DRAFT SPECIAL AGENDA

for

JOINT MEETING BETWEEN THE ALASKA BOARD OF FISHERIES

and the

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

September 26, 1984
Old Federal Building
Anchorage, Alaska

I. Introduction and Purpose/Scope of Joint Meeting

II. Selection of Chairman

III. Staff Reports

1. Results of 1984 NMFS Trawl Survey - Otto
2. Review of 1984 Westward Tanner Crab Fisheries - Eaton/Griffin
3. Review Status of Tanner Crab FMP, State and Federal Regulations - Davis
4. Review report entitled, "Conservation, Allocation and Enforcement Aspects of Pot Limits and Exclusive Areas" - Larson, et al

IV. Review Proposals

V. Public Testimony

VI. Joint Discussion and Action

VIII. Adjournment of Joint Session

SEPT84/BB

9/27/84

Results of Board Action on Tanner Crab

1. Exclusive Registration Areas

* The Board has chosen to maintain the Southeast district as an exclusive area.

The Board has chosen to repeal the exclusive area designation from Chignik, South Peninsula and Yakutat districts.

2. Pot Limits

* The Board has chosen to suspend the state's 200 pot limit in the Kodiak district ~~on~~ until January 1, 1986.

3. Season Dates

* The Board modified the season dates approved last March by changing the Yakutat Tanner crab opening date to January 15 from February 10, the Southeast district remains scheduled to open on Februray 10.

* indicates Council consideration required.

31C/F

AGENDA D-2
SEPTEMBER 1984

M E M O R A N D U M

TO: Council, AP and SSC Members

FROM: Jim H. Branson
Executive Director

DATE: September 18, 1984

SUBJECT: Tanner Crab Fishery Management Plan

ACTION REQUIRED

Review and discuss regulatory proposals before the Council and Board. Give direction to Plan Maintenance Team on preparation of plan amendment if necessary.

BACKGROUND

In March 1984, the Alaska Board of Fisheries and North Pacific Fishery Management Council met to discuss the management of the Tanner crab fishery off Alaska. Numerous regulatory proposals were reviewed and acted upon and there are no substantive differences between state and federal Tanner crab fishery regulations for 1985 except in two areas: exclusive registration areas and pot limits.

In 1983, the Board approved the designation of South Peninsula, Chignik and Southeast districts as exclusive registration areas, and approved a 200-pot limit for the Kodiak district. The Council reviewed these proposed regulations (Amendment #10) in September 1983 and did not adopt them because they lacked a clear objective, there were questions about their conservation rationale and enforcement, and there was some uncertainty as to the allocative effects these measures would have on the fishing fleet and local communities. Several proposals were before the Board in 1984 requesting the elimination of the state exclusive area and pot limit regulations for these districts. The Council's concerns over exclusive registration areas and pot limit regulations were expressed to the Board at the 1984 joint meeting. Following considerable discussion the Council authorized a NMFS/ADF&G/NPFMC study to investigate these regulations more fully and scheduled a special meeting with the Board to review the study before making a decision. Copies of the study have been sent to you prior to the meeting. The Executive Summary has been enclosed for your information as item D-2(a). An oral report will also be presented.

In preparation for the special meeting the Board issued a request for proposals with the focus on exclusive registration and pot limits. Proposals have been cataloged and summarized and are included in your notebooks as item D-2(b) and (c). They essentially mirror the March 1984 proposals requesting the repeal of existing state regulations. One proposal from Southeast Alaska was received supporting the Southeast exclusive area designation.

The action required at this meeting is a decision by the Board and Council to either adopt or reject exclusive registration for the Chignik, South Peninsula and Southeast districts and to either adopt or reject a 200-pot limit in Kodiak. Mutual agreement on these proposed regulations is necessary if consistent fishery regulations in both state and federal waters are to be achieved. A board decision to repeal exclusive registration and pot limits in the four districts would require no formal action from the Council. A Board decision to maintain current state regulations would require a Council decision to either accept the status quo (inconsistent regulations with the state) or amend the Tanner crab FMP to provide for exclusive registration areas and pot limits.

Status of Amendment #9

Amendment #9 which established a framework procedure for setting fishing seasons, expanded the Regional Director's field order authority, and updated MSY and ABC values was partially disapproved by NMFS on August 24, 1984. The only part of the amendment fully approved was the updated MSY and ABC section. A letter explaining the NMFS decision is enclosed as item D-2(d). The pre-season framework procedure was "conditionally approved" and the expanded field order authority disapproved. This differs somewhat from the FEDERAL REGISTER notice of final rulemaking (published on September 12, 1984) which says that the pre-season notice procedure was approved as proposed. A copy of the final notice is included as item D-2(e). The Regional Director of NMFS-Alaska will be available to explain his decision.

EXECUTIVE SUMMARY

This report examines aspects of the conservation and allocation of Tanner crab through the use of pot limits in the Kodiak area or exclusive area registration in the Alaska Peninsula area, and enforcement of pot limits. It reflects research and analysis done by a working group composed of members of the staff of the Alaska Department of Fish and Game, the National Marine Fisheries Service, and the North Pacific Fishery Management Council, and discussions with representatives of other agencies.

