

Fishery Management Report No. 11-68

2012 Report to the Board of Fisheries on Southeast Alaska/Yakutat King Crab Fisheries

by

Joe Stratman,

Adam Messmer,

Gretchen Bishop,

Chris Siddon,

and

Andrew Olson

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
Weights and measures (English)		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft ³ /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	≥
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	≤
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	log ₂ , etc.
		latitude or longitude	lat. or long.	minute (angular)	'
Time and temperature		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
degrees Celsius	°C	registered trademark	®	%	%
degrees Fahrenheit	°F	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
Physics and chemistry				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

FISHERY MANAGEMENT REPORT NO. 11-68

**2012 REPORT TO THE BOARD OF FISHERIES ON SOUTHEAST
ALASKA/YAKUTAT KING CRAB FISHERIES**

by

Joe Stratman

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

Adam Messmer, Gretchen Bishop, Chris Siddon, and Andrew Olson
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: <http://www.adfg.alaska.gov/sf/publications/>. This publication has undergone regional peer review.

Joe Stratman
Alaska Department of Fish and Game, Division of Commercial Fisheries,
16 Sing Lee Alley, Petersburg AK 99833
and
Adam Messmer, Gretchen Bishop, Chris Siddon, and Andrew Olson
Alaska Department of Fish and Game, Division of Commercial Fisheries,
802 3rd St, Douglas AK 99824, USA

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ABSTRACT

This report reviews the commercial and personal use fisheries for king crab in Region I, which includes Southeast Alaska (Registration Area A) and Yakutat (Registration Area D).

Red king crab harvest in Region I totaled 209,799 pounds valued at \$1.10 million during the last completed season. The average exvessel price per pound for red king crab during the 2005/2006 season was \$5.24. Golden king crab harvest in Region I totaled 687,505 pounds valued at \$4.66 million during the last completed season. The average exvessel price per pound for golden king crab during the 2010/2011 season was \$6.77.

Most of the shellfish fisheries in Region I are fully developed. Red king crab stocks in Southeast Alaska are assessed in an annual red king crab pot survey. The department has conducted a survey of red king crab abundance in Southeast Alaska since 1979. There have never been stock assessment surveys for Yakutat red king crab stocks or for the golden king crab stocks in Southeast Alaska.

The ability of the department to manage for sustained yields varies among the fisheries due to different levels of development of stock assessment programs and management plans. The commercial red king crab fishery, and the personal use red king crab fishery in Section 11-A, are managed based on abundance identified in the annual survey. The personal use red king crab fishery outside of Section 11-A is managed by bag and possession limits and area specific closures defined through emergency orders. For the golden king crab fishery in Southeast Alaska, managers rely on fishery observer, harvest ticket, and port sampling data to adjust guideline harvest levels. Dockside sampling and skipper interviews also are routinely conducted in Southeast Alaska red and golden king crab fisheries.

Key words: Red king crab, *Paralithodes camtschaticus*, golden king crab, *Lithodes aequispinus*, Southeast Alaska, Yakutat, Fisheries management, Invertebrate fisheries, Crab, Harvest statistics

CHAPTER 1: INTRODUCTION TO SOUTHEAST ALASKA/YAKUTAT KING CRAB FISHERIES

INTRODUCTION

This report reviews the commercial and personal use fisheries for king crab in Region I, which includes Southeast Alaska (Registration Area A) and Yakutat (Registration Area D). Registration 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). Registration Area D encompasses state waters from Cape Fairweather to Cape Suckling, divided into Districts 81 through 91. Shellfish fisheries in these areas are primarily in state waters.

This is the second Board of Fisheries (board) meeting where proposals for all Region I shellfish fisheries are considered in one meeting. In previous years, proposals for Dungeness crab, shrimp, and scallops were combined into one meeting held in Southeast Alaska, while king and Tanner crab proposals were considered separately during the statewide king and Tanner crab board meeting. The reason for including the Southeast king and Tanner crab meeting in the Southeast meeting is to allow for increased participation of stakeholders.

The red king crab fisheries in Southeast Alaska are fully developed. The red king crab fishery in Southeast is prosecuted under limited entry, and abundance is identified in an annual stock assessment survey conducted by the department. The red king crab fishery in Yakutat is much less developed than the red king crab fishery in Southeast Alaska. The last harvest in the red king crab fishery in Yakutat occurred in the 2000/2001 season, is prosecuted as an open access fishery, and has no history of stock assessment. A management plan exists in regulation for the personal use red king crab fishery. In Section 11-A, an allocation is determined through the annual survey. Outside of 11-A, the personal use fishery is managed with variable bag and possession limits and area closures for surveyed areas with poor stock health.

The golden king crab fishery in Southeast Alaska is prosecuted under limited entry. The golden king crab fishery is less developed than the red king crab fishery in Southeast Alaska. For the golden king crab fishery in Southeast Alaska, managers rely on fishery observer, harvest ticket, and port sampling data to adjust guideline harvest levels.

Red king crab harvest in Region I totaled 209,799 lbs valued at \$1.10 million during the last completed season. Golden king crab harvest in Region I totaled 687,505 lbs valued at \$4.66 million during the last completed season (Table 1.1). Ranking by exvessel value based on the last season when a fishery was conducted, the top five fisheries were Southeast Dungeness crab, Southeast golden king crab, Southeast Tanner crab, Southeast shrimp pot, and Southeast red and blue king crab. Ranking by landed poundage, the top five fisheries were Southeast Dungeness crab, Southeast Tanner crab, Southeast golden king crab, Southeast shrimp pot, and Southeast red and blue king crab.

KING CRAB RESEARCH AND MANAGEMENT

The ability of the department to manage the Southeast Alaska and Yakutat king crab fisheries for sustained yields varies due to the different levels of development of stock assessment programs and management plans. Southeast red king crab has a well developed stock assessment program and management plan. Yakutat red king crab has no stock assessment program. Also, there is also no harvest strategy or management plan in place for Yakutat red king crab. The only regulatory management tools for this fishery are pot limits, a season description, and a guideline harvest range of 0 to 20,000 lbs.

No stock assessment work has been conducted on golden king crab stocks in Southeast Alaska. The life history of golden king crabs in Southeast Alaska is poorly understood. They are thought to have an asynchronous molt. The fishery is prosecuted through a regulatory management plan.

Dockside sampling and skipper interviews are routinely conducted in both Southeast Alaska king crab fisheries. The objectives of dockside sampling are to gather data and information on size frequency, shell condition, average weight, fishing location, effort levels, and estimates of average catch per unit of effort (CPUE). The collected information allows assessment of the relative strength of various components (e.g. size, recruits) of the commercially exploited component of the population, and a qualitative estimate of stock condition. However, for the Yakutat red king crab fishery even basic port sampling has not been systematically conducted. Harvest and effort data is also collected through the fish ticket system for both Southeast and Yakutat king crab fisheries.

Logbook information is collected from both Southeast Alaska king crab fisheries. This information is particularly useful in calculating standardized CPUE, editing harvest tickets, and for inseason fisheries management.

TASK FORCE STATUS

In 2000, the department began working with the Southeast Alaska King and Tanner Crab Task Force (KTTF). The original intent of this task force was to develop a management plan for Southeast Alaska Tanner crab and develop methods to reduce harvest pressure in core Tanner crab areas. The department and KTTF conduct a joint meeting annually to review stock status of all Southeast Alaska king and Tanner crab and exchange information regarding management activities and plans.

STAFF

All Region I crab, beam trawl shrimp, and scallops fisheries are managed by the regional shellfish management staff. All Region I shellfish stock assessment and research programs, aside from weathervane scallops, are managed by the regional shellfish research staff. The shrimp pot fishery is the only shellfish fishery managed individually by area offices within the region. These fisheries are managed by Area Management Biologists under the supervision of Bill Davidson, Regional Management Coordinator, stationed in Sitka. All other shellfish research (non-salmon) and management is under the supervision of Forrest Bowers, regional Groundfish and Shellfish Fisheries Program Supervisor, stationed in Douglas. The regional stock biology staff conducts dockside sampling and skipper interviews with assistance from the shellfish and area management staffs.

SHELLFISH PROJECT STAFF

Name	Title	Job Class	Location
Forrest Bowers	Region I Groundfish and Shellfish Fisheries Program Supervisor	Fishery Biologist IV	Douglas
Bill Davidson	Region I Management Coordinator	Fishery Biologist IV	Sitka
Joe Stratman	Region I Shellfish Management Project Leader	Fishery Biologist III	Petersburg
Gretchen Bishop	Region I Crab Research Project Leader	Fishery Biologist III	Douglas
Chris Siddon	Shellfish Biometrician	Biometrician III	Douglas
Adam Messmer	Shellfish Management Biologist	Fishery Biologist II	Douglas
Quinn Smith	Southeast Regional Shrimp Biologist	Fishery Biologist II	Douglas
Andrew Olson	Shellfish Research Biologist	Fishery Biologist II	Douglas
Kellii Wood	Shellfish Technician	Fish and Wildlife Technician IV	Petersburg

CHAPTER 1—TABLES AND FIGURES

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

Area Season	Fishery	Harvest (lbs)	Approximate exvessel Value
Southeast			
2005/2006	Red and blue king crab	209,799	\$1,099,000
2010/2011	Tanner crab (<i>C. bairdi</i>)	891,344	\$2,425,059
2010/2011	Golden king crab	687,505	\$4,656,267
2010/2011	Dungeness crab	3,245,265	\$5,525,404
2010/2011	Pot shrimp	556,574	\$1,519,447 ^a
2010/2011	Beam trawl shrimp	132,383	\$107,813
	Subtotal	5,722,870	\$15,332,990
Yakutat			
2000/2001	Red and blue king crab	391	\$2,960
1999/2000	Tanner crab	—	—
1999/2000	Dungeness crab	65,386	\$133,145
2010/2011	Pot shrimp	—	—
2004/2005	Otter trawl shrimp	—	—
2010/2011	Weatherwane scallop	160,340	\$1,282,720 ^b
	Subtotal	230,499	\$1,427,272
	Grand Total	5,953,369	\$16,760,262

— Confidential data, fewer than three permits fished.

^a Value estimate based on 2010 exvessel price data from Commercial Fisheries Entry Commission.

^b Value estimate based on 2009 exvessel price data.

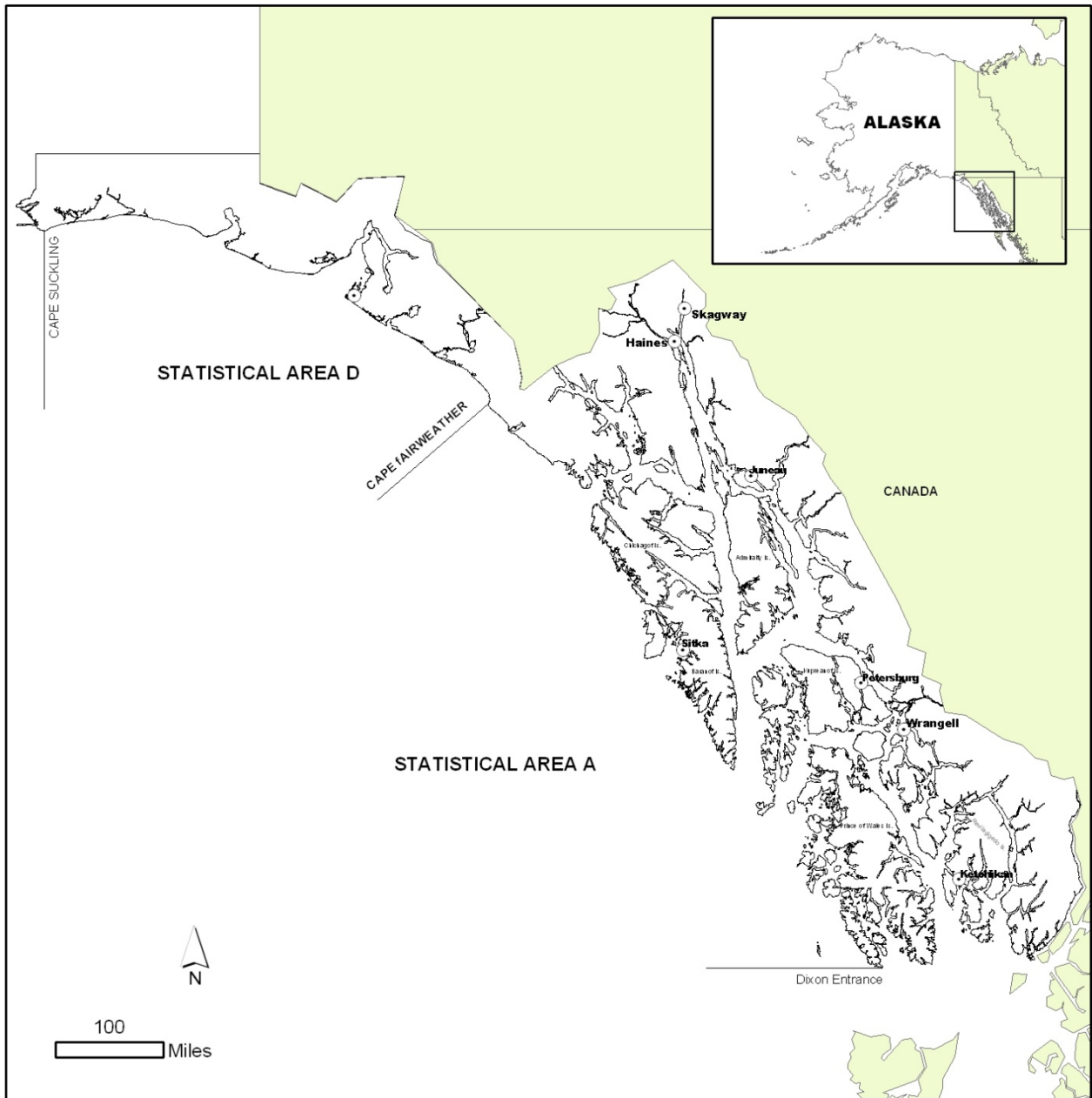


Figure 1.1–Registration Area A (Dixon Entrance to Cape Fairweather) and Registration Area D (Cape Fairweather to Cape Suckling).

CHAPTER 2: SOUTHEAST ALASKA RED AND BLUE KING CRAB FISHERY

INTRODUCTION

This chapter presents an overview of the commercial red and blue king crab fishery in Southeast Alaska (Registration Area A) with emphasis on the last three fishing seasons, 2008/2009, 2009/2010, and 2010/2011. Information is presented on historical harvest and effort, regulation development, research results, and stock assessment.

Red king crabs, *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 200 fathoms and 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 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 ft x 7 ft x 30 inch) and top-loading pyramid or conical-style pots with 5 ft to 8 ft 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 board. The management 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 (CW) of 7 inches can be taken;
3. limits of 20 to 50 pots per vessel, depending on stock size; and,
4. guideline harvest levels (GHLs) based on appropriate 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 lbs to more than 2 million lbs in 1968, with between seven and nine 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 lbs. These relatively large harvests were due to liberal gear and season regulations, a smaller minimum legal size (6.5 inches CW), harvests that included a combination of red, golden, and blue king crab, and the lack of constraining 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 lbs 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 lbs after 4.5 months of fishing by 20 permit holders. The minimum legal size was subsequently increased to 7 inches CW 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 lbs of red king crab. The peak harvest of 658,087 lbs was taken by 39 permit holders during the 1979/1980 season. Fishing effort peaked during the 1983/1984 season when 97 permit holders caught 280,681 lbs of red king crab (Table 2.1). During the 1984/1985 season, 95 permit holders caught 270,495 lbs 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 lbs. The fishery continued during the next four seasons, with an average harvest of about 300,000 lbs 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 lbs for the 1998/1999 and 2000/2001 fishing seasons; hence the fishery was closed. Harvest over the last three open seasons has averaged 212,400 lbs. Beginning with the 2002/03 season, the minimum threshold was reduced to 200,000 lbs. The fishery was closed during the 2004/2005 and 2006/2007 through and 2010/2011 seasons due to estimates of allowable harvest less than the minimum threshold.

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 fishermen 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.

In 1988 the board 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, seven resulted in landings totaling 2,061 pounds. Thirty-six subdistricts were fished, with harvests reported from ten subdistricts. Two seasons of exploratory fishing with poor catch rates and limited industry interest indicated that no major concentrations of unexploited red king crab stocks were present in the area. Because of poor experimental fishery performance and difficulty in enforcing permit terms the board repealed regulations allowing for experimental king crab fishing in Southeast Alaska in 1990.

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 GHL. Section 11-A has been managed for a separate GHL beginning with the 1996/1997 season. Inseason harvest tracking to achieve the GHL with closure by emergency order has been conducted since 2001/2002 when the fishery length was 12 days. In 2002/2003 and 2003/2004 the fishery was closed after respectively eight and four fishing days and the fishery was not opened during the 2004/2005 season. The 2005/2006 season was open for four days in the surveyed areas and for 13 days in Section 11-A and the non-surveyed areas. The fishery has been closed to commercial fishing since the 2006/2007 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 CW was in place. The minimum legal CW was increased to seven 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.

In 2005, a regulation allowing a red king crab season to open with an eight inch minimum size limit was repealed. The department had not previously opened a fishery with an eight inch size limit for red king crabs and does not intend to in the future.

QUOTAS AND GUIDELINE HARVEST RANGES

A quota of 1.5 million lbs 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 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 lbs per season. This was increased to 600,000 lbs in 1974, and then reduced to 400,000 lbs in 1977.

Quotas were replaced by GHRs after 1977. The first GHR of 200,000 to 400,000 lbs was established in 1978. The GHR was increased to 300,000 to 600,000 lbs 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 lbs surplus legal sized crab had to be available before the commercial fishery would be opened. In 2002 this threshold was reduced to 200,000 lbs by the board in response to an industry proposal. Part of this threshold reduction included a three year sunset provision that was removed in 2005.

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 lbs and a 100-pot limit for GHLs above 400,000 lbs. 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 eight inches in the vertical dimension. 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 tags, which are purchased from the department. In 2005, escape ring placement was amended to clarify how escape rings were to be optimally located to escape non-legal size and female crabs. Also in 2005, the gear storage regulations were changed from a limit of three days to a limit of five days after closure of a portion of Registration Area A (Southeast Alaska).

