



Agenda Item: B-2

ALASKA DEPARTMENT OF FISH AND GAME
REPORT TO THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

April 15, 1997

Fisheries managed under delegated authority of the State of Alaska since the last council meeting include crab, scallops, salmon, Southeast demersal shelf rockfish and lingcod, and state waters Pacific cod.

BERING SEA/ALEUTIAN ISLANDS KING AND TANNER CRAB FISHERIES: The Bering Sea *C. opilio* fishery open on January 15 with a preseason GHF of 117 million pounds. A total of 227 vessels registered for the fishery. Due to price negotiations and a strike, the majority of the fleet did not begin fishing until late January. The fishery was closed on March 12 with an estimated harvest of 117.1 million pounds valued at over \$88.0 million. The 1996 *C. opilio* harvest was 64.6 million pounds valued at \$85.6 million.

During their March meeting, the Alaska Board of Fisheries (board) accepted public petitions requesting various management options for the Bristol Bay red king crab fishery. These management options included revising pot limits based on GHF's, establishing mandatory reporting requirements, pre-season closure announcements for small GHF's, baiting pots preseason, leaving baited gear on the grounds after a short closure announcement, and other

options to assist managers when GHF's in this fishery are under 10 million pounds. The board will address all management measures during a special meeting scheduled for **August 25-28 in Anchorage.**

The board took no action on establishing pot limits in the Aleutian Registration Area's red and brown king crab fisheries.

STATEWIDE SCALLOP FISHERY: The 1997 scallop fishery opened in the Yakutat/District 16 and Prince William Sound areas on January 10. Guideline harvest levels and closures for these areas are:

Yakutat, 250,000 pounds, closed February 18; District 16, 35,000 pounds, closed February 23; and Prince William Sound (Kayak Island) 17,300 pounds, closed January 19. The Westward scallop fisheries will open July 1, and the Cook Inlet scallop fishery will open on August 15.

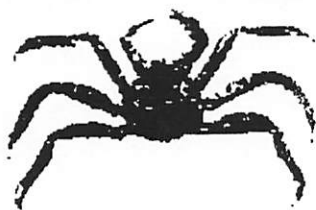
At their meeting last month, the board adopted public proposals changing the opening dates for the Yakutat/District 16 and Prince William Sound scallop fisheries from January 10 to July 1 with a biological closure of February 15. With the adoption of the July 1 opening in these areas, all of the Alaska scallop fishery open simultaneously with the exception of Cook Inlet that opens on August 15. A public proposal requesting 6 foot dredges in state waters was rejected. Staff proposals requiring vessels to obtain a department permit to commercially fish scallops in Cook Inlet and closing waters to scalloping east of 162° West Long' and around the Pribilof Islands to match federal groundfish closures in the Bering Sea were also adopted.

SALMON TROLL FISHERY: The commercial winter troll Chinook fishery catch from January 1 through April 1 is approximately 1,000 fish, down from 1,765 fish caught for this same period last year. Landings for the this period are about half of last years, 133 compared to 289, but catch per landing is greater, 7.6 fish for 1997 compared to 5.9 fish for 1996. The winter troll fishery closes on April 14.

SOUTHEAST ALASKA DEMERSAL SHELF ROCKFISH AND LINGCOD FISHERIES: The directed DSR fishery closed on March 14 in the East Yakutat, Southern Southeastern outside, Northern Southeast inside and Southern Southeast inside with 68.7 mt. taken. The directed lingcod fishery has been open outside of 3 miles, but little effort has occurred.

STATE WATERS PACIFIC COD FISHERY: After being closed with adjacent federal waters, state waters reopened to Pacific cod on April 4 for jig and pot gear. Attached are news releases for the Cook Inlet, Prince William Sound and Westward Region fisheries. To date little effort has occurred in the Cook Inlet and Prince William Sound areas. In the Kodiak area, 42 vessels, 26 of which are using pots, have landed approximately 200,000 pounds. In the South Peninsula area, 20 pot vessels have also landed approximately 200,000 pounds.