Conservation of a fishery resource has many dimensions, some of which (concerning biological degradation due to excessive fishing, for example) are not well known. However, it is recognized that under- or overharvest of a resource relative to the established harvest guideline, or optimum yield, embodies some social costs. If these under- or overharvests are attributable to rapid prosecution of the fishery because of too much effort relative to stock size, the ability of management to respond properly can be hampered. In this situation, a management measure which lengthens the season and permits management to function better, thereby resulting in actual harvests which are closer to the target harvest guidelines, can be considered to be serving a conservation purpose by reducing the social costs. Such an interpretation is consistent with the view of conservation of a resource as "wise use" over time.

A model of movement among western area Tanner crab fisheries was developed in order to examine likely allocation shifts among residents of different areas if pot limits were used in Kodiak, or exclusive area registration were used in the Alaska Peninsula. Using 1983 data, the most recent year for which data were available, it was apparent that exclusive area registration would have prompted a shift of vessels away from the Alaska Peninsula, thereby lengthening the season in that area and reallocating harvests toward Alaska Peninsula residents. This is very much consistent with what everyone generally expects exclusive registration areas to do. However, since Kodiak was clearly the substitute fishery to which vessels would go, there would have been a nearly offsetting reallocation of catch away from Kodiak residents in the Kodiak area as a result of imposing exclusive registration in the Alaska

Peninsula. Thus, it is questionable whether a broader Board of Fisheries goal, increasing the Alaskan share of Tanner crab harvests, would be met. An additional problem is that these reallocations of harvest appear very much like a zero sum gain, where gains to those whose harvests are increased appear to be approximately offset by losses to those whose harvests are reduced. Thus, it is not readily apparent that the exclusive registration will result in an increase in national net economic benefits, the finding that is required for successful federal rulemaking.

Pot limits in the Kodiak area according to the 1983 data used in the model, would result in a reallocation of Kodiak area catch from outside boats (primarily) to Kodiak boats (primarily). However, offsetting the gains to Kodiak in the Kodiak area, Alaska Peninsula residents in the Alaska Peninsula area (the primary substitute fishery for the Kodiak boats) would lose catch. If a 200-pot limit were implemented, all other residents categories (Kodiak, other Alaska, outside) would gain in the Alaska Peninsula area. However, with more severe pot limits (150 or 100 pots) outside boats would lose catch both in Kodiak and in the Alaska Peninsula.

An extremely important qualification is in order here about the effects of pot limits. The reallocations of catch just described are based on an assumption that pot limits would adversely affect the catch of large boats by hindering their efficiency of operation. The way the model reflects this is in a reduction of pot lifts made per week by vessels fishing more than a proposed pot limit. However, previous research suggests that the relationship between soak time and catch per pot may not be statistically significant for the range of changes in soak times induced by pot limits. The implication of this is that it would be better for a vessel which had to change its fishing pattern in response to a pot limit to maintain the number of pots lifted per day, reducing average soak time per pot. If this were done, and there were no change in catch resulting from the change in soak time, no loss of harvest would result.

The enforcement of pot limits was also examined, in light of data on convictions for crab gear violations in the period 1963-83. It is quite likely that a person violating a pot limit regulation would do so by fishing pots that

were either unmarked, registered to someone else, or improperly identified. While there were 3 pot limit convictions in this period, there were 81 convictions for violations in the other three categories, out of a total of 204 convictions for all crab gear violations. This does not necessarily mean that convictions in these related categories were for pot limit offenses, but it seems fair to say that the number of convictions for offenses related to violating pot limits is somewhere between 3 and 81, for the period 1963-83. (75% of the convictions were obtained in the period 1976-83.)

Because of this evidence, and the fact that pot limits have been found to be in violation of a relatively weak[a/] national standard in the past, the working group concluded that enforcement aspects of the pot limits appear to be one of the less important issues concerning their use. More important are defining clear objectives for management of the Tanner crab resource and evaluating the performance of both pot limits and exclusive areas in achieving these objectives.

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a/ The standard in question is National Standard 7, which states that "Conservation and Management measures shall, where practicable, minimize costs and avoid unnecessary duplication."

TANNER CRAB

Proposal #1 5 AAC 35.020. Re-establish Southeast Alaska (Cape Spencer to Dixon Entrance) as a super-exclusive registration area in the tanner crab fishery.

JUSTIFICATION: The tanner crab fishery needs the super-exclusive registration for both stability and better management. Our tanner crab fishery in Southeast Alaska occurs solely in state waters and should not be managed by NPFMC.

Proposed by: Phil Wyman (28)

Bd Supp 5-2

Proposal #2 5 AAC 35.020. Classify Southeastern-Yakutat, South Peninsula and Chignik tanner crab districts as non-exclusive tanner crab fishing areas.

JUSTIFICATION: Prior to the 1984 tanner crab season it was the fishermens understanding that the State of Alaska would enforce super-exclusive areas beyond three miles. Federal regulations classified these areas as non-exclusive, thus the conflict in regulations took place. This proposal would clarify said conflict.