MANAGEMENT PLAN

In 1993 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 the following:

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 GHL 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 fishermen in Section 11-A, lawful gear, and closed waters. A mandatory call-in program was implemented for all 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. CFEC adopted a maximum effort level of 61 permits for the red king crab fishery. Currently there are 63 permits eligible to participate in the red king crab fishery. Some of these permits are interim and may not be eligible to fish after the adjudication process is completed.

MANAGEMENT CONCERNS

PERSONAL USE HARVEST

Accurate harvest data from all users is important to the management of the fishery. Estimates of personal use red and blue king crab harvest come from three sources in Southeast Alaska: the statewide harvest survey, dockside creel census, and personal use permits. Personal use permits are required only in Section 11-A (Juneau area). Outside of Section 11-A, the maximum bag and possession limit of six male crabs per person per day. In Sections 12-B, 15-B, and 15-C the bag and possession limit is three male king crabs per person per day. Estimates of harvest for areas outside of Section 11-A come from the statewide harvest survey (SWHS; Jennings et al. 2011) and dockside creel census, both of these sources are believed to underestimate total harvest. A regionwide system to provide reliable estimates of personal use harvest from all areas would improve management of king crab in Southeast Alaska.

STOCK ASSESSMENT

Management of the commercial red king crab fishery in Southeast Alaska is abundance-based and requires annual assessments of stock size. Stock assessment requires three types of data: commercial harvest from the fish ticket database, personal use harvest, and CPUE and length/weight relationships from the stock assessment survey. These data, along with estimates of growth and natural mortality, are used as input to a 3-stage catch survey model (C-S model). The model provides annual estimates of legal and mature male crab population biomass for each major survey area. The biomass estimates obtained from catch-survey modeling are multiplied by acceptable exploitation rates determined by stock health in order to determine the harvestable surplus for each survey area. The biomass estimate for survey areas is subsequently expanded to a regional estimate using the mean proportion of harvest occurring in surveyed areas.

FISH TICKETS

Alaskan seafood processors are required to submit detailed fish tickets, recording harvest, effort, and location of harvest to the department. A fish ticket is submitted for each landing. Waters of Southeast Alaska are broken into 16 Districts, each further broken into Sections, which are divided into statistical areas of varying size and shape. Fish ticket data, archived in a statewide database, details red king crab harvest by statistical area since 1960.

PERSONAL USE HARVEST DETERMINATION

A personal use permit is required for fishermen in Section 11-A, and requires the holder to record the number of red king crab caught by date (Hebert et al. 2002, 2005, 2008; Suchanek 1995; Woodby et al. 1999). SWHS data is collected through a mail-out survey, sent to all purchasers of Alaska fishing licenses. The SWHS provides annual estimates of the number of king crab harvested by community of residence throughout the state.

Sport fishery creel survey data comes from dockside interviews of recreational fishermen as they land their catch to determine their effort and catch targeting red king crab. The creel survey is expanded to provide an annual estimate of catch by community of landing (Hubartt et al. 1993-1999).

Estimates of red king crab personal use harvest in Southeast Alaska are far less precise and accurate than estimates of commercial harvest and results of the three estimation methods vary considerably. A comparison of 1999–2003 creel census, SWHS and personal use permit harvest estimates found that, averaging 1999–2003 data, the former two methods produced estimates respectively 52% and 66% of the personal use permit harvest estimate (Hebert et al. 2005). This suggests that existing estimates of personal use red king crab harvest in Southeast Alaska may be low outside the Juneau (Section 11-A) area.

SURVEYS

The department has conducted a survey of red king crab abundance in Southeast Alaska since 1979. The surveys provide indices of crab abundance by sex and recruit class in terms of crabs per pot per day. The survey is conducted in areas where the majority of red king crab harvest occurs (Figure 2.1). Currently 80% of commercial harvest comes from the nine survey areas.

Significant improvements, resulting in successive decreases in the coefficient of variation (CV) of CPUE data, have been implemented over the 30-year survey time series. These include a move from fixed to random pot locations and development of strata in 1986, a gradual shift from square to cone pots over the period 1995–1999, and most recently, restratification of the survey to redefine strata boundaries based upon the CPUE of legal, sublegal, and female red king crab in 2005 (Clark 2008). A detailed timeline and methods of survey development has been detailed elsewhere (Clark 2008; Clark et al. 2003).

Because of industry concerns over the red king crab stock assessment program, an external review was conducted in 2005. The general tone of the review was positive, no biases or inherent flaws in the methods were identified (Quinn et al. 2006) but several suggestions for improvements were made and are being gradually implemented. Nonetheless, because of continued industry concerns, a project to independently estimate red king crab population size was initiated cooperatively with industry in fall 2010 and is currently ongoing.

BIOMASS ESTIMATION

The biomass of legal (≥ 178 mm CW) and mature (>129 mm carapace length) male red king crab at the time of the survey is estimated using a 3-stage catch survey model (Collie and DeLong 1998). Inputs to this model are commercial harvest, and survey CPUE for prerecruit, recruit, and postrecruit crabs. An instantaneous rate of natural mortality of $M=0.32$, which translated to an annual natural mortality rate of 27%, and growth of 16 mm per molt for adult male crab are

assumed. These methods, and the rationale for the assumptions regarding natural mortality and growth, are described in more detail by Clark et al. (2003).

STOCK HEALTH DETERMINATION AND EXPLOITATION RATE

For each survey area, stock health is determined annually by a two-stage analysis of seven survey parameters. The seven survey parameters are the CPUEs of large mature females, small immature females, juvenile males, prerecruit males, recruit males, and postrecruit males and the percentage of large mature females having less than 25% clutch fullness. These survey parameters are first compared to an established baseline value, the mean from 1993 to 2007 and then short term trends are determined. Short term trends are based on individual regression analyses over the most recent four years, including the current year. The results of each of these survey parameter analyses are scored and used to determine exploitation rates for each survey area.

Exploitation rates, expressed in terms of the percentage of mature biomass harvested, range from 0% to 20% depending on stock health category. A harvest cap of 50% of the legal male biomass is also employed.

HARVESTABLE SURPLUS

For each survey area, the total harvestable surplus of legal male red king crab is determined as the product of the estimated biomass of mature male red king crab and the exploitation rate, unless this amount exceeds the maximum of 50% of the legal male biomass, in which case the total harvestable surplus becomes 50% of the legal male biomass. Mature, rather than legal, biomass is used to allow legal exploitation rates to vary with recruitment strength.

Total harvestable surplus is decremented by the most accurate estimate of personal use harvest for the current season to determine the remainder available for commercial harvest, or the commercial harvestable surplus.

To obtain a regional GHL estimate, the commercial harvestable surplus from the eight survey areas for which C-S estimates are produced annually is expanded by the proportion of commercial harvest from survey areas and by the historical proportion that is blue king crab. For the three most recent seasons where commercial harvest occurred, 2002/2003, 2003/2004, and 2005/2006, respectively 72.9%, 72.7%, and 46.5% of the harvest came from survey areas, and respectively 0.21%, 0.02%, and 0.00% of the harvest consisted of blue king crab. The historical mean proportion of the harvest from survey areas is 65.15%, for 1978–2004 seasons and of blue king crab is 1.1%.

REGIONAL OVERVIEW

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 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).

SAMPLING

Commercial red king crab fishery landings are sampled dockside at Juneau, Petersburg, Sitka, and Wrangell. Carapace length is measured and shell condition determined for 50-crab samples as crabs are delivered to processors. Crab average weight is also determined for each delivery sampled and skippers are interviewed to determine fishing location and effort. Recruit composition of the harvest can be determined from carapace length and shell condition frequency (Tables 2.5 and 2.6).

LOGBOOKS

Logbooks are mandatory for pot boats and provide information on red king crab catch and effort by statistical area and date.

RECENT SEASONS

The commercial red king crab fishery was closed for the 2008/2009 through 2010/2011 seasons.

2011/2012 SEASON OUTLOOK

The GHL for the 2011/2012 season is calculated at 201,000 lbs of red and blue king crab which exceeds the 200,000 lb minimum threshold to open the commercial fishery. This GHL was determined through a catch-survey analysis, for all surveyed bays with the exception of Holkham Bay where the model does not currently allow for a biomass estimate to be produced. Results of a mark/recapture project were used to adjust mature male biomass estimates in four of the nine areas surveyed.

The biomass estimates for legal and mature red king crab for the Southeast Region are 1.3 million lbs and 1.4 million lbs respectively for the 2011/2012 season. Although this is a 60% increase from 2010/2011, this increase is driven by adjustments from mark/recapture estimates in four out of the nine surveyed areas. The stock assessment matrix was not used to determine a harvest rate for the 2011/2012 season, however the matrix continues to provide an objective and repeatable evaluation of the survey data, and was considered in determining 2011/2012 stock status. Generally, the current stock assessment showed low levels of prerecruit and recruit CPUEs for all surveyed areas, but showed positive signs from survey CPUE data for postrecruits in Juneau, Lynn Sisters, and Port Frederick. The regionwide GHL of 201,000 lbs will be split into specific harvest objectives for four fishery areas. Section 11-A will have a preannounced 24 hour opening, while the other three areas—Excursion Inlet/St. James Area, Pybus/Gambier/Round Rock Area, and the Non-Surveyed Area—will be managed through inseason, daily call-ins of logbook data.

CHAPTER 2—TABLES AND FIGURES

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 1969/70 season.

Year/Season	Total catch	Number of landings^a	Number of permits^b
1960	3,424	ND	ND
1961	–	–	–
1962	1,289,550	ND	8
1963	1,112,200	ND	8
1964	820,530	ND	9
1965	579,300	ND	7
1966	105,899	ND	8
1967	599,078	ND	7
1968	2,199,722	ND	19
1969	1,899,930	122	39
1969/70	1,438,226	401	33
1970/71	389,373	150	20
1971/72	670,645	183	19
1972/73	528,025	198	19
1973/74	758,103	234	29
1974/75	535,534	201	46
1975/76	356,771	170	32
1976/77	328,145	174	35
1977/78	234,494	138	34
1978/79	443,639	165	34
1979/80	658,087	229	39
1980/81	532,674	193	35
1981/82	524,240	172	46
1982/83	412,474	114	58
1983/84	280,681	119	97
1984/85	270,495	121	95
1985/86–1992/93	-----Fishery Closed -----		
1993/94	202,384	180	83
1994/95	256,267	246	84
1995/96	357,815	203	73
1996/97	428,540	217	79
1997/98	308,322	187	76
1998/99	-----Fishery Closed -----		
1999/00	289,548	215	77
2000/01	-----Fishery Closed -----		
2001/02	296,967	177	77
2002/03	233,630	154	75
2003/04	193,759	93	67
2004/05	-----Fishery Closed -----		
2005/06	209,799	113	58
2006/07–2010/11	-----Fishery Closed -----		

– Fewer than three permits were fished; information is confidential.

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

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

Table 2.2–Red king crab stock health by survey area, 2008–2010. Long-term (l-t) scores are based on comparisons to the l-t average, defined from 1993–2007. Short-term (s-t) trends are based on individual regression analyses over the past four years including the current year. Total score is the sum of scores (+1, 0, -1 for l-t; +.25, 0, -.25 for s-t) for each response variable. For 2008, stock status is defined by the total score: < -1.5 = Poor, -1.5 to 1.5 = Moderate, and > 1.5 = Healthy; for 2009 and 2010: < -4.25 = Poor, -4.25 to -1.75 = Below Ave, -1.5 to 1.5 = Moderate, 1.75 to 4.25 = Above Ave, and > 4.25 = Healthy. Stock health for Holkham Bay is defined by the total score: < -1.75 = Poor, -1.75 to -0.75 = Below Ave, -0.5 to 0.5 = Moderate, 0.75 to 1.75 = Above Ave, and > 1.75 = Healthy due to less available data.

Survey area	Season	Clutch fullness		CPUE												Total score	Stock health
		Large females		Small females		Juvenile males		Prerecruit males		Recruit males		Postrecruit males					
		l-t	s-t	l-t	s-t	l-t	s-t	l-t	s-t	l-t	s-t	l-t	s-t				
Pybus Bay	08/09	1	0	-1	-0.25	-1	-0.25	-1	-0.25	0	0	0	0	0	0	-2.75	Poor
	09/10	1	0	-1	-0.25	-1	-0.25	-1	-0.25	-1	-0.25	-1	0	0	0	-5.00	Poor
	10/11	1	0	-1	-0.25	-1	0	-1	-0.25	-1	-0.25	-1	0	-1	0	-5.75	Poor
Gambier Bay	08/09	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	0	0	-4.00	Poor
	09/10	1	0	-1	0	-1	0	-1	-0.25	-1	0	-1	0	0	0	-4.25	Below Ave.
	10/11	1	0	-1	0	-1	0	-1	0	1	0.25	0	0.25	0	0	-0.50	Moderate
Seymour Canal	08/09	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-5.00	Poor
	09/10	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-5.00	Poor
	10/11	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-5.00	Poor
Peril Strait	08/09	1	0	-1	0	-1	0	-1	0	-1	0	0	0	0	0	-3.00	Poor
	09/10	1	0	0	0	-1	0	-1	0.25	-1	-0.25	0	0	-1	-0.25	-3.25	Below Ave.
	10/11	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-1	0	-5.00	Poor
Juneau Area	08/09	1	0	-1	-0.25	-1	0	-1	0	-1	-0.25	-1	-	0	-0.25	-5.00	Poor
	09/10	1	0	-1	-0.25	-1	-0.25	-1	-0.25	-1	-0.25	-1	0	0	0.25	-4.75	Poor
	10/11	1	0	-1	0	-1	0	-1	0	-1	0	-1	0	0	0.25	-3.75	Below Ave.
Lynn Sisters	08/09	1	0	-1	0	-1	0	-1	0	0	0	0	0	0	0	-2.00	Poor
	09/10	1	0	-1	-0.25	-1	0	-1	0	0	0	0	0	1	0.25	-1.00	Moderate
	10/11	1	0	-1	0	-1	-0.25	-1	-0.25	-1	-0.25	0	0	1	0	-2.75	Below Ave.
Excursion Inlet	08/09	1	0	0	0	-1	-0.25	-1	-0.25	-1	0	0	0	-1	0	-3.50	Poor
	09/10	0	0	-1	0	-1	0	-1	0	-1	0	-1	0	0	0	-5.00	Poor
	10/11	0	0	0	0	-1	0	-1	0	-1	0	-1	0	0	0	-4.00	Below Ave.
Port Frederick	08/09	1	0	-1	0	-1	0	-1	0	-1	0	0	0	0	0	-3.00	Poor
	09/10	0	0	-1	0	-1	0	-1	-0.25	-1	-0.25	-1	0	-1	-0.25	-6.75	Poor
	10/11	-1	0	-1	0	-1	0	-1	0	-1	-0.25	-1	0	0	0	-6.25	Poor
Holkham Bay	08/09	-	-	-	-	-	-	-	-	-1	0	-1	-	-1	-0.25	-3.50	Poor
	09/10	-	-	-	-	-	-	-	-	-1	0	-1	0	-1	-0.25	-3.25	Below Ave.
	10/11	-	-	-	-	-	-	-	-	-1	0	-1	0	-1	0	-3.00	Below Ave.

– For Holkham Bay only legal grounds are surveyed resulting in a very low numbers of large females, small females, and juvenile males captured. Thus this data is not used in determining stock health.

Table 2.3.– Biomass estimates, and recommended exploitation rates, and guideline harvest levels (GHLs) for eight surveyed areas, 2008/2009 through 2010/2011 seasons. See the stock health determination matrix in Table 2.2 for a more detailed look at data behind stock health determination. Recommended exploitation rates are 0% of estimated mature male biomass for Poor stock status, 5% for Below Ave., 10% for Moderate, 15% for Above Ave., and 20% for Healthy stock health. An expansion factor of 65.2% and an assumed blue king crab catch of 1% of total were used to determine the total regional crab biomass. This expansion factor was based on the percentage of commercial catch harvested in surveyed areas from 1978–2004.

Parameter	Season	Survey area									Blue king crab	Total
		Pybus Bay	Gambier Bay	Seymour Canal	Peril Strait	Juneau Area	Lynn Sisters	Excursion Inlet	Port Frederick	Other areas		
Mature biomass	08/09	122,529	59,431	22,770	68,845	331,517	50,664	57,043	22,553	393,182	7,808	1,136,343
	09/10	133,065	39,342	10,617	34,831	301,390	47,522	35,773	14,032	329,671	6,547	952,789
	10/11	82,350	84,209	8,358	25,244	246,309	35,716	28,635	14,434	280,845	5,577	811,676
Legal biomass	08/09	87,517	47,666	22,283	51,791	250,415	35,722	27,745	18,338	289,518	5,750	836,744
	09/10	117,060	33,619	10,569	27,698	259,122	39,889	21,723	12,952	279,442	5,549	807,623
	10/11	80,804	42,105	8,132	21,005	210,094	33,468	20,077	12,899	229,157	4,551	662,293
Mature ER	08/09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ND	ND	ND
	09/10	0.00	0.05	0.00	0.05	0.00	0.10	0.00	0.00	ND	ND	ND
	10/11	0.00	0.10	0.00	0.00	0.05	0.05	0.05	0.00	ND	ND	ND
Legal ER	08/09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ND	ND	ND
	09/10	0.00	0.06	0.00	0.06	0.00	0.12	0.00	0.00	ND	ND	ND
	10/11	0.00	0.20	0.00	0.00	0.06	0.05	0.07	0.00	ND	ND	ND
Total GHL	08/09	0	0	0	0	0	0	0	0	ND	ND	ND
	09/10	0	1,967	0	1,742	0	4,752	0	0	ND	ND	ND
	10/11	0	8,421	0	0	12,315	1,786	1,432	0	ND	ND	ND
Personal use catch	08/09	0	0	0	0	0	0	0	0	ND	ND	ND
	09/10	0	0	0	0	0	0	0	0	ND	ND	ND
	10/11	0	0	0	0	7,389	0	0	0	ND	ND	ND
Commercial GHL	08/09	0	0	0	0	0	0	0	0	0	0	0
	09/10	0	1,967	0	1,742	0	4,752	0	0	4,524	90	13,075
	10/11	0	8,421	0	0	4,926	1,786	1,432	0	8,857	176	25,597

Table 2.4—Red king crab harvest in thousands of pounds by district and season in Registration Area A, 1970/71 to present.