COMMERCIAL FISHERIES



NEWS RELEASE

ALASKA DEPARTMENT
OF FISH & GAME



STATE OF ALASKA
Department of Fish and Game
Frank Rue, Commissioner

Westward Region
211 Mission Road
Kodiak, AK 99615

Robert C. Clasby, Director
Commercial Fisheries Management
and Development Division

Contact: Dave Jackson
Area Shellfish Biologist
Alaska Peninsula/ Kodiak

IMMEDIATE RELEASE

Date: March 20, 1997

ATTENTION WESTWARD REGION GROUNDFISH INDUSTRY

State managed fisheries for Pacific cod will open on April 4, 1997 in the Kodiak and South Peninsula Areas. Fisheries will remain open until guideline harvests have been obtained or December 31. The Chignik Area state water Pacific cod fishery will open on April 15 and run through June 15 with a reopening scheduled for August 15 through December 31 if the guidelines has not been met. New regulations adopted by the Alaska Board of Fisheries will initiate these fisheries for vessels using pot, mechanical jig or hand troll gear. Limitations include no more than 60 pots or 5 mechanical jig machines as well as exclusive registration areas. A 58 foot vessel length limit also has been adopted for the Chignik and South Alaska Peninsula areas. The Kodiak guideline harvest will be equally divided between pot gear and jig gear. Pacific cod fishing in state waters is not restricted to vessels qualified under the federal moratorium program. Harvest guidelines are as follows:

<u>Registration Area</u>	<u>Harvest Guideline (million of pounds)</u>
Kodiak	8.5
South Alaska Peninsula	9.4
Chignik	5.9

Vessel operators will be required to obtain an interim-use permit card for miscellaneous finfish from the Commercial Fisheries Entry Commission prior to fishing. Area registrations for the State managed Pacific cod fishery and the required buoy identification tags will be available in King Cove, Sand Point, Chignik and Kodiak during the week prior to the fishery. For more information contact the Alaska Department of Fish and Game at 486-1840.



ALASKA DEPARTMENT OF
FISH & GAME
COMMERCIAL FISHERIES MANAGEMENT &
DEVELOPMENT DIVISION

NEWS RELEASE

03/07/97

STATE OF ALASKA

CENTRAL REGION

Dept. of Fish & Game
Frank Rue, Commissioner

3298 Douglas St.
Homer, AK 99603



Robert Clasby, Director
Commercial Fisheries
Management & Development Division

Contact: Charlie Trowbridge
Regional Groundfish/Shellfish
Management Biologist

Cook Inlet & Prince William Sound
State Managed
Pacific Cod Fishery

In November, 1996 the Alaska Board of Fisheries adopted regulations establishing a new Pacific cod fishery in state waters. This news release is intended to provide information on the regulatory framework of the new Pacific cod fishery in the Cook Inlet and Prince William Sound (PWS) Management Areas.

Due to the time required for administrative and legal review, the new regulations will not become effective until April 4, 1997, therefore, the opening date for the state managed season will be delayed. Once they are in effect, copies of the new regulations will be available to fishermen at Fish and Game offices.

General Information

Area registration is exclusive; a vessel must register for only one exclusive registration area in a calendar year. A vessel may be registered to fish only one gear at a time. Vessels may register at the Homer, Cordova, Kodiak, or Anchorage offices of the Alaska Department of Fish and Game.

Fishermen must have a Miscellaneous Saltwater Finfish interim use permit card from the Commercial Fisheries Entry Commission in order to register. Pacific cod fishing in state waters is not limited to vessels qualified under the federal moratorium program.

Legal gear for the fishery includes pot, mechanical jig, or hand troll gear (hand jig). Gear limits are 60 pots or 5 jigs. Fishermen using pot gear may obtain the required buoy identification tags from department offices in Homer or Cordova during the week prior to the fishery. Following the closure of the federal season and prior to the opening of the state waters fishery, all pot gear must be removed from the water or stored in designated gear storage areas.

When rockfish is closed to directed fishing, bycatch of rockfish by directed Pacific cod fishermen fishing jig gear is limited to 5% of the gross round weight of all groundfish species on board.

Cook Inlet

The Cook Inlet Management area includes waters between Cape Douglas and Cape Fairfield. There are two regulatory districts, the North Gulf District and the Cook Inlet District.