Proposed by: North Pacific Fishing Vessel Owners' Association (39)

TANNER CRAB

Proposal #3 5 AAC 35.110., 5 AAC 35.310., 5 AAC 35.410. and 5 AAC 35.510 Establish season dates for 1984-85 tanner crab fisheries as follows:

AREA	OPEN	BARDI CLOSURE	OPILIO CLOSURE
Kodiak	Jan. 15	April 30	
Alaska Peninsula (Chignik)	Jan. 15	May 15	
Eastern Aleutians (Dutch Harbor)	Jan. 15	June 15	
Western Aleutians (Adak)	Nov. 10	June 15	
Bristol Bay	Jan. 15	June 15	August 1
Pribilofs	Jan. 15	June 15	August 1
St. Matthew	Jan. 15	June 15	August 1
Norton Sound	Jan. 15	June 15	August 1
St. Lawrence	Jan. 15	June 15	August 1
Cook Inlet	Nov. 1	May 31	
Prince William Sound	Jan. 5	May 31	
Southeast/ Yakutat	~~Feb. 10~~ 1/15	May 1	

Same as currently on books

JUSTIFICATION: The enclosed recommendations for season dates were established at the March Board of Fisheries meeting. This proposal reinforces that position. Closure dates could vary depending on biological information and catch statistics.

Proposed by: North Pacific Fishing Vessel Owners' Association (39)

pass - 7-0

TANNER CRAB

Proposal #4 5 AAC 35.525. Eliminate the pot limit for the Kodiak district tanner crab fishery.

JUSTIFICATION: Prior to the 1984 Kodiak tanner crab fishery there was a conflict between state and federal regulations in regards to pot limits. Eliminating the Kodiak pot limit would address this conflict area. Pot limits have been proven to be a discriminating allocative management tool, not a conservation measure.

Proposed by: North Pacific Fishing Vessel Owners' Association (39)

fld 5-2

TANNER CRAB

Proposal #5 5 AAC 35.525. Correct an administrative error by changing the Tanner crab pot storage areas in the Bering Sea District to conform with the king crab pot storage areas.

JUSTIFICATION: When the board changed the king crab pot storage areas for the Bering Sea, they expressed a desire to likewise change the tanner crab pot storage areas. However, lacking a specific proposal to do so, the board simply neglected to formally adopt the change.

Proposed by: Alaska Board of Fisheries (13)

pass 7-0

COUNCIL STAFF REVIEW OF TANNER CRAB PROPOSALS OF MUTUAL BOARD/COUNCIL CONCERN

SOUTHEASTERN-YAKUTAT

Amendment Required

A. Registration

Y

1. Establish Southeast Alaska (Cape Spencer to Dixon Entrance) as exclusive registration area in the Tanner crab fishery.

The proposal was submitted by Mr. Phil Wyman. He supports the proposals by saying that exclusive registration (i.e. super-exclusive) will provide stability in the fishery and better management. He also states that the Tanner crab fishery in the Southeast district occurs solely in state waters and not in the FCZ.

Given that the Southeast district Tanner crab season opens later than those areas westward, the harvest guidelines in the westward areas are generally higher than in Southeast Alaska, and that it is highly unlikely that a mobile, non-local Tanner crab fleet will fish in the Southeast district, how will creating an exclusive registration area improve the economic stability of this fishery?

With fishing vessels already required to register prior to fishing, how will management be improved?

Is there no commercial Tanner crab harvest taken in the FCZ cul-de-sacs located in Cross Sound, Sitka Sound, Chatham Strait and Iphigenia Bay?

N

2. Classify Southeastern-Yakutat districts as non-exclusive registration areas for Tanner crab management.

This proposal was submitted by the North Pacific Fishing Vessel Owner's Association. Currently a regulatory inconsistency exists between state and federal regulations. The State of Alaska has designated the Southeast and Yakutat districts as exclusive (i.e. super-exclusive) registration areas. Federal regulations classify these areas as non-exclusive. The NPFVOA is in favor of a

non-exclusive status and proposes changing state regulations to bring them into conformity with federal regulations.

Adoption of this proposal by the Board would produce a consistent registration regulation for both state and federal waters. No FMP amendment is required. If the Board disapproved this proposal, the Council must consider amending the FMP and federal regulations to be in conformity with the Board.

SOUTH PENINSULA-CHIGNIK

Amendment Required		
	A.	Registration
N	1.	Classify South Peninsula-Chignik districts as non-exclusive registration areas for Tanner crab management.

This proposal was submitted by the North Pacific Fishing Vessel Owner's Association. Currently a regulatory inconsistency exists between state and federal regulations. The State of Alaska has designated the South Peninsula and Chignik districts as exclusive (i.e. super-exclusive) registration areas. Federal regulations classify these areas as non-exclusive. The NPFVOA supports the non-exclusive status and proposes that state regulations be brought into conformity with existing federal regulations.

Adoption of this proposal by the Board would produce a consistent registration regulation for both state and federal waters. No FMP amendment is required. If the Board disapproved this proposal, the Council must consider amending the FMP and federal regulations to be in conformity with the Board.

KODIAK

Amendment Required		
	A.	Gear
N	1.	Eliminate the 200-pot limit for the Kodiak district Tanner crab fishery.

This proposal was submitted by the North Pacific Fishing Vessel Owner's Association. Currently there exists a conflict between state and federal Tanner crab regulations. The State of Alaska has set a 200-pot limit for the Kodiak district. There are currently no federal Tanner crab pot limits.

The NPFVOA supports the elimination of the state pot limit. They claim that pot limits are a discriminating allocative measure and not a conservation measure. Adoption of this proposal by the Board would bring state regulations into conformity with federal regulations. No Council action is required. If the Board disapproves this proposal, or establishes a new pot limit, the Council must consider amendment of the FMP and regulations to bring them into conformity with the Board.