Season	District															Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1970/71	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	—	45.8	116.4	119.6	—	—	—	53.8	389.4
1971/72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	197.6	259.4	—	95.8	—	—	670.6
1972/73	—	0.0	0.0	0.0	0.0	—	0.0	16.8	—	223.8	103.6	—	40.0	—	0.0	528.0	
1973/74	0.0	0.0	0.0	0.0	—	—	—	—	21.2	365.1	120.7	—	98.7	87.1	—	758.1	
1974/75	—	0.0	0.0	0.0	0.0	—	—	8.3	27.9	124.5	74.1	60.2	101.2	128.8	8.5	535.5	
1975/76	0.0	0.0	0.0	0.0	—	—	0.0	15.5	—	30.4	35.1	53.4	95.8	116.1	—	356.8	
1976/77	0.0	0.0	—	0.0	—	—	0.0	16.7	17.5	49.3	82.0	—	—	63.8	24.7	328.1	
1977/78	—	0.0	0.0	0.0	—	—	0.0	—	0.0	43.1	64.5	—	—	18.5	—	234.5	
1978/79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	118.5	122.9	14.1	112.5	40.2	28.9	443.6	
1979/80	—	0.0	0.0	0.0	—	—	—	—	—	168.4	220.2	39.5	79.4	89.1	11.8	658.1	
1980/81	—	0.0	0.0	0.0	0.0	—	—	27.4	—	163.7	179.2	—	73.4	—	39.9	532.7	
1981/82	0.0	0.0	0.0	0.0	—	—	—	—	—	114.4	135.4	32.7	116.7	32.8	52.8	524.1	
1982/83	0.0	0.0	0.0	0.0	7.3	0.0	—	—	—	77.4	53.8	98.0	70.8	79.5	20.5	412.6	
1983/84	—	0.0	—	0.0	—	—	—	0.0	—	79.5	35.2	30.2	46.7	50.8	1.9	280.7	
1984/85	—	0.0	—	0.0	0.0	0.0	0.0	0.0	—	58.7	89.0	14.2	51.9	48.9	6.2	270.5	
1985–1992	-----Fishery Closed-----																
1993/94	0.0	0.0	0.0	0.0	0.0	—	0.0	—	2.4	29.6	76.9	38.9	22.7	10.3	20.9	202.4	
1994/95	0.0	0.0	0.0	0.0	—	0.0	0.0	—	—	69.5	113.5	24.8	21.8	13.4	6.6	256.3	
1995/96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	169.7	142.2	—	13.1	18.5	6.3	357.8	
1996/97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	1.5	176.7	206.2	2.2	18.3	18.0	—	428.5	
1997/98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	76.7	184.2	—	—	25.3	8.0	308.3	
1998/99	-----Fishery Closed-----																
1999/00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	43.5	191.9	11.7	—	32.9	9.3	289.5	
2000/01	-----Fishery Closed-----																
2001/02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	83.0	147.9	5.9	—	41.6	15.5	297.0	
2002/03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	69.2	96.1	10.0	—	41.6	11.4	233.6	
2003/04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	64.0	98.2	4.1	0.0	19.8	7.5	193.8	
2004/05	-----Fishery Closed-----																
2005/06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	1.3	67.8	109.9	5.7	—	4.9	16.7	209.8	
2006/07	-----Fishery Closed-----																
2007/08	-----Fishery Closed-----																
2008/09	-----Fishery Closed-----																
2009/10	-----Fishery Closed-----																
2010/11	-----Fishery Closed-----																

— Fewer than 3 permits were fished; information is confidential.

Table 2.5—Summary of commercial red king crab length frequency and shell condition data collected during dockside sampling in Registration Area A, 1970/71 to present.

Season	Number of sampled		Carapace length (mm)			Recruitment ^a				Skip molts ^g	
	Boats	Crab	Average	Range	Recruits ^b	PR+1 ^c	PR+2 ^d	PR+3 ^e	PR+4 ^f		
1970/71	29	2,264	161.0	138–201	40.2	39.6	18.3	1.9	0.0	28.5	
1971/72	10	742	160.2	134–203	47.7	33.0	14.9	4.1	0.3	24.4	
1972/73	30	3,032	158.7	133–205	53.5	32.5	11.5	2.4	0.1	20.5	
1973/74	15	1,438	161.6	140–208	27.6	52.5	17.6	2.1	0.2	39.7	
1974/75	20	2,181	166.3	137–200	27.6	47.4	21.3	3.8	0.0	18.6	
1975/76	21	1,969	160.3	135–207	49.0	29.6	16.6	4.7	0.2	22.2	
1976/77	18	1,460	160.6	115–204	50.1	33.0	11.9	4.5	0.6	21.4	
1977/78	32	3,161	156.7	136–203	29.7	40.2	20.4	9.5	0.2	67.9	
1978/79	18	1,712	155.4	137–202	61.5	28.7	8.5	1.1	0.1	22.9	
1979/80	30	3,082	156.1	137–193	55.5	31.0	11.6	1.9	0.0	29.1	
1980/81	49	4,103	156.3	134–196	53.0	34.7	10.8	1.4	0.0	29.5	
1981/82	37	3,425	158.8	123–199	47.1	35.0	15.4	2.5	0.0	30.6	
1982/83	30	2,821	159.4	137–200	46.0	33.6	15.5	4.9	0.0	30.5	
1983/84	42	3,521	158.4	137–196	51.9	33.9	11.7	2.6	0.0	24.9	
1984/85	36	3,641	159.6	139–196	48.3	37.9	12.3	1.5	0.0	22.6	
1985–1992					-----Fishery Closed-----						
1993/94	116	8,601	162.9	103–209	30.5	46.5	19.4	3.6	0.0	30.3	
1994/95	124	7,974	162.8	90–209	34.5	33.1	23.4	9.0	0.1	36.9	
1995/96	73	5,882	159.4	96–204	56.2	30.1	9.5	4.2	0.1	17.8	
1996/97	132	7,744	161.5	113–212	38.6	44.0	12.9	4.4	0.2	28.8	
1997/98	111	5,919	164.4	122–207	28.2	44.0	23.4	4.5	0.0	33.6	
1998/99					-----Fishery Closed-----						
1999/00	136	6,320	161.1	135–199	44.5	29.7	17.9	7.9	0.1	34.1	
2000/01					-----Fishery Closed-----						
2001/02	105	5,162	160.1	135–195	40.4	43.0	15.2	1.4	0.0	31.4	
2002/03	66	3,217	161.4	138–194	41.4	37.7	18.4	2.5	0.0	28.5	
2003/04	53	2,619	159.9	138–195	49.4	34.6	13.7	2.3	0.0	23.6	
2004/05					-----Fishery Closed-----						

–continued–

Table 2.5–Page 2 of 2.

Season	Number of sampled		Carapace length (mm)			Recruitment ^a				Skip molts ^g
	Boats	Crab	Average	Range	Recruits ^b	PR+1 ^c	PR+2 ^d	PR+3 ^e	PR+4 ^f	
2005/06	58	2873	163.7	139–206	29.6	41.2	24.9	4.0	0.2	38.0
2006/07					-----Fishery Closed -----					
2007/08					-----Fishery Closed -----					
2008/09					-----Fishery Closed -----					
2009/10					-----Fishery Closed -----					
2010/11					-----Fishery Closed -----					

^a Recruitment is expressed as a percentage of the given size classes..

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

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

^d 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.

^e 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.

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

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

Table 2.6—Summary of commercial red king crab CPUE and average weight data collected during dockside sampling and interviews in Registration Area A, 1970/71 to present.

Season	Number			Weight (pounds)				Estimated no. crab caught	Percentage of catch sampled
	Boats interviewed	Pots	Crab	Average catch/pot	Range of catch/pot	Average	Range		
1970/71	1	ND	ND	ND	ND	8.6	ND	45,276	5.0
1971/72	ND	ND	ND	ND	ND	ND	ND	ND	ND
1972/73	ND	ND	ND	ND	ND	ND	ND	ND	ND
1973/74	ND	ND	ND	ND	ND	ND	ND	ND	ND
1974/75	ND	ND	ND	ND	ND	ND	ND	ND	ND
1975/76	2	ND	ND	ND	ND	8.4	7.5–9.2	42,523	4.6
1976/77	5	ND	ND	ND	ND	8.0	7.3–10.1	40,865	3.6
1977/78	15	ND	ND	ND	ND	7.5	6.9–9.8	31,391	10.1
1978/79	8	ND	ND	ND	ND	7.2	6.3–8.7	61,788	2.8
1979/80	4	ND	ND	ND	ND	7.4	6.6–7.9	88,931	3.5
1980/81	41	5,345	29,897	5.6	1.0–14.5	7.2	6.4–8.2	74,292	5.5
1981/82	19	600	900	1.5		7.2	6.5–8.7	72,692	4.7
1982/83	23	1,542	6,449	4.2	1.3–7.6	7.7	6.6–8.5	52,388	5.4
1983/84	29	3,693	4,165	1.1	0.2–4.3	7.0	5.5–8.5	40,034	8.8
1984/85	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-----				
1993/94	114	10,158	17,749	1.8	0.0–6.2	8.1	5.8–9.6	25,110	34.3
1994/95	120	9,087	15,063	1.7	0.0–7.8	8.0	6.2–10.3	31,914	25.0
1995/96	73	5,350	16,676	3.1	0.5–9.6	7.5	5.5–8.7	47,900	12.3
1996/97	129	11,958	36,449	3.1	0.4–11.5	7.8	6.3–9.6	54,662	14.2
1997/98	111	8,236	24,079	2.9	0.3–12.0	8.3	5.7–9.8	37,103	16.0
1998/99					-----Fishery Closed-----				
1999/00	136	12,003	26,733	2.2	0.2–18.4	7.6	5.5–10.0	38,098	16.6
2000/01					-----Fishery Closed-----				
2001/02	105	8,445	27,709	3.3	0.4–10.0	7.7	6.1–8.6	38,819	13.3
2002/03	66	4,213	14,489	3.4	0.5–10.8	7.9	6.6–9.2	29,686	10.8
2003/04	53	3,350	16,666	5.0	1.4–14.5	7.7	6.3–8.9	25,262	10.4
2004/05					-----Fishery Closed-----				
2005/06	58	5,261	20,054	3.8	0.9–10.4	8.0	7.0–9.8	26,192	11.0
2006/07					-----Fishery Closed-----				

–continued–

Table 2.6–Page 2 of 2.

Season	Number			Average catch/pot	Range of catch/pot	Weight (pounds)		Estimated no. crab caught	Percentage of catch sampled
	Boats interviewed	Pots	Crab			Average	Range		
2007/08				-----	Fishery Closed	-----			
2008/09				-----	Fishery Closed	-----			
2009/10				-----	Fishery Closed	-----			
2010/11				-----	Fishery Closed	-----			

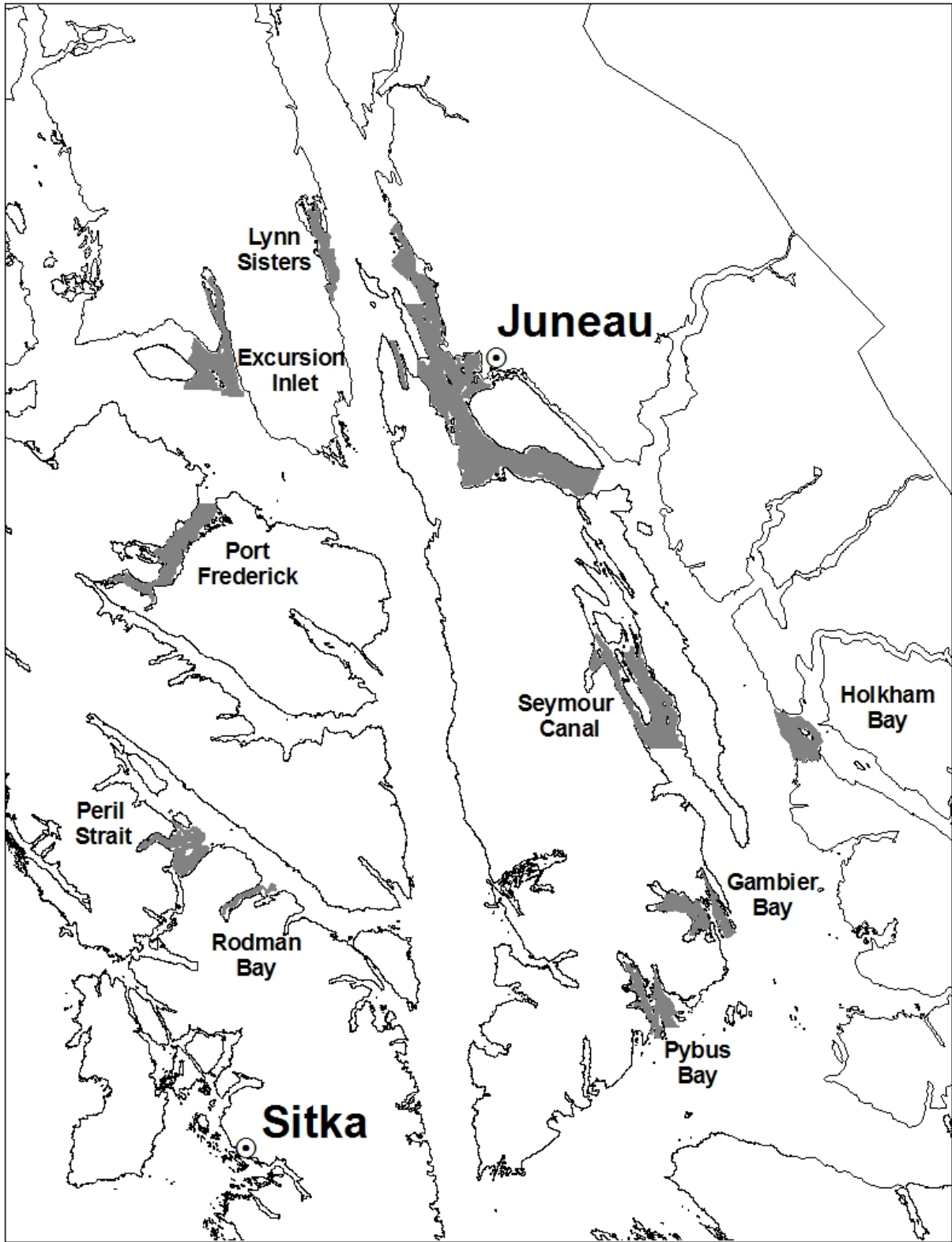


Figure 2.1–Map showing red king crab survey areas in Southeast Alaska.

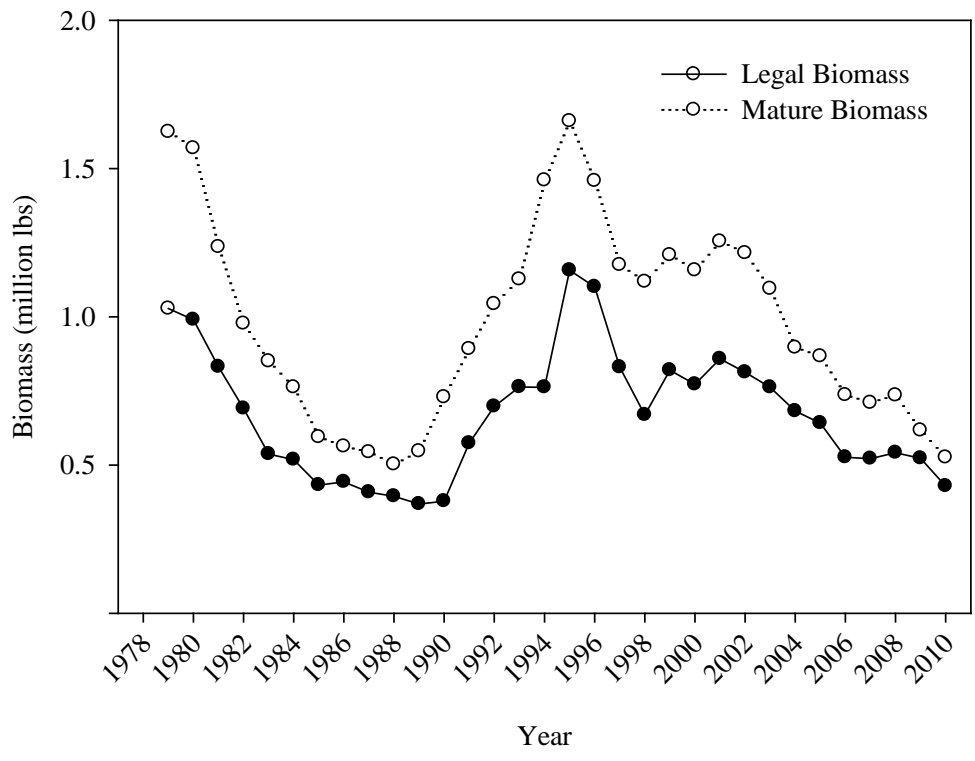


Figure 2.2—Total biomass estimates of mature and legal red king crab from eight surveyed areas in Southeast Alaska. Estimates are based on Catch-Survey Analysis (CSA) methodologies and do not include Holkham Bay and non-surveyed areas.

CHAPTER 3: SOUTHEAST ALASKA GOLDEN KING CRAB FISHERY

INTRODUCTION

This chapter presents an overview of the commercial golden king crab fishery in Southeast Alaska (Registration Area A) with emphasis on the most recent three seasons, 2008/2009, 2009/2010, and 2010/2011, with an outlook for the 2011/2012 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, however stock status is assessed using fish ticket, logbook, dockside sampling, and onboard observer data.