The season in the Cook Inlet Management Area is set to open one week after the closure of the federally managed Central Gulf Regulatory Area, or on the date that the state regulations become effective, whichever ever is later. The guideline for the Cook Inlet Management Area is 2.1 million pounds split equally between pot and jig gear and harvested under the following plan:

Jig gear will close when the jig allocation has been achieved or December 31, whichever occurs first. However, if the jig allocation has not been harvested by September 1, the remainder of the guideline will be open to both pot and jig gear.

Pot gear will close when the pot allocation is achieved or April 7, whichever occurs first. If the pot allocation has not been taken by April 7, pot gear will reopen June 15 and remain open until the pot allocation is taken or December 31, whichever occurs first. The April to June pot closure was adopted to address processor concerns for product quality. Fishermen should note that there are regulatory pot closures in both Kachemak and Kamishak Bays, 5 AAC 28.350. (b).

Pots may be stored unbaited and open, in waters 25 fathoms or less throughout the Cook Inlet management area.

Prince William Sound

The Prince William Sound management area included the waters between Cape Fairfield and Cape Suckling. There are two regulatory districts; the Inside District, including the internal waters of Prince William Sound and the Outside District, which includes the territorial waters along the Gulf Coast outside of PWS.

The season for the Inside District of the PWS Management Area is set to open one week after the closure of the federally managed Central Gulf Regulatory Area, or on the date that the state regulations become effective, which ever is later. The Outside District of the PWS Management Area will close concurrently with the Central Gulf Regulatory Area. The PWS guideline harvest level is 880,000 lb to be harvested under the following plan:

When 60% of the guideline is harvested (by all legal gear), fishing with pot gear will close. If the balance of the guideline is not harvested by jig gear before October 1, then pot gear will reopen and the season will remain open to both pot and jig gear until the guideline is achieved. Fishermen should note that there is a regulatory pot closure in eastern and Central PWS, 5 AAC 28.230(e).

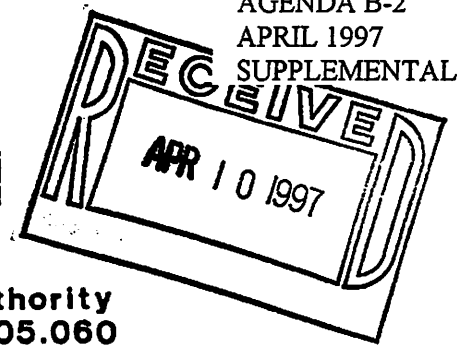
Pot storage, with pots unbaited and open, is provided 10 days before the state season in waters 25 fathoms or less in depth on the north side of Montague Island between 147°25.00' W. long. and 147°35.00' W. long.

COMMERCIAL FISHING

Alaska Department of Fish & Game

emergency order

under authority
of AS 16.05.060



No: 2-GF-H-01-97

Issued at: Homer, AK April 1, 1997.

Effective Date: April 4, 1997

Expiration Date: December 31, 1997 unless
superseded by subsequent emergency order.

EXPLANATION

This emergency order opens the Cook Inlet state waters season for Pacific cod to jig gear and sets open season dates of April 4 through April 6, 1997 for pot gear.

REGULATION

5AAC 28.310. FISHING SEASONS is added to read

5AAC 38.310. FISHING SEASONS

(c) Pacific cod may be taken in state waters of the Cook Inlet Area

(1) by jig gear from April 4 through December 31.

(2) by pot gear from

(A) April 4 through April 6

(B) June 15 through December 31.

Frank Rue
Commissioner

by delegation to:

A handwritten signature in black ink that reads "Charlie E. Trowbridge". The signature is written in a cursive style and is positioned above the printed name of the signatory.

Charlie Trowbridge
Central Region Shellfish/Groundfish
Management Biologist

JUSTIFICATION

During the October 1996 meeting, the Alaska Board of Fisheries adopted a management plan which established a new state waters fishery for Pacific cod. Elements of the plan were described in news releases dated 01/03/97 and 03/07/97. Copies of the regulations are available at ADF&G in Homer. These regulations specify that season dates for the state waters Pacific cod fishery will be set by emergency order.