WESTWARD

Amendment Required		
N	A.	Correct a state administrative error by changing the Tanner crab pot storage areas in the Southeastern Bering Sea to conform with the king crab pot storage areas.

This proposal was established by the Alaska Board of Fisheries. It essentially cleans up state regulations by designating as a state Tanner crab pot storage area the existing state king crab pot storage area and federal Tanner crab pot storage area located in waters between 57° and 58°N. latitude and 164° and 166°W. longitude. This action, if adopted by the Board, will bring state regulations into conformity with federal regulations. No Council action is required.

STATEWIDE

Amendment Required		
	A.	Fishing Seasons
?	1.	Establish season dates for the 1984-85 Tanner crab fisheries as follows:

Area	Open	Bairdi Closure	Opilio Closure
Kodiak	Jan. 15*	April 30	
Alaska Peninsula (Chignik)	Jan. 15*	May 15	
Eastern Aleutians (Dutch Harbor)	Jan. 15*	June 15	
Western Aleutians (Adak)	Nov. 10	June 15	
Bristol Bay	Jan. 15*	June 15	August 1
Pribilofs	Jan. 15*	June 15	August 1
St. Matthew	Jan. 15*	June 15	August 1
Norton Sound	Jan. 15*	June 15	August 1
St. Lawrence	Jan. 15*	June 15	August 1
Cook Inlet	Nov. 1*	May 31	
Prince Wm. Sound	Jan. 5*	May 31	
Southeast/Yakutat	Feb. 10*	May 1	

*Indicates current federal inconsistencies as of 8/1/84.

This proposal was submitted by the North Pacific Fishing Vessel Owner's Association. These season dates were agreed upon by both the Board and Council at its March meeting. This proposal was submitted as a confirmation of these season dates. NPFVOA understands that the closure dates may change depending on biological information and catch statistics.

In July 1983, the Council approved Amendment #9 to the Tanner Crab FMP which would establish a framework procedure for the setting of Tanner crab seasons.

At the March meeting, the Council and Board reviewed season proposals with the assumption that Amendment #9 would be implemented prior to the Tanner crab fishery. However, the amendment has undergone several delays and as of August 1, 1984, the new season dates have not been noticed in federal regulations.

AGENDA D-2(d)
SEPTEMBER 1984

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

RECEIVED AUG 28 1984

ACTION	ROUTE TO	INITIAL

August 24, 1984

James O. Campbell, Chairman
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, AK 99510

Dear Jim:

This letter is to advise you of my decision to partially disapprove Amendment 9 to the fishery management plan for the Commercial Tanner Crab Fishery off the Coast of Alaska and to provide you with my reasons for this decision.

Under procedures that implement the Magnuson Fishery Conservation and Management Act (Magnuson Act), as amended by Public Law 97-453, and authority delegated to me on September 20, 1983, I am required to approve, disapprove, or partially disapprove plans and amendments after the 75th day, but before the close of the 95th day, following receipt by the Secretary of Commerce of a plan or amendment. Following receipt by the Secretary of the subject amendment on May 21, 1984, I immediately commenced a review of the amendment to determine whether it was consistent with the national standards, other provisions of the Magnuson Act, and any other applicable law. As required by procedures of the Magnuson Act, a Notice of Availability of the amendment was published in the FEDERAL REGISTER on May 29, 1984 (49 FR 22362) and the receipt date was announced. Proposed implementing regulations were filed with the Office of the Federal Register on June 21, 1984, and published June 26, 1984 (49 FR 26117). Both documents invited public review and comment until August 6, 1984. No comments from the public were received. During this same period, the views and comments of the Secretary of State, the U.S. Coast Guard, and the Washington, D.C., components of NMFS and NOAA were invited. My decision to partially disapprove Amendment 9 takes into account comments received from the latter.

Amendment 9 was adopted by the Council at its July 1983 meeting to implement the following three measures.

- establish a framework provision for setting Tanner crab fishing seasons;
- provide the Secretary of Commerce with broadened field order authority to adjust season opening and closing dates for socioeconomic factors; and

° update the values for acceptable biological catches (ABCs) on which optimum yields are based.

I have conditionally approved the framework provision and have approved the updated ABCs; I have disapproved the broadened field order authority.

My conditional approval of the framework provision reflects policy and advice received from the NMFS Washington Office. The Council intended season changes to be implemented through publication of initial and final notices in the FEDERAL REGISTER. Season changes were not to be codified in the Code of Federal Regulations. The Council intended that the regulatory impact review (RIR) prepared for this amendment would satisfy purposes of the Regulatory Flexibility Act and E.O. 12291, and, reflecting the philosophy of "framework plans," that RIRs would not be needed for future season changes.

I have been advised by the Washington Office that the notice and comment procedure established to "framework" the preseason setting of seasons is considered rulemaking under the Administrative Procedure Act; initial and final notices (proposed and final rules) prepared to implement season changes will therefore be reviewed by the Department of Commerce (DOC) and the Office of Management and Budget (OMB). The Washington Office will require that a regulatory impact review/regulatory flexibility analysis (RIR/RFA) be prepared to support the initial exercise of this authority implementing any season changes for the 1985/86 fishery that the Council recommends following its March 1985 joint meeting with the Alaska Board of Fisheries. The RIR/RFA will be reviewed by the Washington Office, DOC, and OMB prior to proposed rulemaking. The economic impacts of season changes in subsequent years must also be analyzed, but this analysis will be limited to an update of the original RIR/RFA, to be incorporated into the preamble of each notice. Review of these future analyses, however, will be conducted concurrently with the public comment period provided during proposed rulemaking. Final rules implementing season changes must be approved by the Washington Office, DOC, and OMB. This compromise will be somewhat less expeditious than a pure "notice" procedure, but the agreed-upon review of the supplementary economic analysis concurrent with the public comment period on initial notices will minimize the period required for review and approval. I believe that this action constitutes a substantial improvement over the amendment process now required to implement preseason adjustments to seasons under the Tanner crab FMP.

