closed times and areas	
1970–1979/1980	Seasonal closure first established in 1974/75. Seasons ranged from July 1–January 31 to July 1 to March 31 (1979/1980). Possession limit of 6 crabs per person (1979/1980) for all Southeast Alaska.		Seasons ranged from August 1 to June 30 (1969 season) to September 1 to December 18 (1979/1980 season). Some areas were closed early.	Gastineau Channel closed in 1978/79.
1980/1981–1984/1985	Season established as July 1–March 31. Possession limit of 6 crabs per person.		Seasons gradually reduced from 114 days (September 1 to December 24 1980) to 7 days (October 10 to October 17 1984).	Auke Bay and Gastineau Channel remain closed.
1985/1986–1992/1993	Season remained July 1–March 31. Possession limit remained 6 crabs per person. Gear limited to 5 pots per person and 10 pots per vessel (1985/1986).		No traditional commercial fishery.	
1993/1994	Waters deeper than 100 feet closed from Oct. 4–March 31.	No change from 1992/1993	Opened Nov. 1–Nov. 9 1993. Juneau area ^a closed to all commercial fishing.	Opened Nov. 1–Nov. 9 and Nov. 27–Dec. 3 1993. Pybus Bay and Port Frederick closed
1994/1995	Personal use closure in Juneau Area ^a from Oct. 25 to end of season.	No change from 1993/1994	Opened Nov. 1–Nov. 18 1994. Juneau area ^a closed.	Opened Nov. 1–Nov. 18 1994. No area closures
1995/1996	Possession limited to 3 crabs per person and 4 pots per person and vessel.	Possession limited to 3 crabs per person and 4 pots per person and vessel in areas 12-B and 15-C.	Opened Nov. 1–Nov. 5, 1995. Juneau area ^a closed.	Opened Nov. 1–Nov. 17 1995. No area closures.
1996/1997	Allocation guidelines established. Personal use permit required. Winter fishery closed March 7, 1997.	No change from 1995/1996	Allocation guidelines established. Commercial fishery opened Nov. 1–Nov. 11, 1996. Juneau area ^a closed.	Opened Nov. 1–Nov. 20 1996. No area closures.
1997/1998	Possession limited to 2 crabs per person. Summer fishery closed August 16 and winter fishery closed December 29. Household permit required.	No change from 1996/1997	Opened Nov. 1–Nov. 12 1997. Juneau area ^a closed.	Opened Nov. 1–Nov. 15 1997. Fishing in Pybus Bay and Gambier Bay limited to 4 days and 8 days respectively.
1998/1999	2 crabs per person limit. Seasonal limit of 10/20 crabs per individual/household.	Pybus Bay and Peril Strait areas closed October 1 1998.	No commercial fishery.	No commercial fishery
1999/2000	2 crabs per person limit. Seasonal limit of 10/20 crabs per individual/household. Winter fishery closed February 29, 2000.	Pybus Bay reopened October 19, 1999. Peril Strait areas remained closed.	Opened Nov. 1–Nov. 10 1999. Juneau area ^a closed.	Opened Nov. 1–Nov. 13 1999. Fishing in Pybus Bay and Gambier Bay limited to 4 days. Peril Strait Area closed

Table 7.1–Continued.