LIFE HISTORY

Golden king crabs, *Lithodes aequispinus*, are distributed from the deeper waters, between 100 and 350 fathoms, of Southeast Alaska. Few golden king crabs are harvested from the southern portion of Southeast Alaska although their range extends to British Columbia (Butler and Hart 1962). 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 (Figures 3.1 and 3.2)

The biology of golden king crabs is poorly understood, but they are thought to have a 24-month reproductive cycle (Otto and Cummiskey 1985), asynchronous timing of mating and molting (McBride et al. 1982; Otto 1984; Sloan 1985) and large yolk-rich eggs with low fecundity—about 30,000 (Jewett et al. 1985). Relatively long-lived, golden king crab males in Southeast Alaska become sexually mature at a size of approximately 118 mm CL (Jewett et al. 1985; Koeneman and Buchanan 1985; Otto 1984). Extrapolating the juvenile growth data of Paul and Paul forward (Paul and Paul 2001a) this size is approximately 8 years of age. Golden king crab in Southeast Alaska enter the fishery at 178 mm CW, which corresponds to 150.6 mm CL (using the length-width relationship of $CL = 44.336 + .8875 * CW$ from (Koeneman and Buchanan 1985). Adult male molt increment is probably the only parameter that has been well-described for this species in Southeast Alaska, where it is estimated as 16.4 mm CL (Koeneman and Buchanan 1985). Using this molt increment, the legal size is between two and three molts from the mature size; since molt frequency is only slightly more than 12 months at this size this means that male golden king crabs in Southeast Alaska have in excess of two years to contribute to the reproductive potential of the population before they begin to be exploited at about 10.5 years of age. From the legal size of 156.6 mm CL to the maximum observed size in the fishery of 215 mm CL is four molts. Since the molt frequency begins to decline at sexual maturity, it is likely to take in excess of four years to reach this maximum size. Using a molt frequency of 48 months, the maximum age would be approximately 18.5 years of age.

COMMERCIAL FISHERY

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 ft x 7 ft x 30 in) and top loading conical or pyramid-style pots. Because of challenging fishing conditions, fishermen 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 adopted by the board. Primary elements of the management plan are as follows:

- Seasons that open concurrently with the Tanner crab fishery,
- Harvest of only male crabs with a minimum legal CW,
- Gear limits of 100 pots per vessel,
- Seven separate management areas, and
- GHRs by management area based on historic harvest levels.

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. Reliable golden king crab harvest data have 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 lbs 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 (Table 3.1). This effort level resulted in an average harvest of 824,383 lbs. These relatively high harvests coincided with four years of good recruitment starting in 1983 and ending by 1988. Fishing effort peaked during the 1984/1985 season when 124 permits fished for a harvest of 848,818 lbs. Harvest peaked two seasons later during the 1986/1987 season when only 51 permits fished for a harvest of 1,016,011 lbs. Although effort and harvest declined through the 1995/1996 season when only 16,000 lbs was harvested they have increased since then in response to increasing recruitment.

The development of the golden king crab fishery in Southeast Alaska occurred in five phases. Initial development (first phase) occurred from in 1960 through the 1971/1972 fishing season. This development phase was characterized by fishermen 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 by the board 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 lbs occurred during the 1986/1987 season and declined through the 1995/1996 season due to lack of recruitment and overexploitation. The fishery was separated into five management areas with GHRs 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 seven seasons, to a low of 15,718 lbs 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 fishermen 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.

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 the day with most favorable tides between February 10 and 17, 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 GHLs. In recent seasons, the fishery areas have closed between February and November, 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 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 seven 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 board developed a regulation allowing the department to open a fishery on male golden king crabs 6 ½ inches or greater in CW 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 et al. 1985), 110 mm CL in Prince William Sound (Paul and Paul 2001b), 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 well with the standard of ‘size at maturity plus two molts of growth’ but if the size at maturity is 130 mm CL as in the Southern Bering Sea then the current seven 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 et al. 1986, 1987). Removal of infected crabs may improve stock reproduction and growth.

QUOTAS AND GUIDELINE HARVEST RANGES

In 1970, a quota of 1.5 million lbs 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 lbs was established for the golden king crab fishery. This quota remained in regulation through 1977. After 1977, GHRs replaced quotas. The first GHR of 50,000 to 200,000 lbs was established in 1978. The GHR was increased to 200,000 to 500,000 lbs in 1981 based on industry recommendations. This GHR remained in regulation through the 1986/1987 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 preseason. 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 inseason.

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. The following five defined fishing areas and GHRs existed in regulation until 2005:

- Frederick Sound Area: 0 to 250,000 lbs
- Icy Strait Area: 0 to 200,000 lbs
- Chatham Strait Area: 0 to 150,000 lbs
- Cape Ommaney Area: 0 to 50,000 lbs
- Clarence Strait Area: 0 to 25,000 lbs

From the 2001/2002 season through the 2004/2005 season the original five management were managed as seven; Frederick Sound and Icy Strait areas were split and managed as two sub areas each with their own GHRs as follows:

- Frederick Sound 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). GHR is 0 to 225,000 lbs.
- North Frederick Sound Sub area (all waters of Sections 11-B and 11-C). GHR is 0 to 25,000 lbs.
- Icy Strait Area (all waters of Sections 11-A, 13-C and 13-A in Peril Straits east of Point Kakul, and Districts 12 and 15). GHR is 0 to 110,000 lbs.
- West Icy Strait Sub area (all waters of District 14). GHR is 0 to 90,000 lbs.
- Chatham Strait Area: GHR is 0 to 150,000 lbs.
- Cape Ommaney Area: GHR is 0 to 50,000 lbs.
- Clarence Strait Area: GHR is 0 to 25,000 lbs.

In 2005, the two sub areas that had been unofficially managed separately were officially added as distinct management areas. Secondly the areas formerly managed as the Icy Strait Area and West Icy Strait Sub area had their GHRs altered to more accurately represent historic harvests. Lastly, all seven areas were renamed. Since the 2005/2006 season the area names (Figures 9.1 and 9.2) and associated GHRs are as follows:

- East Central Area: 0 to 225,000 lbs
- North Stephens Passage Area: 0 to 25,000 lbs
- Northern Area: 0 to 145,000 lbs
- Icy Strait Area: 0 to 55,000 lbs
- Mid Chatham Strait Area: 0 to 150,000 lbs
- Lower Chatham Strait Area: 0 to 50,000 lbs
- Southern Area 0 to 25,000 lbs

In 2009, GHRs for three fishery areas were changed. Since the 2009/2010 season the GHRs are as follows:

- East Central Area: 0 to 300,000 lbs
- North Stephens Passage Area: 0 to 25,000 lbs
- Northern Area: 0 to 175,000 lbs
- Icy Strait Area: 0 to 75,000 lbs
- Mid Chatham Strait Area: 0 to 150,000 lbs
- Lower Chatham Strait Area: 0 to 50,000 lbs
- Southern Area 0 to 25,000 lbs

Because this fishery lacks fishery-independent survey information, trends in stock abundance are sometimes difficult to detect. Annually varying GHLs without fishery independent justification can confuse rather than enhance detection of trends. For this reason, the department decided to begin applying GHLs for a three-year period prior to the start of the 2003/2004 season, using the same GHLs as were used in the 2002/2003 season. This strategy was discussed at the 2003 KTTTF meeting and was used again prior to the start of the 2005/2006 season. This strategy was repeated again prior to the 2008/2009 season, but changes to three fishery area GHRs at the 2009 board meeting provided the opportunity to reassess GHLs before the 2009/2010 season.

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 in escape rings or a panel of 9-in 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. The rigid tunnel eye openings for standard side loading pots must be no less than five inches in any one dimension with tunnel eye opening perimeters that individually are more than 36 inches. 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 ten 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. A recent estimate of pot type fished in the 2007/2008 fishery noted that 90% of the pots fished were cone-type pots.

In 2005, escape ring placement was amended to clarify how escape rings were to be optimally located to escape non-legal size and female crabs. Also in 2005, the gear storage regulations were changed from a limit of three days to a limit of five days after closure of a portion of Registration Area A (Southeast Alaska). In 2009, the board allowed king crab to be taken in a Tanner crab pot if both seasons are open and both permits are held.

LIMITED ENTRY

In January 1984 CFEC established a limited entry program for the king and Tanner crab pot fisheries in Southeast Alaska. CFEC adopted a maximum effort level of 52 permits for the golden king crab fishery. Currently there are 55 possible permits eligible to participate in the golden king crab fishery. Some of these permits are interim and may not be eligible to fish once the adjudication process is completed.

MANAGEMENT CONCERNS

Fish tickets, logbooks and dockside sampling data provide a postseason analysis of stock condition, and a limited estimate of future stock condition. To date these three data sources have been used to adjust GHGs. For the last six seasons the GHGs have been set at three year intervals. It is likely that future stock analysis will include more information on the female and sublegal components of the stocks since the resurgence of the onboard observer program. Catch rates in the fishery have been stable over the past three seasons. Catch rates improved in all areas in the 2007/2008 season, resulting in the highest catch per landing in the history of the fishery (Table 3.1).

Currently the fishery is managed through call-ins of logbook data. Compliance with the call-in requirement is good, but most vessels use unreliable cellular communications to relay logbook data. The department is considering increasing the frequency of these call-ins to more accurately stay apprised of progress towards GHGs, catch rates, and the movement of the fleet. Under the current limit of 100 pots per vessel it is difficult to allow enough advance notice of fishery area closures in consideration of tides and weather. This has often led to exceeding fishery area GHGs. Management precision would improve if the pot limits were reduced. Lastly, there has been continuing industry pressure to increase GHRs in light of healthy fisheries over the past decade. The GHRs for three fishery areas were increased in 2009, with the upper end of the GHRs now approaching the average harvest in the 1980s. With increased GHRs the department anticipates pressure to increase GHGs to levels that may be unsustainable. This fishery has already gone through a decade of high harvests in the 1980s, which were followed by seasons of much reduced harvest in the mid-1990s (Table 3.1). Despite current indications of a healthy fishery with consistent harvests, any future increase in GHRs should be based on the best available stock status data.

STOCK ASSESSMENT

Golden king crab stock status is determined and GHGs are set on a triennial basis using fish ticket, logbook, dockside sampling, and onboard observer information. GHGs are adjusted based on trends in these data. The last stock status determination and GHG-setting occurred prior to the 2009/2010 season, and the next is planned prior to the 2012/2013 season.

LOGBOOK

Since the 1999/2000 season, the department has required vessels participating in the golden king crab fishery to maintain a logbook of their catch throughout the season. Information in the logbooks includes; date, area description, statistical area, number of pot lifts, number of legal golden and blue king crab, and type of gear used. Logbook information is used for monitoring harvest inseason to estimate CPUE to assist with targeting GHGs, and in some years for Leslie depletion estimations of harvest rate.

DOCKSIDE SAMPLING

Department personnel have sampled dockside deliveries of golden king crab, for carapace length, and shell condition at various ports throughout the region since 1970 (Table 3.11) Length frequency data are used to monitor recruitment trends and the relative contribution of various recruit-classes of crab. Department personnel began collecting average weight data dockside in 1974 (Table 3.12); this data provides additional insight into stock dynamics. In 1985, skipper interviews were initiated to provide an estimate of CPUE.

OBSERVER PROGRAM

The department reinstated a program of deploying observers onboard volunteer vessels to sample the catch of golden king crab when funding became available beginning in the 2006/2007 season. Vessels with observers were asked to close the escape rings, or 9-in stretch mesh panel, on up to 20 of their pots. This program provides data on the commercial catch rate of sublegal and female golden king crabs in the fishery and may provide a useful index of prerecruit abundance.

During the 2008/2009 season, 10 observer trips were conducted in five management areas: Mid Chatham Strait, Northern, Icy Strait, North Stephens, and Lower Chatham Strait.

During the 2009/2010 season, eight observer trips were conducted in six management areas: East Central, Mid Chatham Strait, Northern, Icy Strait, North Stephens Passage, and Lower Chatham Strait.

During the 2010/11 season, seven observer trips were conducted, one in each of the seven management areas: East Central, Mid Chatham Strait, Northern, Icy Strait, North Stephens Passage, and Lower Chatham Strait, and Southern. Observer program results are summarized elsewhere (Olson and Bishop In Prep.).

RECENT COMMERCIAL SEASONS

2008/2009 SEASON SUMMARY

The 2008/2009 season started on February 15, 2009. The department announced new GHGs by fishing area for the 2008/2009 season through a news release. As GHGs in each of the seven fishery areas were reached, fishing seasons were closed by area using emergency orders. The earliest closure was of the East Central Area on February 26. Northern closed shortly after on March 4. The Icy Strait Area closed March 12 and the Mid-Chatham Strait Area closed on April 17. The North Stephens Passage Area closed on May 15. The last area to close was the Southern Area on November 5. During the season, 36 permit holders fished and a total of 698,637 lbs 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). East Central, Northern, Mid Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.4–3.10).

Dockside sampling data from commercial landings indicated that an overall 39.9% of the crabs were recruit crabs and the average size was 170.2 mm in CL (Table 3.11). About 39.2% of the crabs landed were postrecruit 1s (Table 3.11).

2009/2010 SEASON SUMMARY

The start date for the 2009/2010 season was February 15, 2010. The department announced new GHs by fishing area for the 2009/2010 season through a news release. Fishing seasons were closed by area using emergency orders. The earliest closure was the East Central Area on February 24, followed by the Northern area on March 13. The Icy Strait Area closed on March 15, and the Mid-Chatham Strait Area closed on April 12. The North Stephens Passage Area closed on May 4. The last areas to close were the Lower Chatham Strait on June 22 and Southern on October 17. During the season, 38 permit holders fished and a total of 732,127 lbs 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). East Central, Northern, Mid Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.4–3.10).

Dockside sampling data from commercial landings indicated that 32.8% of the crabs were recruit crabs and the average size was 171.6 mm in CL (Table 3.11). About 40.7% of the crabs landed were postrecruit 1s (Table 3.11).

2010/2011 SEASON SUMMARY

The 2010/2011 golden king crab fishery opened concurrent with the commercial Tanner crab fishery on February 18, 2011. The start date had originally been set for February 15, 2011 but the season was delayed for 48 hours, and then another 24 hours due to adverse weather conditions. The department and KTTF had previously jointly established criteria by which the golden king crab fishery could be delayed or extended due to bad weather. The criteria stipulated winds 40 knots or higher throughout the region in the 3–4 days preceding the start of the fishery. The department felt that these criteria had not been met, but that a delay to the start of the fishery was warranted. The department also consulted with National Oceanic and Atmospheric Administration (NOAA) meteorologists, Alaska Wildlife Troopers (AWT), the US Coast Guard (USCG), KTTF, and crab permit holders and processors on the decision to delay the start date of both fisheries. Fishing seasons were closed by area using emergency orders. The earliest closure was East Central on March 9, followed closely by the Icy Strait Area on March 16 and the Northern Area on April 1. Mid-Chatham closed on April 13. The Southern Area closed on June 10 and the North Stephens Passage Area closed soon after on June 12. The last area to close was Lower Chatham Strait on September 23. During the season, 40 permit holders fished and a total of 687,505 lbs 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). East Central, Northern, Mid Chatham Strait, and Icy Strait produced the majority of the harvest (Tables 3.4–3.10).

Crabs harvested were large in the 2010/2011 season. Dockside sampling data from commercial landings indicated that only 23.2% of the crabs were recruit crabs (Table 3.11), the smallest percentage in the history of the fishery, and the average size was 175.1 mm in CL. About 41.0% of the crabs landed were postrecruit 1s (Table 3.11), and 25.7% were postrecruit 2s, the largest percentage of postrecruit 2s since the 1990/1991 season (Table 3.11).

2011/2012 OUTLOOK

A few adjustments were made to fishery area GHs prior to the 2009/2010 season. The 2011/2012 season will be the third consecutive season that the GHs adopted prior to the 2009/2010 season are used. The department will evaluate available information to adjust GHs prior to the 2012/2013 season.

CHAPTER 3—TABLES AND FIGURES

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), 1972/73 to present.

Season	Total harvest (lbs)	Number of landings	Number of permits	Pounds per landing
1972/73	177,544	85	12	2,089
1973/74	71,783	38	11	1,889
1974/75	32,332	28	9	1,155
1975/76	68,842	33	7	2,086
1976/77	75,046	30	6	2,502
1977/78	83,407	54	14	1,545
1978/79	52,476	66	10	795
1979/80	167,823	82	20	2,047
1980/81	704,622	158	30	4,460
1981/82	653,042	255	54	2,561
1982/83	804,437	283	70	2,843
1983/84	973,100	307	89	3,170
1984/85	848,818	277	124	3,064
1985/86	698,249	211	61	3,309
1986/87	1,016,011	222	51	4,577
1987/88	949,205	235	56	4,039
1988/89	968,296	228	59	4,247
1989/90	632,872	260	63	2,434
1990/91	426,882	221	40	1,932
1991/92	229,242	154	33	1,489
1992/93	103,781	80	18	1,297
1993/94	30,318	51	13	594
1994/95	39,344	65	19	605
1995/96	15,845	40	11	396
1996/97	67,164	62	16	1,083
1997/98	244,484	87	18	2,810
1998/99	367,782	105	30	3,503
1999/00	560,427	143	46	3,919
2000/01	530,765	189	45	2,808
2001/02	609,510	211	45	2,889
2002/03	562,384	189	48	2,976
2003/04	557,251	145	45	3,843
2004/05	557,725	130	42	4,290
2005/06	563,615	165	37	3,416
2006/07	581,101	131	34	4,436
2007/08	638,582	104	33	6,140
2008/09	698,637	134	36	5,214
2009/10	732,127	147	38	4,980
2010/11	687,505	172	40	3,997

Table 3.2—Commercial golden king crab harvest (in thousands of pounds) in Registration Area A by season (October through September) and month, 1972/73 to present.