Therefore, in order to adhere to the Board's specified plan and provide adequate notice to fishermen, the state waters fishery for Pacific cod will open to jig gear on April 4, 1997 and to pot gear from April 4 through April 7 and from June 15 through December 31.

DISTRIBUTION:

Commercial Processors, Commissioner of Fish & Game, Director of Commercial Fisheries, Commercial Fisheries Regional Supervisor, Director of Fish & Wildlife Protection, Fish & Wildlife Protection Officers, Lt. Governor, Asst. Attorney General, Magistrate, Members Board of Fisheries, U.S. Coast Guard, local newspapers and radio stations, Seward, Homer, Kodiak and Seldovia.



ALASKA CRAB COALITION

3901 Leary Way (Bldg.) N.W., Suite #6 • Seattle, WA 98107 • (206) 547-7560 • FAX (206) 547-0130

DATE: March 14, 1997

TO: Dr. John R. White, Chairman
Alaska Board of Fisheries
P.O. Box 25526
Juneau, Alaska 99802 5526

FROM: Arni Thomson, Executive Director



RE: RECOMMENDATIONS FOR ALTERNATIVE MANAGEMENT
MEASURES IN THE BRISTOL BAY KING CRAB FISHERY
(Previously submitted as RC #113, during
deliberations at the Alaska Board of Fisheries,
March 14, 1997.)

The ACC wishes to reaffirm its support for the ADF&G policy of no king crab fishery in Bristol Bay below a 5 million pound GHL for conservation/rebuilding reasons as addressed in our formal comments submitted for this meeting. (See the attached correspondence dated March 3, 1997.)

ADF&G has stated at this meeting that it can manage the fishery with the existing pot limits of 200/250 pots if the GHL is in the range of 5,000,000 lbs. with a pre-announced closure 48 hours after opening. Preannounced closures in the GHL range of 5 to 8 million pounds will most likely result in conservative catches, which will also encourage rebuilding at this depressed stock level.

ADF&G has also stated that even if the Board takes action at a special meeting prior to the fall 1997 fishery to implement pot limits of 60/75 pots to enable opening fisheries below 5 million pounds, they would not open the fishery below 4 million pounds due to conservation concerns and the size of today's fleet. In addition to conservation concerns related to excessive handling that would result from a drastic pot limit reduction, ACC is dubious of marginal economic benefits that would be derived from capturing an additional 1 million pounds of king crab, particularly when weighed against the costs to rebuilding and future harvests.

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The fleet, the industry at large and the State of Alaska as noted in the success of the 1996 king crab season, have already derived significant short term economic benefits from only two years of fisheries conservation practices.

However, ACC notes that ADF&G has the authority to set a minimum GHL through 5AAC 34.080, Harvest Strategy. Included in the criteria that are used for setting the GHL that would support no fishery below the 5,000,000 pound level, are "accepted biological catch;" and "historical fishery performance data."

Thus, it appears to the ACC that the previously defined conservation emergency in the original ADF&G petition of December 6, 1996 accepted by the Board of Fisheries, has after further consideration by ADF&G staff, been removed, and there is no need to schedule a special meeting before the November 1997 Bristol Bay king crab season.

It also appears to the ACC that ADF&G has adequate management flexibility to conservatively manage Bristol Bay with non-significant foregone harvests in 1997 and 1998 and that alternative measures need not be addressed until the regular statewide shellfish cycle in the spring of 1999.

cc: Rick Lauber, Chairman, NPFMC



ALASKA CRAB COALITION

3901 Leary Way (Bldg.) N.W., Suite #6 • Seattle, WA 98107 • (206) 547-7560 • FAX (206) 547-0130

DATE: March 3, 1997

TO: Dr. John R. White, Chairman
Alaska Board of Fisheries
P.O. Box 25526
Juneau, Alaska 99802 5526

FROM: Arni Thomson
Executive Director

RE: RECOMMENDATIONS ON OPTIONS TO IMPROVE MANAGEMENT
OF THE BRISTOL BAY KING CRAB FISHERY

The members of the Alaska Crab Coalition have reviewed the ADF&G petition to the Board of Fisheries setting forth four options to improve management of the Bristol Bay King Crab Fishery. The ACC concurs with ADF&G's conservation concerns regarding the need for the season catch to stay within the parameters of the Guideline Harvest Level and to establish other safeguards to manage the fishery that will protect the reproductive viability of the stock and encourage rebuilding. However, the ACC differs with ADF&G on the preferred options for achieving these goals.