Season	Personal Use in 11-A	Personal Use in Other Southeast Areas	Commercial fishery in 11-A	Commercial fishery in other Southeast Areas
2000/2001	See Table 7.5 for details. Harvest reallocation from commercial to personal use resulted in final summer limits of 3 crabs per person and 20/40 crabs per individual/household on August 4. Limits decreased to 2 crabs per person and 10/20 Crabs per individual/household for winter Fishery.	Pybus Bay and Seymour Canal closed September 22, 2000. Peril Strait area remained closed.	No commercial fishery.	No commercial fishery
2001/2002	2 crab per person limit. Seasonal limit of 10/20 crabs per individual/household. Winter fishery closed March 31, 2002.	Pybus Bay, Seymour Canal, and Deadman Reach-Ushk Bay re-opened September 6, 2001, Rodman Bay remained closed.	Opened Nov. 1 – Nov 6, 2001. Juneau area ^a closed.	Opened Nov. 1–Nov. 12 2001 with Seymour and Peril Strait excluding Rodman Bay closing Nov. 7, Rodman Bay closed entire season.
2002/2003	Summer fishery 2 crab per person limit, Seasonal limit of 20 crabs per household. closed August 30, 2002. Winter fishery 1 crab per permit limit, seasonal limit of 20 crabs per household. Closed March 2, 2003.	Rodman Bay remained closed.	Opened Nov. 1–Nov. 4, 2002. Juneau area ^a closed.	Opened Nov. 1–Nov. 8, 2002 with Seymour Canal and Peril Strait closing Nov. 7, Rodman Bay closed entire season.
2003/2004	Summer fishery 2 crab per person limit, seasonal limit of 20 crabs per household. closed September 7, 2003. Winter fishery 1 crab per permit limit, season limit of 20 crabs per household. Closed March 11, 2004.	Rodman closure expanded to all of Peril Strait and Port Frederick closed on September 14, 2003.	Opened Nov. 1–Nov. 4 2003. Juneau area ^a closed.	Opened Nov. 1–Nov 5 2003. Peril Strait and Port Frederick closed for entire season. Seymour Canal closed Nov. 4, all other areas closed Nov. 5, 2003.
2004/2005	Summer fishery 2 crab per person limit, seasonal limit of 20 crabs per household. Harvest reallocation of the commercial quota to personal use results in no early closure. Winter fishery, 1 crab per permit, 20 crabs per household. Ongoing	Peril Strait and Port Frederick remained closed.	No commercial fishery	No commercial fishery

^a Juneau Area defined as Gastineau Channel, Barlow Cove, and waters enclosed by a line from Outer Point on Douglas Island across Stephens Passage to the mouth of Bear Creek on Admiralty Island extending north to Symonds Point and across Saginaw Channel to the Southeast tip of Shelter Island and extending north to south tip of Halibut Cove, across Favorite Channel to south entrance of Amalga Harbor (See Figure 1).

Table 7.2.—Estimated number of red and blue king crab caught in the personal use and commercial fisheries and number of commercial permits fished in Section 11-A and elsewhere in Southeast Alaska, Registration Area A.

Season	Personal use harvest in Section 11-A	Personal use harvest in other Southeast areas	Commercial fishery harvest in Section 11-A	No. of commercial permits fished in Section 11-A	Commercial fishery harvest in other Southeast areas	Total no. of commercial permits fished in Southeast Alaska
1988/1989	665	1,130	0	0	0	0
1989/1990	2,228	1,130	0	0	0	0
1990/1991	2,361	1,130	0	0	0	0
1991/1992	2,972	1,130	0	0	0	0
1992/1993	6,835	1,625	0	0	0	0
1993/1994	10,799	2,806	4,153	19	23,314	83
1994/1995	7,139	2,855	6,089	31	29,558	84
1995/1996	5,540	3,253	673	6	50,988	73
1996/1997	6,975	2,209	2,996	11	55,302	79
1997/1998	6,612	3,208	3,016	12	36,764	76
1998/1999	7,016	5,295	0	0	0	0
1999/2000	9,044	862	11,353	16	27,312	77
2000/2001	9,471	737	0	0	0	0
2001/2002	9,510	2,970	8,794	29	33,162	77
2002/2003	9,070	521	5,165	31	24,981	75
2003/2004	11,880	1,140	6,998	30	18,420	67
2004/2005 ^a	8,539		0	0	0	0

^a The personal use fishery is still open and permits are not due to be returned till April 15, 2005.

^b Average for harvests includes all seasons from 1988/1989 through 2003/2004. Average for permits includes only the seasons when the commercial fishery was opened (1993/1994 through 1997/1998 and 1999/2000, 2001/2002–2003/2004).

Table 7.3.—Openings, closures, and fishery regulations by season for the red and blue king crab personal use fishery in Section 11-A from 1996–2004.