Season	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1972/73	27.6	36.5	18.6	18.1	22.1	0.0	7.6	—	—	—	—	13.9
1973/74	4.4	—	0.0	—	12.2	8.7	24.8	0.0	0.0	0.0	0.0	5.0
1974/75	3.7	8.1	—	—	0.0	—	—	0.0	0.0	0.0	0.0	—
1975/76	—	—	—	—	—	13.2	1.7	—	0.0	0.0	—	—
1976/77	—	9.1	—	—	—	9.1	7.5	—	0.0	0.0	0.0	—
1977/78	—	—	—	14.2	10.0	11.7	14.3	0.0	0.0	0.0	0.0	—
1978/79	8.7	4.4	8.7	9.7	5.9	5.9	3.7	—	0.0	0.0	—	3.3
1979/80	4.7	8.2	4.9	9.0	16.5	34.8	44.9	10.4	—	8.8	0.0	18.7
1980/81	36.2	43.2	18.2	79.3	178.2	171.0	87.7	—	—	—	—	14.0
1981/82	43.0	41.7	44.0	17.9	65.8	80.9	70.7	20.9	82.0	70.0	55.8	60.4
1982/83	174.1	77.5	58.7	0.0	115.8	168.3	15.0	46.8	27.5	36.6	59.8	24.1
1983/84	23.7	50.6	11.0	33.7	152.7	303.5	287.8	53.4	32.2	11.0	6.9	6.6
1984/85	166.9	250.8	19.9	—	117.8	172.5	22.3	19.6	24.9	—	19.1	11.9
1985/86	39.9	53.8	41.1	32.1	241.0	249.1	8.6	—	14.7	—	—	—
1986/87	147.5	80.2	46.3	326.2	136.5	70.5	67.9	39.3	39.0	—	27.8	17.3
1987/88	13.2	15.2	10.3	264.6	297.4	80.2	64.0	79.0	63.8	29.3	20.1	12.2
1988/89	—	—	—	—	220.9	329.2	122.6	101.1	63.0	44.3	41.8	35.0
1989/90	78.8	31.8	6.5	5.9	71.1	145.3	68.2	60.3	55.7	42.2	23.3	43.7
1990/91	51.3	14.0	8.4	—	38.1	89.3	67.9	60.0	52.0	14.3	—	11.6
1991/92	18.7	17.7	16.0	10.8	8.7	48.0	56.2	29.6	—	—	—	—
1992/93	—	—	—	—	2.9	28.2	22.3	13.9	8.6	—	—	0.0
1993/94	0.0	0.0	0.0	0.0	2.6	9.1	13.1	5.6	0.0	0.0	0.0	0.0
1994/95	0.0	0.0	0.0	0.0	6.3	14.5	15.2	3.4	0.0	0.0	0.0	0.0
1995/96	0.0	0.0	0.0	0.0	2.3	—	5.0	—	—	0.0	0.0	0.0
1996/97	0.0	0.0	0.0	0.0	6.5	26.0	12.6	13.4	8.8	0.0	0.0	0.0
1997/98	0.0	0.0	0.0	0.0	14.5	81.0	95.2	40.3	—	0.0	0.0	0.0
1998/99	0.0	0.0	0.0	0.0	67.4	226.0	57.5	8.7	8.1	0.0	0.0	0.0
1999/00	0.0	0.0	0.0	0.0	256.0	237.1	51.3	13.8	—	0.0	0.0	0.0
2000/01	0.0	0.0	0.0	0.0	201.2	156.3	120.7	36.1	12.7	—	0.0	0.0
2001/02	0.0	0.0	0.0	0.0	205.9	259.6	106.6	32.2	5.3	0.0	0.0	0.0
2002/03	0.0	0.0	0.0	0.0	264.4	243.6	25.0	16.0	10.1	—	0.0	—

—continued—

Table 3.2–Page 2 of 2.

Season	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2003/04	0.0	0.0	0.0	0.0	411.1	98.3	18.8	10.1	–	–	–	–
2004/05	0.0	0.0	0.0	0.0	356.0	147.1	20.1	18.3	10.6	–	–	–
2005/06	21.6	–	–	0.0	195.8	244.0	43.1	15.6	–	0.0	–	17.0
2006/07	–	–	0.0	0.0	259.0	227.2	37.6	22.1	–	0.0	0.0	10.4
2007/08	0.0	0.0	0.0	0.0	476.6	99.4	35.0	–	–	–	–	–
2008/09	–	0.0	0.0	0.0	516.9	112.7	29.2	18.4	–	–	–	–
2009/10	–	0.0	0.0	0.0	489.7	141.8	61.8	14.6	–	–	–	–
2010/11	0.0	0.0	0.0	0.0	362.8	249.3	44.5	27.1	3.9	0.0	0.0	0.0

– Fewer than three permits were fished; information is confidential.

Table 3.3—Commercial golden king crab harvest (in thousands of pounds) in Registration Area A by district and season (October through September), 1972/73 to present.

Season	District															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1972/73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	1.5	128.6	19.0	—	0.0	—	—	177.5
1973/74	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.4	17.1	0.0	0.0	—	—	71.8
1974/75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	17.2	14.4	—	0.0	0.0	0.0	—	32.3
1975/76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	—	0.0	—	—	—	—	68.8
1976/77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	0.0	0.0	—	75.0
1977/78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	74.4	7.3	—	—	0.0	—	83.4
1978/79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.5	6.7	1.3	0.0	—	—	52.5
1979/80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	61.3	21.8	61.8	0.0	—	21.5	167.8
1980/81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	—	204.6	29.8	169.7	—	236.9	55.9	704.6
1981/82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	48.8	248.2	48.8	92.9	6.2	152.6	49.4	653.0
1982/83	0.0	0.0	0.0	0.0	0.0	13.9	—	—	109.3	186.5	44.6	228.7	12.9	151.7	39.3	804.4
1983/84	0.0	0.0	0.0	0.0	0.0	3.2	—	5.4	135.4	222.7	24.6	438.2	—	46.5	91.7	973.1
1984/85	0.0	—	0.0	0.0	0.0	—	14.1	—	192.3	375.9	34.5	153.3	2.5	52.8	13.7	848.8
1985/86	—	—	0.0	0.0	0.0	18.2	—	4.6	234.0	324.4	35.6	23.3	—	24.8	25.5	698.2
1986/87	—	0.0	0.0	0.0	0.0	10.1	—	—	609.3	298.8	43.8	—	0.0	1.5	16.2	1,016.
1987/88	0.0	0.0	0.0	0.0	0.0	—	—	—	298.0	318.6	36.9	195.7	0.0	16.4	67.0	949.2
1988/89	0.0	0.0	0.0	0.0	0.0	—	—	10.3	413.6	338.8	9.1	140.5	0.0	37.5	12.0	968.3
1989/90	—	0.0	0.0	0.0	0.0	—	0.0	—	231.3	146.1	6.9	206.0	0.0	30.2	9.2	632.9
1990/91	0.0	0.0	0.0	0.0	0.0	—	0.0	—	213.3	83.2	18.5	82.9	0.0	19.4	8.7	426.9
1991/92	0.0	0.0	0.0	0.0	0.0	—	—	—	137.8	13.1	21.0	38.1	0.0	9.2	4.0	229.2
1992/93	0.0	0.0	0.0	0.0	0.0	—	0.0	—	74.7	6.7	11.2	—	0.0	—	0.0	103.8
1993/94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	3.8	5.6	—	0.0	—	0.0	30.3
1994/95	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0	22.3	—	9.0	2.8	0.0	—	—	39.3
1995/96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	3.1	—	0.0	—	0.0	15.8
1996/97	0.0	0.0	0.0	0.0	0.0	—	0.0	—	—	3.9	15.7	0.0	0.0	0.0	0.0	67.2
1997/98	0.0	0.0	0.0	0.0	0.0	—	—	—	150.9	18.6	21.0	13.0	0.0	—	—	244.5
1998/99	0.0	—	0.0	0.0	0.0	—	—	—	190.8	57.8	13.1	37.4	0.0	52.1	—	367.8
1999/00	0.0	0.0	0.0	0.0	0.0	—	—	—	236.0	168.1	11.8	34.6	0.0	101.1	0.0	560.4
2000/01	0.0	0.0	0.0	0.0	0.0	—	—	0.0	246.4	114.6	11.6	104.5	—	41.2	2.9	530.8
2001/02	0.0	0.0	0.0	0.0	0.0	—	—	0.0	174.4	218.5	23.4	121.0	—	50.1	9.9	609.5
2002/03	0.0	—	0.0	0.0	0.0	—	—	0.0	156.8	153.5	35.6	165.8	—	45.1	—	562.4
2003/04	—	—	0.0	0.0	0.0	—	—	0.0	184.0	104.9	38.6	144.4	—	53.0	17.0	557.3

—continued—

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Season	District															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
2004/05	–	–	0.0	0.0	0.0	–	–	0.0	214.9	108.4	48.5	102.7	–	62.8	9.3	557.7
2005/06	0.0	–	0.0	0.0	0.0	–	–	0.0	208.9	126.5	23.6	116.7	–	61.3	18.1	563.6
2006/07	–	–	0.0	0.0	0.0	0.0	–	–	146.4	183.4	24.3	138.1	–	71.1	8.0	581.1
2007/08	–	–	0.0	0.0	0.0	0.0	–	0.0	177.5	178.3	54.9	145.0	–	58.5	–	638.6
2008/09	–	–	0.0	0.0	0.0	–	–	0.0	184.6	262.9	57.3	92.5	0.0	51.0	29.2	698.6
2009/10	–	–	0.0	0.0	0.0	–	13.3	0.0	270.1	201.8	45.7	112.0	–	42.1	39.3	732.1
2010/11	–	4.1	0.0	0.0	0.0	1.5	–	0.0	291.3	147.1	27.1	118.9	0.0	44.9	36.3	687.5

– Fewer than three permits were fished; information is confidential.

Table 3.4–Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the East Central management area by season (October through September), 1971/72 to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1971/72	148,391	49	5	3,028
1972/73	130,544	61	7	2,140
1973/74	50,393	21	6	2,400
1974/75	28,296	22	8	1,286
1975/76	–	–	–	–
1976/77	–	–	–	–
1977/78	74,465	40	6	1,862
1978/79	41,042	39	6	1,052
1979/80	64,257	32	7	2,008
1980/81	213,212	48	10	4,442
1981/82	251,930	85	10	2,964
1982/83	211,995	61	21	3,475
1983/84	254,407	78	23	3,262
1984/85	397,881	92	42	4,325
1985/86	392,323	71	23	5,526
1986/87	449,202	61	22	7,364
1987/88	393,464	48	25	8,197
1988/89	491,786	83	35	5,925
1989/90	184,111	90	37	2,046
1990/91	143,597	97	19	1,480
1991/92	38,487	35	12	1,100
1992/93	16,248	19	7	855
1993/94	10,277	13	4	791
1994/95	9,656	12	4	805
1995/96	–	–	–	–
1996/97	12,994	23	9	565
1997/98	76,803	27	11	2,845
1998/99	160,072	29	17	5,520
1999/00	299,585	47	21	6,374
2000/01	196,810	61	25	3,226
2001/02	267,637	99	29	2,703
2002/03	226,905	72	23	3,151
2003/04	233,655	53	24	4,409
2004/05	261,035	52	25	5,020
2005/06	249,330	65	16	3,835
2006/07	243,675	57	18	4,275
2007/08	251,004	29	14	8,655
2008/09	303,811	43	19	7,065
2009/10	308,013	51	24	6,039
2010/11	305,659	54	20	5,660

– Fewer than three permits were fished; information is confidential.

Table 3.5–Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the North Stephens management area by season (October through September), 1971/72 to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1971/72	–	–	–	–
1972/73	–	–	–	–
1973/74	16,961	10	4	1,696
1974/75	–	–	–	–
1975/76	0	0	0	0
1976/77	–	–	–	–
1977/78	7,349	10	6	735
1978/79	–	–	–	–
1979/80	17,748	21	6	845
1980/81	–	–	–	–
1981/82	41,994	28	7	1,500
1982/83	28,324	15	7	1,888
1983/84	16,674	14	10	1,191
1984/85	29,573	21	16	1,408
1985/86	26,432	28	11	944
1986/87	37,608	20	12	1,880
1987/88	16,280	19	11	857
1988/89	7,965	17	7	469
1989/90	5,450	18	6	303
1990/91	16,359	32	10	511
1991/92	20,377	32	11	637
1992/93	10,750	25	9	430
1993/94	5,548	30	8	185
1994/95	8,932	35	12	255
1995/96	2,960	23	10	129
1996/97	15,556	27	10	576
1997/98	19,888	16	6	1,243
1998/99	–	–	–	–
1999/00	11,678	18	11	649
2000/01	11,563	27	11	428
2001/02	23,335	22	10	1,061
2002/03	26,085	16	7	1,630
2003/04	19,608	25	10	784
2004/05	18,580	29	8	640
2005/06	16,366	12	3	1,364
2006/07	19,450	12	5	1,621
2007/08	27,441	9	7	3,049
2008/09	22,770	20	10	1,139
2009/10	20,568	18	7	1,143
2010/11	20,714	25	8	829

– Fewer than three permits were fished; information is confidential.

Table 3.6—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Mid-Chatham Strait management area by season (October through September), 1974/75 to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1974/75	—	—	—	—
1975/76	0	0	0	0
1976/77	0	0	0	0
1977/78	0	0	0	0
1978/79	0	0	0	0
1979/80	0	0	0	0
1980/81	0	0	0	0
1981/82	—	—	—	—
1982/83	89,870	22	9	4,085
1983/84	78,271	12	4	6,523
1984/85	112,704	24	11	4,696
1985/86	163,694	37	13	4,424
1986/87	412,789	86	16	4,800
1987/88	181,679	39	8	4,658
1988/89	224,211	42	7	5,338
1989/90	184,327	44	6	4,189
1990/91	111,348	42	5	2,651
1991/92	52,419	29	5	1,808
1992/93	—	—	—	—
1993/94	—	—	—	—
1994/95	—	—	—	—
1995/96	—	—	—	—
1996/97	—	—	—	—
1997/98	70,709	19	4	3,722
1998/99	73,934	17	5	4,349
1999/00	79,208	28	6	2,829
2000/01	126,579	34	10	3,723
2001/02	113,426	43	10	2,638
2002/03	78,284	47	15	1,666
2003/04	55,107	33	7	1,670
2004/05	61,841	20	4	3,092
2005/06	81,463	31	5	2,628
2006/07	78,416	26	5	3,016
2007/08	89,873	26	6	3,388
2008/09	123,626	27	8	4,579
2009/10	141,558	26	10	5,445
2010/11	114,966	32	10	3,593

— Fewer than three permits were fished; information is confidential.

Table 3.7–Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Northern management area by season (October through September), 1971/72 season to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1971/72	–	–	–	–
1972/73	–	–	–	–
1973/74	–	–	–	–
1974/75	–	–	–	–
1975/76	–	–	–	–
1976/77	–	–	–	–
1977/78	–	–	–	–
1978/79	6,835	17	5	402
1979/80	85,568	28	11	3,056
1980/81	247,940	73	18	3,396
1981/82	154,018	78	27	1,975
1982/83	271,729	92	33	2,954
1983/84	537,907	139	43	3,870
1984/85	170,458	70	49	2,435
1985/86	57,730	30	16	1,924
1986/87	43,773	27	12	1,621
1987/88	271,422	101	30	2,687
1988/89	153,588	65	21	2,363
1989/90	213,443	88	21	2,425
1990/91	91,963	52	18	1,769
1991/92	42,542	33	10	1,289
1992/93	2,960	9	4	329
1993/94	–	–	–	–
1994/95	3,669	10	6	367
1995/96	–	–	–	–
1996/97	0	0	0	0
1997/98	14,619	10	5	1,462
1998/99	40,208	18	6	2,234
1999/00	34,706	10	6	3,471
2000/01	108,058	53	18	2,039
2001/02	131,277	56	19	2,344
2002/03	178,938	60	22	2,982
2003/04	181,154	47	23	3,854
2004/05	142,449	36	20	3,957
2005/06	142,455	58	19	2,456
2006/07	152,145	38	15	4,004
2007/08	184,227	36	17	5,117
2008/09	156,261	44	17	3,551
2009/10	176,782	48	22	3,683
2010/11	161,522	52	21	3,106

– Fewer than three permits were fished; information is confidential.

Table 3.8–Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Icy Strait management area by season (October through September), 1971/72 season to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1971/72	–	–	–	–
1972/73	–	–	–	–
1973/74	–	–	–	–
1974/75	0	0	0	0
1975/76	–	–	–	–
1976/77	0	0	0	0
1977/78	0	0	0	0
1978/79	–	–	–	–
1979/80	–	–	–	–
1980/81	236,890	26	10	9,111
1981/82	152,441	50	23	3,049
1982/83	151,715	72	32	2,107
1983/84	46,514	48	28	969
1984/85	52,811	34	24	1,553
1985/86	24,827	19	9	1,307
1986/87	1,455	10	7	146
1987/88	16,356	16	12	1,022
1988/89	37,496	21	7	1,786
1989/90	30,168	21	11	1,437
1990/91	19,350	18	9	1,075
1991/92	–	–	–	–
1992/93	–	–	–	–
1993/94	–	–	–	–
1994/95	–	–	–	–
1995/96	–	–	–	–
1996/97	0	0	0	0
1997/98	–	–	–	–
1998/99	52,127	22	4	2,369
1999/00	101,111	21	14	4,815
2000/01	41,221	25	10	1,649
2001/02	50,080	25	8	2,003
2002/03	45,106	39	16	1,157
2003/04	53,034	22	12	2,411
2004/05	62,843	24	13	2,619
2005/06	61,290	35	13	1,751
2006/07	71,058	26	13	2,733
2007/08	58,453	26	14	2,243
2008/09	51,026	19	10	2,686
2009/10	42,136	21	9	2,006
2010/11	44,882	22	10	2,040

– Fewer than three permits were fished; information is confidential.

Table 3.9–Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Lower Chatham management area by season (October through September), 1971/72 season to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1974/75	–	–	–	–
1975/76	0	0	0	0
1976/77	0	0	0	0
1977/78	0	0	0	0
1978/79	0	0	0	0
1979/80	0	0	0	0
1980/81	0	0	0	0
1981/82	–	–	–	–
1982/83	19,124	4	7	4,781
1983/84	30,756	4	9	7,689
1984/85	61,644	10	13	6,164
1985/86	–	–	–	–
1986/87	47,136	7	17	6,734
1987/88	54,264	7	21	7,752
1988/89	46,076	4	14	11,519
1989/90	8,208	2	4	4,104
1990/91	44,260	4	24	11,065
1991/92	61,007	5	31	12,201
1992/93	20,193	2	8	10,097
1993/94	–	–	–	–
1994/95	0	0	0	0
1995/96	0	0	0	0
1996/97	0	0	0	0
1997/98	23,013	2	7	11,507
1998/99	14,694	2	7	7,347
1999/00	25,407	5	19	5,081
2000/01	37,560	4	14	9,390
2001/02	11,848	6	14	1,975
2002/03	5,630	2	9	2,815
2003/04	–	–	–	–
2004/05	–	–	–	–
2005/06	–	–	–	–
2006/07	7,736	7	3	1,105
2007/08	–	–	–	–
2008/09	20,004	8	3	2,501
2009/10	22,328	11	5	2,030
2010/11	17,786	14	5	1,270

– Fewer than three permits were fished; information is confidential.