The Council has already adopted several season changes for the 1984/85 fishery resulting from its March 1984 meeting with the Board. The Washington Office has advised us to implement these changes by emergency rule. We will take this initiative.

I have disapproved the broadened field order authority, again on the advice of the NMFS Washington Office. As approved by the Council, the authority is too broad to qualify for exemption from the notice and comment provisions of the APA or the limited OMB review exemption granted to NMFS for inseason management actions. As a result, any changes in

inseason management under this authority would be subject to notice and comment and to OMB and DOC review, except in emergencies. We understand that the Council desires more expeditious action to respond to unforeseen contingencies and thus comply better with National Standard 6. We in the NMFS Alaska Region will draft a revised version of the field order provisions of the amendment, implementing regulations, and supporting analytical documents for Council review. Should the Council decide to resubmit this revised amendment, it will be subject only to the 60-day Secretarial review provided under Section 304(b)(3)(C)(i) of the Magnuson Act.

The General Counsel of NOAA has asked me to state that he agrees that the field order authority is too broad to qualify for the exemption under Executive Order 12291, but that he does not believe it is otherwise unlawful under the Magnuson Act.

I am willing to discuss my decision and my recommendation before the Council at its September 1984 meeting.

Sincerely,

Robert W. McVey
Director, Alaska Region

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 671

[Docket No. 40674-4106]

Tanner Crab off Alaska

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Final rule.

SUMMARY: NOAA issues a final rule to implement the approved parts of Amendment 9 to the fishery management plan for the Commercial Tanner Crab off the Coast of Alsaka. Approved measures contained in this amendment are necessary to establish annually fishing seasons and areas based on biological information and socioeconomic needs of the fishery, and to update the acceptable biological catches on which optimum yields are based. These measures are intended to promoted an orderly fishery that is consistent with the needs of the industry and with conservation requirements.

EFFECTIVE DATE: October 7, 1984.

ADDRESS: Copies of the amendment, the enviromental assessment, and the regulatory impact review may be obtained from the North Pacific Fishery Management Council, P.O. Box 103136, Anchorage, AK 99510, telephone 907–274–4563.

FOR FURTHER INFORMATION CONTACT: Raymond E. Baglin (Fishery Biologist, Kodiak Field Office, NMFS), 907–486–4791.

SUPPLEMENTARY INFORMATION:

Background

The Fishery Management Plan for the Commercial Tanner Crab Fishery off the Coast of Alaska (FMP) was developed by the North Pacific Fishery Managment Council (Council) and approved and implemented by the Assistant Administrator for Fisheries, NOAA (Assistant Administrator), under the Magnuson Fishery Conservation and Management Act, Pub. L. 94–265,as amended, 16 U.S.C. 1801 *et seq.* (Magnuson Act). The FMP was published in the Federal Register on May 6, 1978 (43 FR 21170). Following initial implementation of the FMP in December 1978, eight amendments to the FMP have been implemented.

Amendment 9 was adopted by the Council at its July 1983 meeting and contains three measures. These measures (1) establish a framework provision for setting Tanner crab fishing seasons by preseason notice and comment procedures, (2) broaden the field order authority of the Secretary of Commerce (Secretary) to adjust seasons or fishing areas for socioeconomic reasons, and (3) establish new optimum yields (OYs) for Tanner crab stocks based on the best available scientific information indicating changes in acceptable biological catches (ABCs). The preamble to the proposed rule (49 FR 26117, June 26, 1984) and the regulatory impact review prepared for the amendment and summarized in the preamble dicussed the need and justification for these measures.

After considering the merits of the three parts of Amendment 9 and their consistency with the Magnuson Act and other applicable law, the Secretary has (1) approved the framework measure to set seasons by the notice procedure that was proposed, (2) disapproved the broadened inseason field order authority, and (3) approved the updated ABCs.

The disapproved measure, as submitted by the Council, is not necessary nor appropriate for the conservation and management of the fishery. After revison, the Council may resubmit this portion of the amendment under section 304(a)(2) of the Magnuson Act. In the final rule, therefore, the proposed removal of § 671.26(c)(2), (d)(2), (e)(2) and (f)(2) and the proposed changes in § 671.27(b) are withdrawn to reflect disapproval of the broadened inseason field order authority of Amendment 9, as proposed. The final rule is also changed in § 671.26(a)(2)(ii)

to indicate that the Secretary will publish a second notice within 45 days, instead of 30 days, after the end of the comment period. This change is necessary to accommodate the actual time required by the Secretary to review and clear the final notice.

Public Comments

Public comments were invited until August 3, 1984. No public comments were received.

Classification

The Assistant Administrator for Fisheries, NOAA (Assistant Administrator), has determined that this rule is necessary and appropriate for conservation and management of fishery resources and that it is consistent with the Magnuson Act and other applicable law.