Season	Type of Permit	Daily Limit	Season Limit	Closure Date
1996/1997 Summer	Individual	3 Crabs/Person	No Limit	August 30, 1996
1996/1997 Winter	Individual	3 Crabs/Person	No Limit	March 7, 1997
1997/1998 Summer	Seasonal			
1997/1998 Summer	Household	2 Crabs/Person	No Limit	August 16, 1997
1997/1998 Winter	Seasonal			
1997/1998 Winter	Household	2 Crabs/Person	No Limit	December 29, 1997
1998/1999 Summer	Seasonal		10/20 Crabs per Individual/	
1998/1999 Summer	Household	2 Crabs/Person	Household for Summer and Winter Season	September 30, 1998 ^a
1998/1999 Winter	Seasonal			
1998/1999 Winter	Household	2 Crabs/Person	Household for Summer and Winter Season	March 31, 1999 ^b
1999/2000 Summer	Seasonal			
1999/2000 Summer	Household	2 Crabs/Person	Household for Summer and Winter Season	September 30, 1999 ^a
1999/2000 Winter	Seasonal			
1999/2000 Winter	Household	2 Crabs/Person	Household for Summer and Winter Season	February 29, 2000
2000/2001 Summer (July 1–July 19)	Summer		5/10 Crabs per Individual/	
2000/2001 Summer (July 20–August 3)	Household	1 Crabs/Person	Household in Summer	
2000/2001 Summer (August 4–Sept. 30)	Summer		10/20 Crabs per Individual/	
2000/2001 Summer (August 4–Sept. 30)	Household	2 Crabs/Person	Household in Summer	
2000/2001 Summer (August 4–Sept. 30)	Summer		20/40 Crabs per Individual/	
2000/2001 Summer (August 4–Sept. 30)	Household	3 Crabs/Person	Household in Summer	September 30, 2000 ^a
2000/2001 Winter	Winter			
2000/2001 Winter	Household	2 Crabs/Person	Household in Winter	March 31, 2001 ^b
2001/2002 Summer	Summer		10/20 Crabs per Individual/	
2001/2002 Summer	Household	2 Crabs/Person	Household in Summer	September 30, 2001 ^a
2001/2002 Winter	Winter		10/20 Crabs per Individual/	
2001/2002 Winter	Household	2 Crabs/Person	Household in Winter	
2002/2003 Summer	Summer			
2002/2003 Summer	Household	2 Crab/Person	20 Crab per Household	August 30, 2002
2002/2003 Winter	Winter			
2002/2003 Winter	Household	1 Crab/Permit	20 Crab per Household	March 2, 2003
2003/2004 Summer	Summer			
2003/2004 Summer	Household	2 Crab/Person	20 Crab per Household	September 4, 2003
2003/2004 Winter	Winter			
2003/2004 Winter	Household	1 Crab/Permit	20 Crab per Household	March 11, 2004
2004/2005 Summer	Summer			
2004/2005 Summer	Household	2 Crab/Person	20 Crab per Household	September 30, 2004
2004/2005 Winter	Winter			
2004/2005 Winter	Household	1 Crab/Permit	20 Crab per Household	Ongoing

^a September 30 is the regulatory closing date for the Summer Red King Crab Personal Use Fishery.

^b March 31 is the regulatory closing date for the Winter Red King Crab Personal Use Fishery.

Table 7.4.—Number of permits issued and returned, total reported harvest of returned permits, and percent of harvest by type of gear in the Section 11-A red and blue king crab personal use fishery by season.

Season	Permits Issued	Permits Returned	Percent Returned	Reported Harvest	Estimated Harvest	Percent by Gear		
						Pot	Dive	Ring Net
1996/1997 Summer	1,474	1,216	82.5%	5,222	5,723	99%	<1%	<1%
1996/1997 Winter	645	382	59.2%	997	1,252	78%	20%	2%
1996/1997 Total	2,119	1,598	75.4%	6,219	6,975			
1997/1998 Summer	1,452	951	65.5%	3,949	4,772	99%	<1%	<1%
1997/1998 Winter				670	810	91%	7%	2%
1997/1998 Unknown				852	1,030	99%	0%	<1%
1997/1998 Total	1,452	951	65.5%	5,471	6,612			
1998/1999 Summer	1,675	1,412	84.3%	4,963	5,386	99%	<1%	<1%
1998/1999 Winter				1,489	1,616	76%	14%	10%
1998/1999 Unknown				13	14	85%	15%	0%
1998/1999 Total	1,675	1,412	84.3%	6,465	7,016			
1999/2000 Summer	1,946	1,589	81.7%	6,304	6,941	99%	<1%	<1%
1999/2000 Winter				1,910	2,103	80%	10%	10%
1999/2000 Unknown				0	0			
1999/2000 Total	1,946	1,589	81.7%	8,214	9,044			
2000/2001 Summer	2,061	1,861	90.3%	6,410	6,737	99%	<1%	<1%
2000/2001 Winter				2,570	2,701	72%	11%	17%
2000/2001 Unknown				31	33	100%	0%	0%
2000/2001 Total	2,061	1,861	90.3%	9,011	9,471			
2001/2002 Summer	2,070	1,942	93.8%	6,988	7,102	99%	<1%	<1%
2001/2002 Winter				2,293	2,408	74%	14%	12%
2001/2002 Unknown				0	0			
2001/2002 Total	2,070	1,942	93.8%	9,281	9,510			
2002/2003 Summer	1,974	1,819	92.2%	7,023	7,318	99%	<1%	<1%
2002/2003 Winter	1,019	860	84.4%	1,565	1,752	72%	13%	15%
2002/2003 Unknown				0				
2002/2003 Total	2,993	2,679	89.5%	8,588	9,070			
2003/2004 Summer	2,199	2,041	92.8%	10,244	10,539	99%	<1%	<1%
2003/2004 Winter	1,030	922	89.5%	1,267	1,341	77%	13%	<10%
2003/2004 Unknown				0	0			
2003/2004 Total	3,229	2,963	91.8%	11,511	11,880			
2004/2005 Summer	2,282	1,537	67.3%	6,875	8,539	99%	<1%	<1%