Table 3.10—Golden king crab commercial harvest, number of landings, number of permits, and pounds per landing in the Southern management area by season (October through September), 1982/83 season to present.

Season	Total harvest (lbs)	Number of		Pounds per landing
		Landings	Permits	
1982/83	15,960	12	4	1,330
1983/84	—	—	—	—
1984/85	21,594	22	5	982
1985/86	25,232	24	4	1,051
1986/87	—	—	—	—
1987/88	—	—	—	—
1988/89	—	—	—	—
1989/90	—	—	—	—
1990/91	0	0	0	0
1991/92	—	—	—	—
1992/93	—	—	—	—
1993/94	0	0	0	0
1994/95	—	—	—	—
1995/96	—	—	—	—
1996/97	—	—	—	—
1997/98	—	—	—	—
1998/99	—	—	—	—
1999/00	—	—	—	—
2000/01	—	—	—	—
2001/02	—	—	—	—
2002/03	—	—	—	—
2003/04	—	—	—	—
2004/05	—	—	—	—
2005/06	—	—	—	—
2006/07	—	—	—	—
2007/08	—	—	—	—
2008/09	—	—	—	—
2009/10	20,724	20	3	1,036
2010/11	21,976	20	4	1,099

— Fewer than three permits were fished; information is confidential.

Table 3.11—Commercial golden king crab size frequency and shell condition data collected during dockside sampling in Registration Area A by season, 1969/1970 to present.

Season	Number of		Carapace length (mm)		Recruit composition ^a				Skip molts ^g	
	Boats sampled	Crabs sampled	Mean	Range	Recruits ^b	PR+1 ^c	PR+2 ^d	PR+3 ^e		PR+4 ^f
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

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Table 3.11–Page 2 of 2.

Season	Number of		Carapace length (mm)		Recruit composition ^a					Skip molts ^g
	Boats sampled	Crabs sampled	Mean	Range	Recruits ^b	PR+1 ^c	PR+2 ^d	PR+3 ^e	PR+4 ^f	
1998/1999	35	2,401	166.7	145-210	46.3	44.0	8.8	1.0	0.0	20.4
1999/2000	59	4,154	166.9	138-203	45.5	45.0	9.2	0.3	0.0	18.4
2000/2001	85	5,717	168.9	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	169.7	137-204	39.5	43.2	15.9	1.5	0.0	14.3
2003/2004	60	2,854	170.5	145-206	39.2	41.1	16.7	3.0	0.1	16.7
2004/2005	63	3,097	168.9	147-210	39.2	38.7	18.1	3.1	0.3	18.0
2005/2006	65	3,211	169.6	138-214	40.2	40.9	16.3	2.2	0.1	8.6
2006/2007	66	3,358	170.0	148-205	36.4	40.1	19.3	3.7	0.2	16.9
2007/2008	40	2,022	169.1	148-210	40.5	38.6	17.1	3.2	0.4	15.5
2008/2009	33	1,692	170.2	147-205	39.9	39.2	15.9	4.3	0.4	9.2
2009/2010	57	2,917	171.6	142-215	32.8	40.7	19.8	5.8	0.7	16.5
2010/2011	72	3,750	175.1	143-221	23.2	41.0	25.7	8.5	1.5	14.9

^a Recruitment is expressed as a percentage of the given size classes..

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

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

^d 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.

^e 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.

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

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

Table 3.12–Summary of traditional commercial golden king crab CPUE and average weight, 1973/1974 to present. Data was collected during dockside sampling and interviews.

Season	Number Sampled			Mean		Range of		Weight (lb)		Estimated no. crab harvested ^a	Percentage of harvest sampled ^b
	Boats interviewed	Pots lifted	Crab captured	catch/pot	catch/pot	Mean	Range	Mean	Range		
1973/74	1	ND	ND	ND	ND	6.9	6.9-6.9	10,388	5.8		
1974/75	ND	ND	ND	ND	ND	ND	ND	ND	ND		
1975/76	1	ND	ND	ND	ND	8.8	8.8-8.8	7,868	10.6		
1976/77	ND	ND	ND	ND	ND	ND	ND	ND	ND		
1977/78	2	ND	ND	ND	ND	7.5	7.2-7.6	11,166	6.5		
1978/79	ND	ND	ND	ND	ND	ND	ND	ND	ND		
1979/80	1	ND	ND	ND	ND	8.8	8.8-8.8	19,180	2.5		
1980/81	9	ND	ND	ND	ND	7.8	6.6-8.8	90,919	1.5		
1981/82	2	50	1,368	27.4	27.4-27.4	7.4	6.5-7.8	89,071	0.6		
1982/83	15	1,697	3,482	2.1	1.1-5.3	7.1	6.5-7.9	113,747	1.4		
1983/84	8	300	900	3.0	3.0-3.0	7.1	6.3-7.6	137,833	0.5		
1984/85	12	ND	ND	ND	0.0-0.0	6.4	5.7-7.3	131,803	1.0		
1985/86	17	2,471	11,743	4.8	1.6-7.5	6.6	6.0-8.5	106,038	1.7		
1986/87	40	9,023	35,064	3.9	1.6-16.4	6.9	6.2-8.5	148,029	3.1		
1987/88	62	14,365	52,275	3.6	0.1-12.7	7.3	6.5-10.6	129,578	4.4		
1988/89	78	23,811	83,295	3.5	0.4-9.0	7.2	5.8-8.7	133,190	5.5		
1989/90	90	18,068	40,560	2.2	0.3-8.7	8.0	6.5-9.4	78,597	10.7		
1990/91	80	14,544	29,877	2.1	0.3-8.8	7.8	6.5-11.0	54,798	13.0		
1991/92	61	9,850	19,072	1.9	0.2-6.6	7.4	6.3-9.8	30,812	16.7		
1992/93	18	2,507	6,627	2.6	0.5-4.9	7.4	6.4-8.2	14,101	10.3		
1993/94	13	1,425	2,771	1.9	0.7-3.4	7.2	6.5-8.3	4,234	25.5		
1994/95	13	1,389	2,164	1.6	0.5-2.7	7.3	6.6-9.2	5,427	19.1		
1995/96	15	835	208	0.3	0.0-1.1	7.2	6.0-8.5	2,204	15.9		
1996/97	19	2,782	5,284	1.9	0.3-3.3	6.6	5.9-8.0	10,162	15.6		
1997/98	30	4,665	17,503	3.8	0.1-6.7	6.6	5.8-7.7	37,269	6.4		
1998/99	37	7,143	33,901	4.8	1.0-10.0	6.5	5.9-7.4	56,236	4.3		
1999/00	59	14,999	57,871	3.9	0.6-10.0	6.7	4.8-7.9	83,896	5.0		
2000/01	85	16,204	48,403	3.0	0.4-7.5	7.2	6.1-8.5	73,923	7.7		
2001/02	76	14,514	35,442	2.4	0.6-5.1	6.9	6.2-8.3	87,826	6.3		
2002/03	77	14,975	36,102	2.4	0.4-6.0	7.2	6.0-8.7	78,218	6.8		
2003/04	60	13,041	40,174	3.1	0.3-6.4	7.1	6.1-9.5	78,267	3.8		
2004/05	62	15,350	50,958	3.3	0.2-5.8	7.1	6.0-8.5	78,664	3.9		
2005/06	66	13,227	36,332	2.8	0.5-8.9	7.0	5.9-8.6	76,735	4.2		
2006/07	66	11,641	50,310	4.3	1.3-10.7	7.1	5.6-9.1	84,733	4.0		
2007/08	40	8,374	44,397	5.3	1.5-10.7	6.9	5.9-8.6	94,640	2.1		
2008/09	33	9,446	51,683	5.5	0.9-11.8	7.1	5.9-8.8	96,726	1.8		
2009/10	57	13,265	58,556	4.4	0.6-12.6	7.4	5.9-9.6	100,026	2.9		
2010/11	70	11,516	42,346	3.7	0.5-12.3	7.8	6.1-10.3	88,602	4.2		

^a Calculated by dividing fish ticket weight data from Table 3.1, 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.

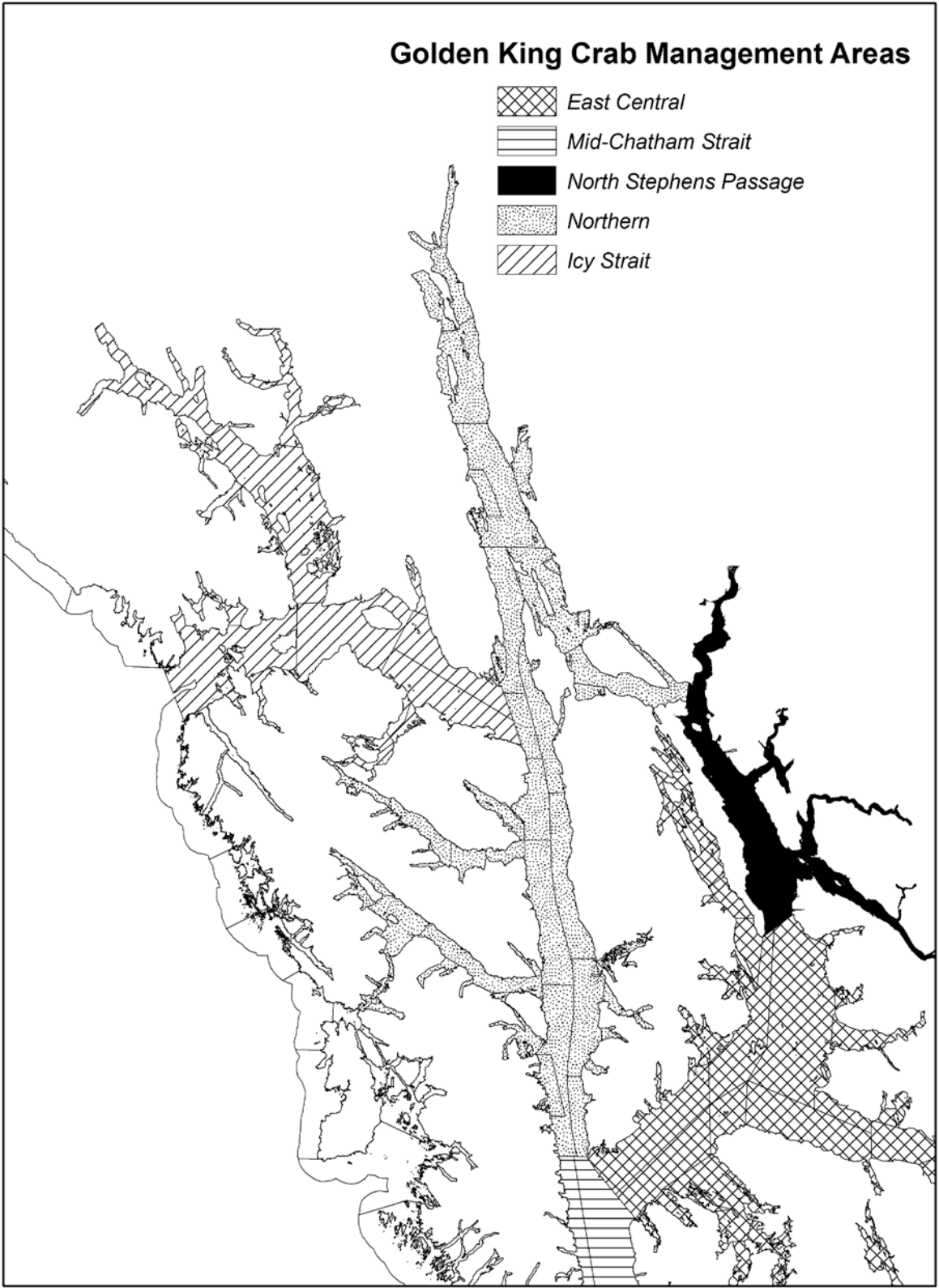


Figure 3.1–Map showing northern golden king crab (GKC) management area boundaries in Registration Area A.

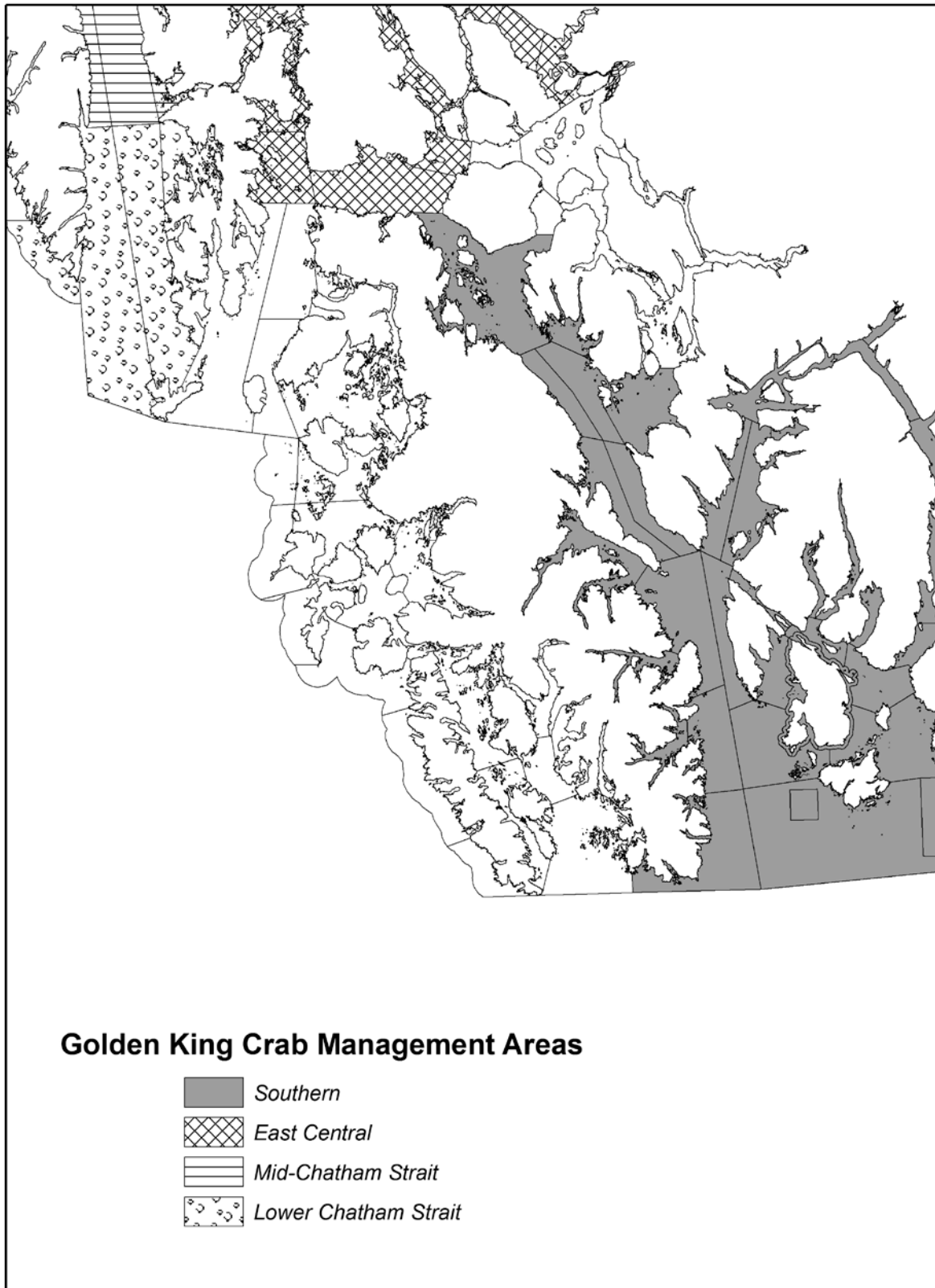


Figure 3.2–Map showing southern golden king crab (GKC) management area boundaries in Registration Area A.

CHAPTER 4: YAKUTAT RED AND BLUE KING CRAB FISHERY

INTRODUCTION

This chapter 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 area and the king crab fishery is not under limited entry. Depending on the circumstances in other crab fisheries in the state, the fishery has been prosecuted by skiffs as well as an occasional Bering Sea-class crabber. However, most of the participating vessels have been small vessels locally based in Yakutat. Fishing effort is generally 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 CWs of seven inches for red king crab and 6 1/2 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 four participating vessels, and resulting harvests have averaged 3,000 lbs. The highest seasonal harvest on record totals less than 20,000 lbs 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 yearlong season (January 1 through December 31) was established by regulation. In 1969 the season was shortened to August 15 to March 15. In 1970 the season length was tied into a maximum harvest of 1.5 million lbs combined from Registration Areas A and D. In 1971 the season was from September 1 through January 31 or until 400,000 lbs 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 lbs in 1974. The season was shortened in 1981 to October 1 to January 31 and in 1983 to November 15 to January 24. In 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 board 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 CW from 1960 to 1971, and changed to seven inches beginning in 1972. The limit was lowered back to 6 1/2 inches in 1979 for blue king crab based on information from other locations in the state, indicating that growth and size at maturity were smaller for this species than for red or brown king crabs.

QUOTAS AND GUIDELINE HARVEST RANGES

In 1970, a quota of 1.5 million lbs was provided for king 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 lbs per season for Southeast Alaska and Yakutat, combined. This was increased to 600,000 lbs in 1974, and then incorporated into a GHR of 300,000 to 600,000 lbs in 1979. In 1982, a GHL of 40,000 lbs was established specifically for Registration Area D. Harvest has never approached this level. In 2005, a GHR of 0 to 20,000 lbs was implemented.

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 five inches in one dimension and a total perimeter greater than 30 inches. In 1978 an escape panel, sewn with no greater than 120-cotton or linen thread, was required to minimize ghost fishing of lost gear. Buoy stickers for pots fished in Yakutat Bay were implemented in 1979 and pot storage was permitted in waters less than 25 fathoms, with doors open and bait removed.