The ACC's preferred options are:

NEED TO ESTABLISH A MINIMUM THRESHOLD FOR MATURE MALES:
ADF&G and the Board of Fisheries need to amend the Harvest Strategy for Red King Crabs in Bristol Bay to incorporate a minimum threshold for mature male king crabs to "maintain adequate brood stock to rebuild the population when it is depressed." (Overview of Population Estimation Methods and Recommended Harvest Strategy for Red King Crabs in Bristol Bay, J. Zheng, M. Murphy, G. Kruse, ADF&G Report #5J96-04, February 22, 1996, p. 3, "The Relationship Between Management Goals and Harvest Strategy." Attachment #1.) The Harvest Strategy adopted by the Board in March 1996, although it established a minimum threshold for mature females, it did not include a minimum threshold for mature males, to protect this segment of the brood stock.

Further, the stock-recruitment relationship that developed from the Harvest Strategy analysis shows that a shortage of mature males to mate all mature females occurred in 4 of 23 years studied: 1972, 1973, 1981, and 1982. During these years the effective spawning stock was calculated from the

estimated number of females the available males could mate. The greatest shortfall of males occurred in 1982 after several years of heavy fishing and high natural mortality (Mature males, 10.9 million; mature females 29.8 million, a 1 to 3 ratio.) (Zheng, Murphy and Kruse, p. 7, and Attachment #2). This followed the record historic catch of 128 million pounds in 1980 and the stock collapse in 1981.

Mature female abundance declined precipitously following the decline of mature males, from 29 million animals in 1982 to 7.1 million animals in 1985, (mature males, 7.1 million animals in 1985), the historic low point for mature males and females (Attachment 2).

Zheng, Murphy and Kruse also note that the mature male and female crab abundances have declined steadily since 1989, 15.6 million males and 17.8 million females to 7.7 million males and 8.5 million females in 1995 (Attachment 2).

Although the level of mature females increased to 10.1 million in 1996 allowing the fishery to reopen, the abundance of mature males continued to decline in 1996 and remains at the historic low level of 7.7 million animals. (Stock Status of Bristol Bay Red King Crabs in 1996, J. Zheng, G. Kruse, and M. Murphy, ADF&G Report #5J96-12, September 5, 1996, Table 1, p. 7, Attachment #2).

Implementation of a minimum threshold can help prevent the abundance of mature males from declining to a level where there is a shortage of males to mate (and protect during soft shell period of grasping pairs) all mature females. The minimum threshold should be considered as integral to the rebuilding and harvest strategy. This will also alleviate industry pressures on fisheries managers to rationalize the opening of fisheries when spawning biomass and recruitment are at perilously low levels, as they are today.

EXPANDED INMARSAT ELECTRONIC CATCH REPORTING AT 12 HOUR INTERVALS: Expand present ADF&G system of Inmarsat Standard C and Standard A electronic catch reporting and mandate catch reports at 12 hour (or less) intervals, at a level within the fleet to be determined by ADF&G/BOF, for statistical accuracy and to insure maintenance of the GHF. The system is to be used for inseason managed fisheries and for pre-announced closure fisheries. Inmarsat C system costs have been reduced to \$5,500 per boat and could be less with group purchases.

USE OF PRE-ANNOUNCED CLOSURES, FOR MINIMUM GHF FISHERIES.

COMBINE SYSTEMATIC ELECTRONIC CATCH REPORTING WITH 24 HOUR ADVANCE NOTICE OF CLOSURE AND ALLOWANCE FOR LEAVING BAITED GEAR ON THE GROUNDS: (Personal use fishery should be closed if baited gear provision is allowed, to alleviate enforcement problems.)