Table 7.5.—Total allowable harvest, allocations, and estimated harvest of red and blue king crab in terms of number of crab for the personal use and commercial fisheries of Section 11-A, Southeast Alaska, Registration Area A.

Season	Commercial Fishery		Summer Personal Use Fishery		Winter Personal Use Fishery		Total Allowable Harvest	
	Allocation	Estimated	Allocation	Estimated	Allocation	Estimated	Goal	Estimated
		Harvest		Harvest		Harvest		Harvest
1996/1997 ^a	3,825	2,996	3,900	5,723	765	1,252	8,490	9,971
1997/1998 ^a	3,750	3,016	3,800	5,653	750	959	8,300	9,628
1998/1999 ^a	6,533	0	6,678	5,397	1,307	1,619	14,518	7,016
1999/2000	4,964	11,353	6,200	6,941	1,241	2,103	12,405	20,396
2000/2001	4,140	0	5,176		1,035		10,351	
2000/2001 Reallocation ^b	0	0	8,626	6,760	1,725	2,710	10,351	9,471
2001/2002	7,189	8,794	8,986	7,102	1,797	2,408	17,972	18,035
2002/2003	4,503	5,165	5,600	7,318	1,100	1,752	11,203	14,235
2003/2004	6,462	6,998	8,100	10,539	1,600	1,341	16,162	18,878
2004/2005	3,868	0	4,836		967		9,671	
2004/2005 Reallocation ^b	0	0	7,737	8,539	1,934		9,671	8,539

^a Allocation guidelines established by Board of Fisheries in October 1995 as 45% Commercial, 46% Summer Personal Use, and 9% Winter Personal Use.

^b Allocation guidelines revised by Board of Fisheries in March 1999 as 40% Commercial, 50% Summer Personal Use, and 10% Winter Personal Use. If there is no commercial fishery, total allowable harvest is reallocated to personal use fisheries as 80% summer and 20% Winter Personal Use.

^c The personal use fishery is still open and permits are not due to be returned till April 15 2005.

Table 7.6.—Summary of Southeast Alaska personal use king crab harvest in numbers by area during 1993–2004. Information is based on ADF&G Sport Fish Division Statewide Harvest Survey (SWHS) estimates and, those results are compared with creel census and personal use permit estimates for Section 11-A of the Juneau SWHS area E only.

Data source Year	Statewide Harvest Survey		Creel Census Section 11-A	Personal Use Permit Section 11-A
	Other Areas	Juneau Area		
1993	2,806	9,130		
1994	2,855	7,236		
1995	3,253	5,167		
1996	2,209	2,669		
1997	3,208	2,808		6,024
1998	5,295	1,601		6,196
1999	862	6,187	6,442	8,571
2000	737	4,371	5,974	8,840
2001	2,970	5,564	5,605	9,836
2002	521	2,677	5,216	9,726
2003	1,140	6,562	9,587	12,291
2004			6,093	9,880
Average	2,351	4,907	6,486	8,921

Figure 7.1.—The Juneau king crab management area including the Section 11-A permit area and waters closed to commercial fishing.