In-water gear storage was not allowed from May 1 to August 31 in 1981 and 1982. Side-loading pots were prohibited in Yakutat waters beginning in January 1, 1983. Pot storage requirements were changed so that all gear needed to be removed from the water within seven 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 COMMERCIAL SEASONS

The Yakutat red and blue king crab season was open from October 24 to December 31 during each of the past eight 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 average harvest in the 1990s was approximately 3,000 lbs. There were some seasons when no harvests were reported (Table 4.1). The harvest since the 2000/2001 season has ranged from 391 lbs in 2000/2001 to 0 lbs for the past eight seasons. While three permit holders delivered crab during the 2000/2001 season, no vessels have registered since. Stock assessment surveys are not conducted in the Yakutat area.

2011/2012 SEASON OUTLOOK

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 since the 2000/2001 season.

CHAPTER 4—TABLES AND FIGURES

Table 4.1–Red and blue king crab harvest (combined), number of permits and number of landings by season in Registration Area D, 1972/73 to present.

Season	Harvest (pounds)	Permits	Landings
1972/73	–	1	–
1973/74	0	0	0
1974/75	–	1	–
1975/76	0	0	0
1976/77	0	0	0
1977/78	–	2	–
1978/79	–	1	–
1979/80	13,915	4	17
1980/81	18,652	3	5
1981/82	–	2	–
1982/83	4,118	4	14
1983/84	1,248	4	4
1984/85	0	0	0
1985/86	–	2	–
1986/87–1989/90	-----	No effort	-----
1990/91	–	2	–
1991/92	1,216	3	–
1992/93	–	2	–
1993/94	7,378	3	8
1994/95	2,174	3	7
1995/96	4,276	3	18
1996/97	4,467	3	17
1997/98	4,208	3	13
1998/99	2,053	4	10
1999/00	–	1	–
2000/01	391	3	4
2001/02–2010/11	-----	No effort	-----

– Fewer than three permits were fished; information is confidential.

**CHAPTER 5: SOUTHEAST ALASKA PERSONAL USE
RED AND BLUE KING CRAB FISHERY**

INTRODUCTION

This chapter 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 (Table 5.1). The Section 11-A fishery is conducted according to a management and allocation plan adopted by the board during the 1995/1996 meeting cycle and subsequently modified. Commercial fish ticket data are available to determine commercial harvests. Personal use permits in Section 11-A, creel census data, statewide harvest 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 board 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 board 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 3,000 personal use households and average of 21 commercial permit holders. Personal use harvests in Section 11-A peaked in 2003/2004 with a harvest of 11,963 crabs; a similar harvest level of 10,799 crabs was achieved in 1993/1994 but the long-term average is 6,601 crabs. Continued controversy between personal and commercial uses centers on the harvest allocation and fishing area.

FISHERY DEVELOPMENT AND HISTORY

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 10,799 crabs in the 1993/1994 season (Table 5.2). 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. Increases in personal use harvests to 11,963 crabs in the 2003/2004 season were 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 fishermen. The regionwide commercial fishery reopened in the 1993/1994 season and was closed for the 1998/1999, 2000/2001, 2004/2005, and 2006/2007-2010/2011 seasons. From 1993/1994 through 2005/2006, an average of 21 permits participated in the commercial fishery in Section 11-A and 75 total permits in the Southeast Region as a whole. There was an 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 36% of the total harvest in Section 11-A for years when the commercial fishery was opened

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 5.1). 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 has been used since 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 two crabs per 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 one crab per permit and a seasonal limit of 20 crabs per household (Table 5.1).

The total number of summer permits issued increased from the 1997 season to the 2004 season (Table 5.4). The increase from 1,266 in 1997 to 2,303 permits in 2004 equates to a 182% increase in permit numbers. The number of permits returned ranges from 66.1% of the issued permits in the 1997/1998 season to 93.8% in the 2001/2002 season. 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 was permits with no harvest). The total estimated personal use harvests range from 1,477 crabs to 11,963 crabs (Table 5.4). The majority of crabs are harvested by pot gear in the summer season, with 5 to 19% of the winter harvest being taken by divers and up to 20% with rings.

GHL, Harvest, and Gear

For the Juneau area, the total allowable harvest has ranged from 0 crabs in the 2008/2009 season to nearly 18,000 crabs in 2001/2002 (Table 5.5). The ability to accurately attain the allocated harvest varies and generally requires intensive management oversight. Personal use harvests have ranged from 87% to 174% of the specified allocation.

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 one phone survey in the summer and another three 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, two aerial surveys to monitor the distribution of effort, and intensive oversight of fish ticket data and tender reports. The development of computer generated permits and e-mail surveys in the Section 11-A fishery has reduced staff workload for this fishery in the last three seasons.

Personal use effort is variable and depends on weather and catch rates. 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 three methods of estimation: dockside creel surveys conducted by the sport fish division for the summer fishery only, random phone surveys and most recently email surveys. All 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 had significantly increased the complexity of attaining allocation goals, when this plan was in use. 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 nine 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% of the summer personal use harvest occurs in July and over 90% 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 was relatively straightforward.

In 1994/1995, 31 commercial vessels harvested 6,089 crabs in 17 days. Effort decreased to six vessels harvesting 673 crabs in four days by the following year. This increased to 16 vessels harvesting 11,173 crabs in nine days in 1999/2000. This season was characterized by a number of vessels retaining their crabs onboard until a closure was announced and unobserved increases in effort and harvest rates in the last days of the fishery, resulting in harvests totaling over two times the target GHL for Section 11-A. In the 2003/2004 commercial fishery, a total of 30

vessels aggressively targeted 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 in a four-day fishery. During the 2005/2006 season 24 permits fished for 13 days and harvested 98.6% of the total commercial harvest objective.

OTHER AREAS

Management and Harvest Trends

Personal use harvests in waters outside of Section 11-A are poorly documented likely underestimated. Currently, the only source of information is the SWHS. 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 harvest estimated using the Section 11-A personal use permit suggests that it the SWHS underestimates the annual personal use harvest in Section 11-A (Table 5.6). The statewide harvest survey does not differentiate between the three species of king crab. For that reason it is a poor tool by which to estimate personal use red king crab harvest in Southeast Alaska.

Over the years, various personal use closures have been implemented in areas where the stock assessment survey indicates that stock status is poor. These closures are always associated with simultaneous commercial closures of the area (Table 5.1). The first such personal use closures were of Pybus Bay and Peril Strait areas in October 1998. Pybus Bay re-opened in October 1999, but Peril Strait remained closed. Subsequently in September 2000 both Pybus Bay and Seymour Canal areas closed, and Peril Strait remained closed. In 2001 Pybus Bay, Seymour Canal, and Deadman Reach-Ushk Bay re-opened on September 6, 2001 while Rodman Bay remained closed. In 2002 Rodman Bay remained closed. In September 2003 Peril Strait and Port Frederick were closed to personal use fishing. In September 2004 Seymour Canal also closed to personal use king crab fishing and Peril Strait and Port Frederick remained closed. Port Frederick and Seymour Canal have remained closed due to poor stock status ever since. Peril Strait re-opened for the winter seasons in 2005/2006 and 2006/2007. The red and blue king crab personal use fishery outside of Section 11-A was closed in October 2007 due to poor stock health in five of the eight surveyed areas, a steady decline in estimated mature male biomass, and the lowest estimated mature biomass level in the last fourteen years.

In some areas 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.

REGULATION DEVELOPMENT

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 5.1). 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 six 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 five 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. Prior to the 1995/1996 season, bag limits were reduced from six to three crab per person in Sections 15-C and 12-B which are located in the southern part of Lynn Canal just outside of the 11-A permit area. This reduction in bag limits was expanded to include Berners Bay, Section 15-B, in 2005/2006. At the 2009 board meeting, bag and possession limits outside of Section 11-A were amended to provide the department management flexibility, allowing for reduced bag limits for red king crab fishing opportunity during periods of decreased abundance.

The board adopted 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% of the available harvest to the commercial fishery with a season from November 1 until closed by emergency order, 46% to the summer personal use fishery from July 1 to September 30, and 9% 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 fishermen who traditionally harvest during the winter when crabs migrate into shallow waters. This allocation plan was revised in March 1999 to an allocation of 40%, 50%, and 10% 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. This rollover provision was repealed at the 2009 board meeting allowing for the 40% allocated to commercial users to remain unused if the regionwide threshold was not met.

STOCK ASSESSMENT

Management of the personal use red and blue king crab fishery in Southeast Alaska is abundance-based in Section 11-A, and quasi abundance-based elsewhere. Stock assessment for commercial and personal use red and blue king crab fisheries is described in Chapter 2.

The estimate of abundance and determination of stock health derived from the annual stock assessment survey are used to establish an annual GHL for Section 11-A. The GHL is allocated between user groups and summer and winter personal use seasons based on the Section 11-A Red and Blue King Crab Management and Allocation Plan [Title 5 Alaska Administrative Code 34.111] promulgated by the board.

Because red and blue king crab personal use fisheries outside Section 11-A in Southeast Alaska are managed by size, sex, season and a bag limit, GHLS are not established. However, stock assessment information is used to guide decisions on closing areas to personal use fishing and to establish personal use bag and possession limits.

Trends in red king crab legal and mature stock abundance are described below.

RECENT SEASONS

2008/2009

The Section 11-A red and blue king crab personal use fishery did not open in 2008 due to 2008 red and blue king crab stock assessment survey results which indicated poor stock health in the Juneau area (Tables 5.1–5.6). Mature males were estimated to be at very low levels in the Juneau area and juvenile males and all females in the Juneau area at or near their lowest levels on record. In addition, the 2008 red and blue king crab personal use fishery remained closed outside of Section 11-A based on 2008 red king crab stock assessment survey results. That survey indicated poor stock health in all eight survey areas outside of Section 11-A, a continued decline in mature male biomass regionwide, estimated mature biomass at the second lowest level in the past 15 years, and continued low abundance of female and juvenile male red king crab in nearly all surveyed areas. That survey also indicated a slight increase in mature male abundance, fueled largely by carryover of legal males to postrecruit status.

2009/2010

On June 23, 2009, the department announced that the Section 11-A red and blue king crab personal use fishery would not open in 2009 (Tables 5.1 –5.6). This action was based on the results of the annual red king crab stock assessment survey for the Juneau area which was completed on June 10, 2009. Catch per unit effort data from the annual assessment survey showed mature males in the Juneau area at or near the long-term average, but young males and all females in the Juneau area at or near the lowest levels on record, resulting in a stock health designation of poor.

The board modified Southeastern Alaska Area personal use red and blue king crab fishery regulations in January 2009, including a provision providing the department authority to establish reduced bag and possession limits to allow additional red king crab fishing opportunity during periods of decreased abundance. Using this authority, the department reopened the red and blue king crab personal use fishery in some areas outside of Section 11-A with a reduced bag limit on July 29, 2009, the day the regulation changes from the 2009 board meeting became effective. At the time of this opening the department had not finalized results of the 2009 red king crab stock assessment survey outside of Section 11-A, so the decision to reopen the red and blue king crab personal use fishery was based on 2008 red king crab stock assessment survey results. In September 2009, the department completed analysis of the 2009 red and blue king crab stock assessment survey outside of Section 11-A. Five of the eight survey areas outside of Section 11-A exhibited poor stock health. The stock assessment survey indicated a lack of recruitment to the mature male segment of the population, however an increase in postrecruit crab abundance was observed in several of the surveyed areas. Three survey areas previously closed (St. James Bay, Gambier Bay, and Peril Strait) showed signs of improvement in stock health and were reopened by emergency order in October 2009 with a reduced bag limit of two red and blue king crabs in combination.

2010/2011

The Section 11-A red and blue king crab personal use fishery opened on July 1, 2010 (Tables 5.1–5.6). The season was opened for five days with a daily bag and possession limit of 2 crabs, a seasonal household limit of two crabs, and a pot limit of one pot per vessel.

Outside of Section 11-A, the red and blue king crab personal use fishery opened by regulation on July 1, 2010 in St. James Bay, Gambier Bay, and Peril Strait with a reduced bag and possession limit of two red and blue king crab in combination for non-surveyed areas and surveyed areas based on 2009 survey results. The department completed analysis of 2010 red king crab stock assessment survey data in late summer of 2010 and, based on results of that survey, categorized stock health as poor in five of the eight surveyed areas outside of Section 11-A. Stock status in Peril Strait, previously categorized as below average, was downgraded to poor in 2010 and that area was closed for personal use red and blue king crab fishing on October 1, 2010. Stock status in Excursion Inlet no longer exhibited poor stock health and Excursion Inlet was reopened to personal use red and blue king crab fishing on November 1, 2010. The red and blue king crab personal use fishery outside of Section 11-A was closed by regulation on March 31, 2011.

2011/2012 OUTLOOK

Section 11-A opened on July 15, 2011 and closed on July 20, 2011. Bag limits were set at two crabs per person and a seasonal limit of two crabs per household. Only one pot per vessel was allowed. Outside section 11-A, the red and blue king crab personal use fishery opened by regulation on July 1, 2011 in the same areas with a reduced bag and possession limit of two red and blue king crabs in combination for non-surveyed areas and surveyed areas based on 2010 survey results. The department completed analysis of the 2011 red king crab stock assessment survey and red king crab mark/recapture project in late summer 2011. The 2011 red king crab stock assessment survey indicates that regionwide the harvestable biomass of mature red and blue king crab exceeds 200,000 lbs; stock health in Seymour Canal remains poor; stock health in Peril Strait and Port Frederick are well below average; and stock status in all other survey areas and non-survey areas are adequate to sustain personal use harvest in 2011. According to 5 AAC 77.664(a)(1), the bag and possession limit outside of Sections 11-A, 12-B, 15-B, and 15-C is 6 red king crabs per person when the harvestable biomass of mature red and blue king crab exceeds 200,000 lbs. According to 5 AAC 77.664 (b), the bag and possession limit in Sections 12-B, 15-B, and 15-C is 3 red king crabs per person when the harvestable biomass of mature red and blue king crab exceeds 200,000 lbs. Given current red king crab stock status, Holkham Bay and Pybus Bay were opened to personal use red and blue king crab fishing, effective November 1, 2011.

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CHAPTER 5—TABLES AND FIGURES

Table 5.1—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 SE 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.

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Table 5.1–Page 2 of 5.

Season	Personal use in 11-A	Personal use in other Southeast areas	Commercial fishery in 11-A	Commercial fishery in other Southeast areas
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
2000/2001	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

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Table 5.1–Page 3 of 5.

Season	Personal use in 11-A	Personal use in other Southeast areas	Commercial fishery in 11-A	Commercial fishery in other Southeast areas
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. Closed March 31, 2005.	Peril Strait and Port Frederick remained closed. Seymour Canal closed Sept. 12, 2004	No commercial fishery	No commercial fishery

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Table 5.1–Page 4 of 5.

Season	Personal use in 11-A	Personal use in other Southeast areas	Commercial fishery in 11-A	Commercial fishery in other Southeast areas
2005/2006	Summer fishery 2 crab per person limit, seasonal limit of 20 crabs per household. Winter fishery, 1 crab per permit, 20 crabs per household. Closed March 31, 2006	Peril Strait, Port Frederick, and Seymour Canal remained closed. Peril Strait re-opened Nov. 1, 2005–March 31, 2006. Bag limits reduced from 6 to 3 crab in Berners Bay, Aug. 14, 2005.	Opened Nov. 1– Nov 13, 2005. Juneau area ^a closed.	Opened Nov. 1–Nov. 4, 2005. Port Frederick and Seymour Canal closed for the entire season.
2006/2007	Summer fishery 2 crab per person limit, seasonal limit of 20 crabs per household. Closed Sept. 17, 2006. Winter fishery, 1 crab per permit, 6 crabs per household. Closed March 31, 2007.	Peril Strait, Port Frederick, and Seymour Canal remained closed. Peril Strait re-opened Nov. 1, 2006–March 31, 2007.	No commercial fishery	No commercial fishery
2007/2008	Summer fishery 2 crab per person limit, seasonal limit of 10 crabs per household. Closed July 14, 2007. No winter fishery.	Peril Strait, Port Frederick, and Seymour Canal remained closed. All other areas closed until further notice Oct. 1, 2007.	No commercial fishery	No commercial fishery
2008/2009	Fishery closed until further notice.	Fishery closed until further notice.	No commercial fishery	No commercial fishery
2009/2010	Fishery closed until further notice.	Port Frederick, Seymour Canal, Holkham Bay, Excursion Inlet, And Pybus Bay remained closed. Opened Oct 7, 2009 - March 31 2010. Bag limit 3 crab per person.	No commercial fishery	No commercial fishery

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Table 5.1–Page 5 of 5.

Season	Personal use in 11-A	Personal use in other Southeast areas	Commercial fishery in 11-A	Commercial fishery in other Southeast areas
2010/2011	Summer fishery 2 crab per person limit, seasonal limit of 2 crabs per household. One pot per vessel. Closed July 5, 2010. Winter fishery: Opened Jan. 1, 2011–Feb. 6, 2011 1 crab per permit per day, seasonal limit 2 crab per household. One pot per vessel.	Port Frederick, Seymour Canal, Holkham Bay, Excursion Inlet, And Pybus Bay remained closed. Opened July 1, 2010 - March 31 2011. Peril Strait closed on Oct 1, 2010. Excursion Inlet reopened Nov. 1, 2010 Bag limit 2 crab per person	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.