Attachment #1

The purpose of this report is to provide a non-technical summary of our recommended harvest strategy for red king crabs in Bristol Bay given our research findings on stock abundance, population dynamics, and analysis of harvest strategies. Specifically, we describe (1) the length-based analysis (LBA) for calculation of historical population size, (2) the stock-recruitment relationship used to simulate future abundances, (3) an analysis of long-term harvest strategies that are optimal with respect to a suite of biological and economic considerations and which are robust to uncertainties, and (4) a strategy to rebuild the stock in the near term. This report updates Regional Information Report 5J95-21 of the Alaska Department of Fish and Game: *Overview of population estimation methods and robust long-term harvest strategy for red king crabs in Bristol Bay* by Zheng et al. (1995a). For technical details on this research, readers are referred to several scientific papers. Zheng et al. (1995b) described the development of the LBA and estimation of stock-recruitment relationships for the Bristol Bay red king crab population. Zheng et al. (MSa) reported on a slightly revised version of the LBA and stock-recruitment relationships that included updated data through 1994. Zheng et al. (MSb) analyzed long-term harvest strategies and Zheng et al. (MSc) evaluated rebuilding strategies for this stock. Copies of the four technical papers are available from the authors.

The Relationship Between Management Goals and Harvest Strategy

An optimal harvest strategy for any fishery resource depends on fishery management goals. In March 1990 the Alaska Board of Fisheries (Board) adopted a fishery management policy for king and Tanner crabs. The goal of the policy is to maintain and improve these crab resources for the greatest overall benefit to Alaska and the nation. Achievement of this goal is constrained by a need to minimize: (1) risk of irreversible adverse effects on reproductive potential; (2) harvest during biologically sensitive periods; (3) adverse effects on non-targeted portions of the stock; and (4) adverse interactions with other stocks and fisheries. The policy endeavors to maintain a healthy stock, provide for a sustained and reliable supply of high quality product and substantial and stable employment, and provide for subsistence and personal use of the resource. In brief the Board specified a series of policies to protect the crab stock and provide for optimum utilization:

- ✓ 1. Maintain stocks of multiple sizes and ages of mature crabs to sustain reproductive viability and to reduce industrial dependency on annual recruitment;
2. Routinely monitor crab resources so that harvests can be adjusted according to stock productivity;
- ✓ 3. Protect the stock during mating, molting and egg hatch periods;
- ✓ 4. Minimize handling mortality of non-legal crabs;
- ✓ 5. Maintain adequate brood stock to rebuild the population when it is depressed;
6. Establish management measures based on the best available information for each area; and
7. Establish regulations for an orderly fishery.

The Board recognized that these policies may not result in maximization of physical or economic yield. The Board also directed the Alaska Department of Fish and Game (ADF&G) to establish harvest strategies consistent with the Board policy (5 AAC 34.080).

The Board's management goal and policies provide very specific criteria with which the current and alternative harvest strategies for Bristol Bay red king crabs can be evaluated. The following three Board policies imply that harvest rates should be constrained to low or moderate levels: maintain multiple ages and sizes of mature crabs in the population, reduce the variation in yield, and minimize chance of fishery closure due to low abundance. Three other Board policies lead toward the use of a fishery threshold: maintain minimum levels of spawning stock which improve long-term yield, safeguard against population collapse, and provide managers some flexibility when spawning stock is depressed and recruitment uncertain.

A rebuilding strategy will need to patiently accumulate stock by assuring that additions to the stock through recruitment and growth exceed deletions from the stock from directed harvest, handling, bycatch and natural mortality. A rebuilding strategy must balance more immediate loss of harvest against future gains in stock productivity and yields. So harvest strategy depends not only on the management goal and policies but also the planning horizon (or time frame) to realize the desired outcome. Red king crabs take about 7 years to mature and can live more than 20 years. Because of management actions that affect the current spawning stock will take 7 or more years to be manifested as recruitment, the process of rebuilding the population is very slow. Therefore, a planning horizon of several decades is needed to offset the more immediate cost of rebuilding. We must also recognize that uncertainties about mortality from handling or other sources and uncertainty about the degree of density-dependence in the stock-recruit relationship lead us toward selection of a long-term optimal harvest strategy that is robust to differing assumptions.