The Council prepared an environmental assessment for this amendment and concluded that no significant impact on the environment will occur as a result of this rule.

The Administrator of NOAA has determined that this rule is not a "major rule" requiring a regulatory impact analysis under Executive Order 12291.

Although the Administrator of NOAA had determined that the proposed rule would have had a significant economic impact upon a substantial number of small domestic entities for the purposes of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, he has now determined that the final rule will not have such an impact. The measure which would have broadened inseason field order authority has been disapproved. The measure addressing preseason setting of seasons is purely procedural; the exercise of this authority will be analyzed to assess its impact on small entities. Finally, the revisions of ABCs and OYs reflect values currently used in management of the fishery, and thus do not constitute a change which would have a substantial economic impact on small entities. For these reasons, the General Counsel of the Department of Commerce has certified to the Small Business Administration that this rule will not have a significant economic impact.

This final rule does not contain a collection of information requirement within the meaning of the Paperwork Reduction Act.

The Council determined that this rule will be implemented in a manner that is consistent to the maximum extent practicable with the approved coastal zone management program of the State of Alaska. This determination has been submitted for review by the responsible State agency under section 307 of the Coastal Zone Management Act.

List of Subjects in 50 CFR Part 671

Fish, Fisheries, Reporting and recordkeeping requirements.

(16 U.S.C. 1801 *et. seq.*)

Dated: September 7, 1984.

Carmen J. Blondin,

Deputy Assistant Administrator for Fisheries Resource Management National Marine Fisheries Service.

PART 671—[AMENDED]

For the reasons set forth in the preamble, 50 CFR Part 671 is amended as follows:

1. In § 671.2, new definitions for "Council" and "FMP" are added in appropriate alphabetical order to read as follows:

§ 671.2 Definitions.

* * * * *

Council means the North Pacific Fishery Management Council, P.O. Box 103136, Anchorage, AK 99510, telephone 907–274–4563.

* * * * *

FMP means the Fishery Management Plan for the Commercial Tanner Crab Fishery off the Coast of Alaska.

* * * * *

2. In § 671.21, Table 1 at paragraph (a) is revised to read as follows:

§ 671.21 Optimum yield.

(a) * * *

TABLE 1.—OPTIMUM YIELDS (MILLIONS OF POUNDS) OF TANNER CRAB STOCKS IN THE FISHING DISTRICTS OR REGISTRATION AREAS OFF ALASKA [1]

Registration area—District	Optimum yield
Southeastern (A):	
Southeast	1.0 to 3.0.
Yakutat	0.1 to 1.0.
Prince William Sound (E)	1.5 to 3.5.
Cook Inlet (H)	1.5 to 3.0.
Westward (J):	
Kodiak	11.0 to 33.0.
Chignik	0.5 to 5.0.
South Peninsula	2.0 to 6.0.
Eastern Aleutians	0.1 to 2.0.
Western Aleutians	0.1 to 2.0.
Bering Sea:	
C. bairdi	5.0 to 28.5.
C. opilio	20.0 to 130.5.[2]

[1] Catches of Tanner crab in a State of Alaska registration area or district will be considered part of the optimum yield specified for the contiguous Federal registration area or district of the same name.

[2] Equals domestic annual harvest.

* * * * *

3. In § 671.26, paragraph (a) is revised to read as follows:

§ 671.26 Seasons, general gear restrictions, and registration areas.

(a) *Season dates*—(1) *Criteria for setting season opening and closing dates.* The Council may recommend to the Regional Director Tanner crab season opening and closing dates that it finds to be necessary in accordance with the following factors:

(i) Deadloss—the need to prevent or minimize deadloss, i.e., mortality of crab prior to processing.

(ii) Recovery rate—the need to increase the meat recovery rate.

(iii) Weather—the need to schedule seasons to avoid severe weather conditions.

(iv) Costs—the need to mininize costs to the industry.

(v) Other fisheries—the need to consider demands by other fisheries on harvesting, processing, and transportation systems.

(vi) Coordinated season timing—the need to distribute fishing effort and thus prevent gear saturation in a particualr area.

(vii) Enforcement and management costs—the need to consider costs of enforcement and management before, during, and after an open season.

(2) *Procedures*—(i) As soon as practicable after the Council has recommended to the Regional Director season opening and closing dates, the Secretary will publish an initial notice in the Federal Register specifying the proposed dates. Public comments on the proposed dates and whether they are consistent with the objectives of the FMP will be invited for a period of 30 days after this notice is published in the Federal Register.

(ii) Within 45 days after the end of the comment period, the Secretary will publish a second notice approving, disapproving, or partially disapproving the proposed season dates based on comments received and his determination on whether the dates are consistent with the objectives of the FMP, the national standards of the Magnuson Act, and other applicable law. Season opening and closing dates presented under this paragraph will remain in effect until the Secretary issues a notice approving changes to those dates.