Table 5.2—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 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	Number of commercial permits fished in Section 11-A	Commercial fishery harvest in other Southeast	Total number of commercial permits fished in Southeast Alaska
1988/89	665	1,130	0	0	0	0
1989/90	2,228	1,130	0	0	0	0
1990/91	2,361	1,130	0	0	0	0
1991/92	2,972	1,130	0	0	0	0
1992/93	6,835	1,625	0	0	0	0
1993/94	10,799	2,806	4,153	19	23,314	83
1994/95	7,139	2,855	6,089	31	29,558	84
1995/96	5,540	3,253	673	6	50,988	73
1996/97	6,989	2,209	2,842	11	55,302	79
1997/98	6,390	3,208	2,830	12	36,764	76
1998/99	6,967	5,295	0	0	0	0
1999/00	8,994	862	11,173	16	27,061	77
2000/01	9,455	737	0	0	0	0
2001/02	9,611	2,970	8,525	29	31,022	76
2002/03	9,076	521	5,165	31	24,905	75
2003/04	11,963	1,140	6,987	30	18,424	67
2004/05	10,178	476	0	0	0	0
2005/06	10,406	829	7,079	24	19,296	58
2006/07	7,518	1,051	0	0	0	0
2007/08	2,541	349	0	0	0	0
2008/09	0	18	0	0	0	0
2009/10	0	672	0	0	0	0
2010/11	1290	ND	0	0	0	0

Table 5.3–Openings, closures, and fishery regulations by season for the red and blue king crab personal use fishery in Section 11-A from 1996/97 through 2010/11 seasons.

Season	Type of permit	Daily limit	Season limit	Closure date
1996/97 Summer	Individual	3 Crabs/Person	No Limit	August 30, 1996
1996/97 Winter	Individual	3 Crabs/Person	No Limit	March 7, 1997
1997/98 Summer	Seasonal Household	2 Crabs/Person	No Limit	August 16, 1997
1997/98 Winter	Seasonal Household	2 Crabs/Person	No Limit	December 29, 1997
1998/99 Summer	Seasonal Household	2 Crabs/Person	10/20 Crabs per Individual/ Household for Summer and Winter Season	September 30, 1998 ^a
1998/99 Winter	Seasonal Household	2 Crabs/Person		March 31, 1999 ^b
1999/00 Summer	Seasonal Household	2 Crabs/Person	10/20 Crabs per Individual/ Household for Summer and Winter Season	September 30, 1999 ^a
1999/00 Winter	Seasonal Household	2 Crabs/Person		February 29, 2000
2000/01 Summer (July 1–July 19)	Summer Household	1 Crabs/Person	5/10 Crabs per Individual/Household in Summer	
2000/01 Summer (July 20–Aug. 3)	Summer Household	2 Crabs/Person	10/20 Crabs per Individual/Household in Summer	
2000/01 Summer (Aug. 4 –Sept. 30)	Summer Household	3 Crabs/Person	20/40 Crabs per Individual/Household in Summer	September 30, 2000 ^a
2000/01 Winter	Winter Household	2 Crabs/Person	10/20 Crabs per Individual/Household in Winter	March 31, 2001 ^b
2001/02 Summer	Summer Household	2 Crabs/Person	10/ 20 Crabs per Individual/Household in Summer	September 30, 2001 ^a
2001/02 Winter	Winter Household	2 Crabs/Person	10/20 Crabs per Individual/Household in Winter	
2002/03 Summer	Summer Household	2 Crab/Person	20 Crab per Household	August 30, 2002
2002/03 Winter	Winter Household	1 Crab/Permit	20 Crab per Household	March 2, 2003
2003/04 Summer	Summer Household	2 Crab/Person	20 Crab per Household	September 4, 2003
2003/04 Winter	Winter Household	1 Crab/Permit	20 Crab per Household	March 11, 2004
2004/05 Summer	Summer Household	2 Crab/Person	20 Crab per Household	September 30, 2004 ^a
2004/05 Winter	Winter Household	1 Crab/Permit	20 Crab per Household	March 31, 2005 ^b
2005/06 Summer	Summer Household	2 Crab/Person	20 Crab per Household	September 30, 2005 ^a
2005/06 Winter	Winter Household	1 Crab/Permit	20 Crab per Household	March 31, 2006 ^b
2006/07 Summer	Summer Household	2 Crab/Person	20 Crab per Household	September 17, 2006
2006/07 Winter	Winter Household	1 Crab/Permit	6 Crab per Household	March 31, 2007 ^b
2007/08 Summer	Summer Household	2 Crab/Permit	10 Crab per Household	July 14, 2007
2007/08 Winter		-----Fishery Closed -----		
2008/09		-----Fishery Closed -----		
Summer/Winter 2009/10		-----Fishery Closed -----		
Summer/Winter 2010/11 Summer	Summer Household	2 Crab/Permit	2 Crab per Household	July 5, 2010
2010/11 Winter	Winter Household	1 Crab/Permit	2 Crab per Household	February 6, 2011

^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 5.4—Number of permits issued and returned, total reported harvest of returned permits, and percentage 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	Percentage returned	Reported harvest	Estimated harvest	Percentage by gear		
						Pot	Dive	Ring net
1996/97 Summer	1,474	1,215	82.40%	5,193	5,693	99.4%	0.3%	0.3%
1996/97 Winter	643	385	59.9%	1,036	1,296	78.7%	18.5%	2.8%
1996/97 Total	2,117	1,600	75.6%	6,229	6,989	ND	ND	ND
1997/98 Summer	1,266	840	66.4%	4,632	5,567	99.5%	0.3%	0.2%
1997/98 Winter	152	98	64.5%	677	823	93.4%	5.1%	1.5%
1997/98 Total	1,418	938	66.1%	5,309	6,390	ND	ND	ND
1998/99 Summer	1,404	1,181	84.1%	4,964	5,392	99.7%	0.2%	0.1%
1998/99 Winter	245	213	86.9%	1,472	1,575	75.9%	14.2%	9.9%
1998/99 Total	1,649	1,394	84.5%	6,436	6,967	ND	ND	ND
1999/00 Summer	1,660	1,367	82.3%	6,212	6,813	99.7%	0.0%	0.3%
1999/00 Winter	249	196	78.7%	1,949	2,181	80.8%	9.6%	9.6%
1999/00 Total	1,909	1,563	81.9%	8,161	8,994	ND	ND	ND
2000/01 Summer	1,751	1,595	91.1%	6,424	6,724	99.6%	0.2%	0.2%
2000/01 Winter	277	246	88.8%	2,578	2,731	72.1%	10.7%	17.2%
2000/01 Total	2,028	1,841	90.8%	9,002	9,455	ND	ND	ND
2001/02 Summer	1,793	1,688	94.1%	6,988	7,199	99.7%	0.2%	0.1%
2001/02 Winter	285	261	91.6%	2,310	2,412	74.1%	13.4%	12.5%
2001/02 Total	2,078	1,949	93.8%	9,298	9,611	ND	ND	ND
2002/03 Summer	2,166	1,990	91.9%	7,025	7,322	99.8%	0.1%	0.1%
2002/03 Winter	872	690	79.1%	1,571	1,754	71.7%	15.1%	13.2%
2002/03 Total	3,038	2,680	88.2%	8,596	9,076	ND	ND	ND
2003/04 Summer	2,231	2,073	92.9%	10,248	10,624	99.3%	0.2%	0.5%
2003/04 Winter	1,082	977	90.3%	1,274	1,339	77.2%	13.2%	9.6%
2003/04 Total	3,313	3,050	92.1%	11,522	11,963	ND	ND	ND
2004/05 Summer	2,303	2,096	91.0%	8,292	8,682	99.6%	0.2%	0.2%
2004/05 Winter	921	833	90.4%	1,425	1,496	63.0%	16.6%	20.4%
2004/05 Total	3,224	2,929	90.8%	9,717	10,178	ND	ND	ND
2005/06 Summer	2,152	1,694	78.7%	8,202	9,179	99.6%	0.0%	0.4%
2005/06 Winter	860	713	82.9%	1,122	1,227	72.9%	9.0%	18.1%
2005/06 Total	3,012	2,407	79.9%	9,324	10,406	ND	ND	ND
2006/07 Summer	2,046	1,397	68.3%	5,857	6,961	99.9%	0%	0.1%
2006/07 Winter	679	458	67.5%	466	557	68.2%	13.7%	18.1%
2006/07 Total	2,725	1,855	68.1%	6,323	7,518	ND	ND	ND
2007/08 Summer	1,250	909	72.7%	2,194	2,541	99.7%	0.3%	0%
2007/08 Winter	0	0		0		0	0	0
2007/08 Total	1,250	909	72.7%	2,194	2,541	ND	ND	ND
2008/09 Total	0	0	0	0	0	0	0	0
2009/10 Total	0	0	0	0	0	0	0	0

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Table 5.4—Page 2 of 2.

Season	Permits issued	Permits returned	Percentage returned	Reported harvest	Estimated harvest	Percentage by gear		
						Pot	Season	Permits issued
2010/11 Summer	1,329	1,048	78.8%	981	1,104	98.7%	0	1.3%
2010/11 Winter	505	358	70.9%	309	373	46.9%	18.1%	29.1%
2010/11 Total	1,834	1,406	76.7%	1,290	1,477	ND	ND	ND

^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 Allocation guidelines revised by Board of Fisheries in February 2009 as 40% Commercial, 50% Summer Personal Use, and 10% Winter Personal Use. If there is no commercial fishery, total allowable harvest is **not** reallocated to personal use fisheries.

Table 5.5–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 harvest	Allocation	Estimated harvest	Allocation	Estimated harvest	Goal	Estimated harvest
1996/1997 ^a	3,825	2,842	3,900	5,693	765	1,296	8,490	9,831
1997/1998 ^a	3,750	2,830	3,800	5,567	750	823	8,300	9,220
1998/99 ^a	6,533	0	6,678	5,392	1,307	1,575	14,518	6,967
1999/2000	4,964	11,173	6,200	6,813	1,241	2,181	12,405	20,167
2000/01	4,140	0	5,176	*	1,035	*	*	0
2000/01 Reallocation ^b	0	0	8,626	6,724	1,725	2,731	10,351	9,455
2001/02	7,189	8,525	8,986	7,199	1,797	2,412	17,972	18,136
2002/03	4,503	5,165	5,600	7,322	1,100	1,754	11,203	14,241
2003/04	6,462	6,987	8,078	10,624	1,616	1,339	16,156	18,950
2004/05	3,868	0	4,836	*	967	*	*	0
2004/05 Reallocation ^b	0	0	7,737	8,682	1,934	1,496	9,671	10,178
2005/06	7,161	7,079	8,952	9,179	1,790	1,227	17,903	17,485
2006/07	1,720	0	2,149	*	430	*	*	0
2006/07 Reallocation ^b	0	0	3,439	6,961	860	557	4,299	7,518
2007/08 ^c	0	0	0	2,541	0	0	0	2,541
2008/09	0	0	0	0	0	0	0	0
2009/10	0	0	0	0	0	0	0	0
2010/11	1,094	0	1,494	1,104	298	373	1,792	1,477

^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 fishery was opened during the 2007/08 season prior to the stock health rating being assessed and was closed when it was determined that 11-A was “poor”, thus a 0% harvest rate.

* Personal use allocation and harvest is reflective of reallocation from commercial fishery.

Table 5.6–Summary of Southeast Alaska personal use king crab harvest in numbers by area during 1993–2008. 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.

Year	Data source			
	Statewide harvest survey		Creel census	Personal use permit
	Other areas	Juneau area	Section 11-A	Section 11-A
1993	2,806	9,130	–	–
1994	2,855	7,236	–	–
1995	3,253	5,167	–	–
1996	2,209	2,669	–	6,989
1997	3,208	2,808	–	6,390
1998	5,295	1,601	–	6,967
1999	862	6,187	6,442	8,994
2000	737	4,371	5,974	9,455
2001	2,970	5,564	5,605	9,611
2002	521	2,677	5,216	9,076
2003	1,140	6,562	9,587	11,963
2004	476	3,761	6,093	10,178
2005	829	5,634	6,880	10,406
2006	1,051	3,432	5,759	7,518
2007	349	4,093	2,093	2,541
2008	18	18	ND	0
2009	672	0	ND	0
2010	ND	178	ND	1,477
Average	1,785	4,431	5,365	7,699

– Creel census program and personal use permits not in place to estimate personal use red king crab harvest.

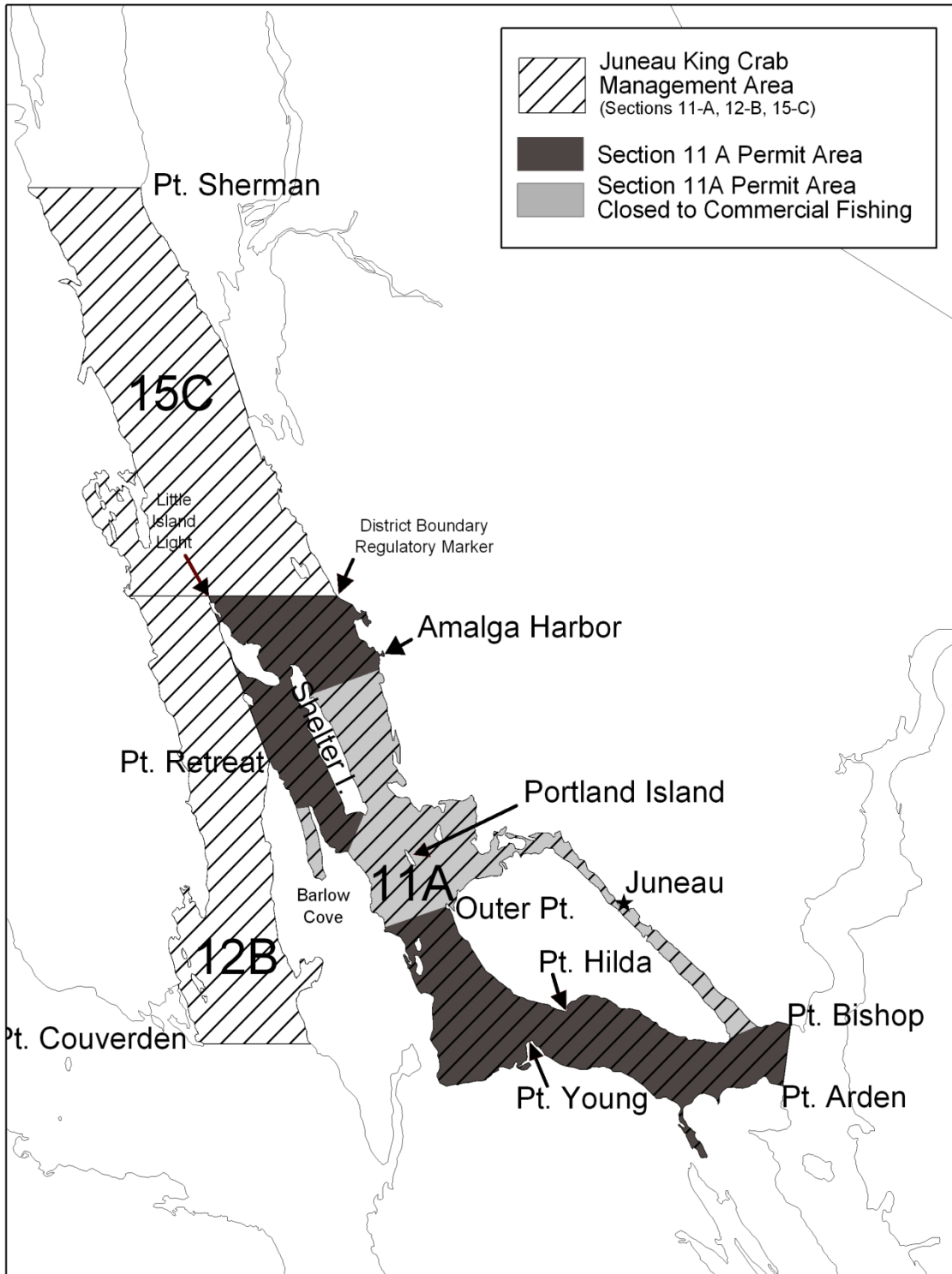


Figure 5.1–The Juneau king crab management area including the Section 11-A permit area and waters closed to commercial fishing.

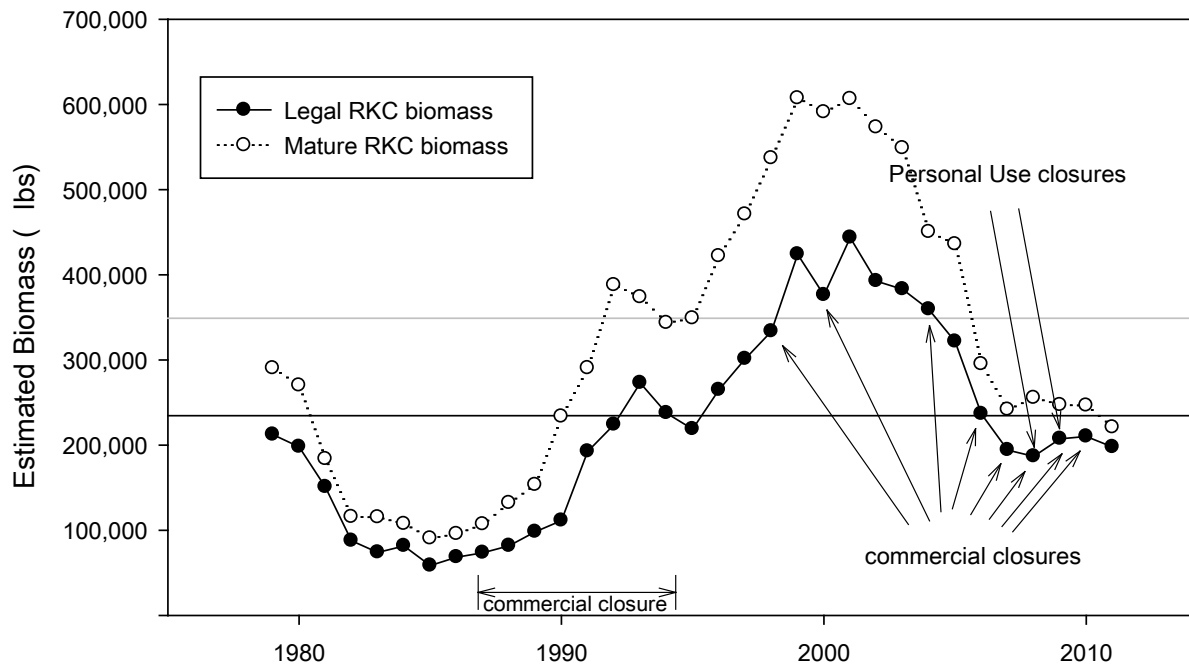


Figure 5.2—Trends in red king crab mature and legal population size from catch survey modeling in the Juneau area, Section 11-A.