Abundance Estimation

The National Marine Fisheries Service (NMFS) has estimated the abundance of red king crabs in Bristol Bay by assessment surveys conducted annually since 1968 (e.g., Stevens et al. 1994). This multispecies survey employs a systematic design in which a 20 X 20 nautical mile grid is overlaid on the eastern Bering Sea, and one trawl tow is made per 400 square nautical miles. Population size has been calculated by NMFS using an area-swept method from the number of crabs caught, the width of the trawl opening, and the distance towed.

Over the years, questions have been raised about the accuracy of the survey and the area-swept estimation method due to the coarse spacing of stations, uncertainties about trawl catchability, and occasional unexpected changes in estimated stock size from year to year. Additionally, increased fishing power in recent years in Bristol Bay coupled with the contracting geographic distribution of red king crabs has led to much shorter seasons. Short seasons yield very few days to accumulate data and therefore few data points for managers to draw conclusions on stock status.

Given the uncertainty in area-swept methods of population estimation and extremely short time series of inseason data for Bristol Bay red king crabs, ADF&G sought to develop

Attachment #2

Table 1. Annual abundance estimates (millions of crabs), effective spawning biomass (millions of pounds), and 95% confidence intervals for red king crabs in Bristol Bay as calculated by length-based analysis. Size measurements are carapace length.

Year	Males				Females		Effective Spawning Biomass
	Recruits	Small (95-109 mm)	Pre-rec. (110-134 mm)	Mature (>119mm)	Legal (>134 mm)	Recruits	

a. Abundance Estimates and Spawning Biomass

	1972	NA	13.635	15.182	18.668	10.088	NA	59.632	55.949
	1973	33.561	21.708	28.440	23.626	10.588	32.855	69.667	65.373
	1974	21.878	14.974	36.869	35.869	15.185	28.173	71.223	97.343
	1975	32.985	21.330	37.480	43.008	21.243	21.755	65.804	116.186
	1976	48.805	31.563	47.984	51.076	26.035	34.298	75.024	128.791
	1977	57.745	37.775	64.589	65.327	30.957	72.172	118.540	171.947
	1978	21.549	15.842	61.576	78.543	40.876	46.737	119.878	199.930
	1979	12.681	8.809	37.795	75.326	48.378	18.837	92.982	166.904
	1980	24.681	15.798	26.556	60.160	44.213	35.990	93.616	166.383
	1981	17.188	11.653	17.541	18.618	9.467	13.618	71.523	59.787
Ratio	1982	28.277	15.132	16.720	-10.685	2.912	17.154	-29.724	-24.940
	1983	12.927	8.980	13.733	9.183	2.477	4.828	10.030	16.728
Historic Low	1984	18.106	11.764	13.087	8.430	2.320	11.704	13.461	16.961
	1985	11.225	7.706	11.136	→ 7.152	1.784	4.798	← 7.146	- 10.699
	1986	6.525	4.662	13.386	12.108	4.334	3.917	9.101	14.474
	1987	7.002	4.693	11.784	14.203	6.683	8.911	15.532	24.525
	1988	6.599	4.457	10.645	14.771	8.260	5.705	16.987	28.427
Declining Trend To 1996	1989	5.448	3.727	9.729	← 15.684	9.670	5.515	- 17.885	- 31.232
	1990	1.466	1.208	7.261	15.043	10.103	0.895	13.923	26.921
	1991	4.007	2.564	5.173	11.923	8.452	3.762	13.931	27.062
	1992	5.820	3.806	6.072	9.907	6.641	3.473	13.625	26.709
	1993	1.994	1.791	6.620	9.724	5.787	2.191	12.122	24.601
	1994	0.923	0.827	5.053	8.047	4.476	0.420	9.263	20.329
	1995	2.220	1.488	3.915	7.837	5.116	1.799	8.565	18.640
	1996	3.604	2.443	4.334	- 7.795	5.258	3.937	- 10.183	20.263

b. 95% Confidence Limits in 1996:

Lower	2.879	NA	3.535	6.408	4.201	2.900	8.145	NA
Upper	4.509	NA	4.943	8.704	5.993	6.277	13.788	NA