* * * * *

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ADDENDUM

to Chapter IV

Conservation and Allocation Effects of Pot Limits

and Exclusive Areas

The Analysis of Data from the 1980-81 Fishing Year

The fishing year 1980-81 was selected for further analysis in this update, because we believed it provides an interesting counterpoint to the 1982-83 season. In the 1982-83 fishing season, the Alaska Peninsula and Kodiak seasons were both very short and scheduled simulataneously, with the result that there was very little participation by vessels in both areas. Also, the Bering Sea opened later than the Kodiak and Alaska Peninsula seasons opened, and did not really develop (in terms of both CPUE and vessel participation) until after the Kodiak and Alaska Peninsula seasons were completed. Thus, in the 1982-83 season, the Alaska Peninsula and Kodiak areas acted as primary substitute areas for each other, and the Bering Sea fishery occurred late enough that vessels could fish either the Alaska Peninsula or Kodiak first, then go to the Bering Sea. Thus, the primary fishery participation patterns in 1982-83 were Kodiak-Bering Sea and Alaska Peninsula-Bering Sea.

In contrast, in the 1980-81 season, the Kodiak and Alaska Peninsula fisheries were substantially longer, and were not scheduled simultaneously. The Alaska Peninsula fishery began November 1, while the Kodiak fishery began January 22.[1/] Thus, the Alaska Peninsula fishery had been open for some 17 statistical weeks before the opening of the Kodiak fishery. Also, in the 1980-81 season, the

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1/ Landings were not recorded until late February, however, because of a price dispute.

Bering Sea opened the last week of January, and catches were sufficiently high early in that season that it represented a major alternative to fishing in the Kodiak or Alaska Peninsula fisheries from late January on. Another contrast between the 1980-81 season and the 1982-83 season is that stocks in the Bering Sea were relatively more healthy in 1980-81, compared with the Alaska Peninsula and Kodiak areas.

Effects of Exclusive Area Registration in the Alaska Peninsula

When 1980-81 data were analyzed in the allocation model, adjustments among all three areas (Kodiak, Alaska Peninsula, and the Bering Sea) were predicted. Small vessels from Kodiak and the Alaska Peninsula fished both Kodiak and the Alaska Peninsula, as did medium Kodiak vessels. Vessels from each of these categories which fished both areas would have chosen to forego fishing in Kodiak in favor of fishing the Alaska Peninsula area, based on expected average gross earnings in the two areas. Medium vessels from the Alaska Peninsula and Outside, and large Kodiak and Outside boats, all fished both the Alaska Peninsula area and the Bering Sea. Given the choice that exclusive registration requires (i.e., to fish either the Alaska Peninsula or areas outside the Alaska Peninsula), these vessels would have elected to forego fishing the Alaska Peninsula in favor of the Bering Sea. Thus, the movement of effort was away from the Kodiak area, and toward the Bering Sea area, with some effort moving into the Alaska Peninsula area and some leaving it.

The results of these effort movements in response to exclusive registration are summarized in Table B-1, for the adjusted model (time constraints prevented analysis of the data with the unadjusted model as well). Because of

Table B-1. Predicted Effects of Instituting Exclusive Registration in the 1980/81 Alaska Peninsula Tanner Crab Fishery.

	ADJUSTED MODEL			
	KODIAK	AK PEN.	BERING SEA	NET CHANGE
Actual 1981 catch (lbs.)	11,676,224	6,233,908	67,311,373	
Season length (days)	60	125	90	
Predicted 1981 catch (lbs.)	11,652,000	6,240,000	67,310,000	
Predicted changes in:				
Season length (days)	+ .60	+ 1.0	- 1.0	
Catch (lbs.)				
Kodiak residents	- 20,000	+ 383,000	+ 59,000	+ 422,000
Alaska Pen. residents	- 4,000	+ 444,000	+ 26,000	+ 466,000
Other AK residents	+ 1,000	+ 4,000	- 47,000	- 42,000
Outside residents	+ 22,000	- 831,000	- 38,000	- 847,000
Gross earnings (in 1981 $)				
Kodiak residents	- $161,000	+ $264,000	+ $24,000	+ $272,000
Alaska Pen. residents	- 3,000	+ 306,000	+ 11,000	+ 313,000
Other AK residents	+ 1,000	+ 3,000	- 19,000	- 16,000
Outside residents	+ 17,000	- 573,000	- 16,000	- 571,000
Percent changes in catch and earnings				Catch / Earnings
Kodiak residents	- tr[a]/%	+ 16%	+ 1%	+ 3% / + 3%
Alaska Pen. residents	- 15	+ 18	+ 22	+ 18 / + 18
Other AK residents	+ 1	+ 26	- 1	- 1 / - 1
Outside residents	+ 1	- 60	- tr	- 1 / - 2

a/ "tr" denotes changes of less than 0.5%.

the removal of some Kodiak and Alaska Peninsula effort from the the Kodiak area, harvest shares of Kodiak and Alaska Peninsula residents in that area declined; because of the reallocation of catch which removal of this effort causes, Other Alaska and Outside residents had their harvest shares increase somewhat. The net effect in the Alaska Peninsula area was increases in the shares of Kodiak and Alaska Peninsula residents, and a decrease in catch by outside residents prompted by the move by some Outside boats to the Bering Sea. (The effects of new Kodiak vessel effort in the Alaska Peninsula outweighed the reduction in effort brought on by the movement of some Kodiak vessels from the Alaska Peninsula to the Bering Sea.) In the Bering Sea, some gains were predicted to accrue to Kodiak and Alaska Peninsula residents as a result of the movement of Kodiak and Alaska Peninsula vessels to the area, and some losses were predicted to occur to Other Alaska and Outside residents.

In sum, the model predictions of effects of exclusive registration in the Alaska Peninsula for 1980-81 are rather slight, with some gains expected to result to Kodiak and Alaska Peninsula residents, and most of the losses in catch and gross earnings being borne by Outside residents. The effect of the exclusive registration on season lengths was very small, with increases of one day or less in Kodiak and the Alaska Peninsula, and a reduction of the Bering Sea season by one day. This would have clearly not have been expected to serve a conservation purpose, given that seasons in that year were so long, and the effect on season length of exclusive registration was so slight.

Looking at the lower right-hand corner of Table B-1, the net change in area catch and earnings is shown. It would appear from the model results that some gains would result to Alaska Peninsula and Kodiak residents, and some losses

would result to Other Alaska residents and Outside residents. However, as a percentage of catches without the exclusive registration, the effects would appear to be very slight. An interesting contrast of 1980-81 data with 1982-83 data is that the gains to Alaska Peninsula residents are offset by losses to Other Alaska and Outside residents, whereas in 1982-83 the gains to Alaska Peninsula residents appeared to be largely offset by losses to Kodiak residents. Thus, the model suggests that in 1980-81, exclusive area registration in the Alaska Peninsula would have reallocated toward Kodiak and Alaska Peninsula residents and away from Other Alaska and outside residents; while the exclusive registration in 1982-83 would have reallocated toward Alaska Peninsula residents and away from all other groups, with the burden falling most heavily on Kodiak residents.

Predicted Effects of a Kodiak Pot Limit

Applying 1980-81 data to the question of imposing a pot limit in Kodiak, the model suggested that a 200-pot limit would have done very little to effect a reallocation of catch shares. Remembering that this analysis is based on an assumption that the pot limit works by hindering the efficiency of larger boats which fish more pots than the proposed limit, there is some slight allocation toward Kodiak residents and away from Outside residents in Kodiak area. However, the 200-pot limit does not reduce expected incomes in Kodiak area by larger Outside boats to the point where the Bering Sea becomes an attractive alternative, so there is not short-term readjustment of effort between areas (See Table B-2).

Table B-2. Predicted Effects of Instituting a 200-Pot Limit in the 1980/81 Kodiak Tanner Crab Fishery.

	ADJUSTED MODEL		
	KODIAK	BERING SEA	NET CHANGE
Actual 1981 catch (lbs.)	11,676,224	67,311,373	
Season length (days)	60	90	
Predicted 1981 catch (lbs.)	11,652,000	67,310,000	
Predicted changes in:			
Season length (days)	+ 0.4	-0-	
Catch (lbs.)			
Kodiak residents	+ 28,000	-0-	+ 28,000
Alaska Pen. residents	-0-	-0-	-0-
Other AK residents	+ 1,000	-0-	+ 1,000
Outside residents	- 28,000	-0-	- 28,000
Gross earnings (in 1981 $)			
Kodiak residents	+ $22,000	-0-	+ $22,000
Alaska Pen. residents	-0-	-0-	-0-
Other AK residents	+ 1,000	-0-	+ 1,000
Outside residents	- 22,000	-0-	- 22,000

Percent changes in catch and earnings			Catch	Earnings
Kodiak residents	- tr[a]/%	-0-	+ tr	+ tr
Alaska Pen. residents	-0-	-0-	-0-	-0-
Other AK residents	+ 4	-0-	+ tr	+ tr
Outside residents	- 1	-0-	- tr	- tr

a/ "tr" denotes changes of less than 0.5%.

The predicted effects of a 150-pot limit in Kodiak and a 100-pot limit are similar (Tables B-3 and B-4). Both pot limits prompt shifts in effort from the Kodiak fishery to the Bering Sea fishery, by Kodiak and Outside vessels. With the 150-pot limit, Kodiak large vessels and Outside medium vessels would be expected to move; the shift in effort by Kodiak boats is much larger than the shift in effort by Outside boats. Thus, while the reduction in Outside effort from the Kodiak area causes an expected decline in the catch shares of Outside vessels in Kodiak, the relatively larger effort increase in the Bering Sea due to Kodiak boats drives down the average catch of Outside vessels, more than offsetting the increase of Outside effort in the Bering Sea. Thus, a reduction in catch by Outside residents in the Bering Sea also results.

With a 100-pot limit, the switch in effort by Kodiak vessels (from Kodiak to the Bering Sea) is also much greater than the switch in effort by Outside residents, and a similar outcome results. That is, the catch of Kodiak residents increases rather substantially, and is offset by nearly equal reductions in catch by Outside residents. The catch shares of Alaska Peninsula and Other Alaska residents appear to be largely unaffected by the pot limits in the aggregate; most of the reallocation appears to be from Outside residents to Kodiak residents. This reallocation is somewhat similar to the reallocation that was predicted for 1982-83 data. Generally, Kodiak residents gain and Outside residents lose catch and gross earnings. However, with 1980-81 data, catch shares by Alaska Peninsula and Other Alaska residents appear to be largely unaffected, whereas with 1982-83 data Alaska Peninsula residents showed some loss and Other Alaska residents showed some gain in catch and gross earnings.

Table B-3. Predicted Effects of Instituting a 150-Pot Limit in the 1980/81 Kodiak Tanner Crab Fishery.

	ADJUSTED MODEL		
	KODIAK	BERING SEA	NET CHANGE
Actual 1981 catch (lbs.)	11,676,224	67,311,373	
Season length (days)	60	90	
Predicted 1981 catch (lbs.)	11,652,000	67,310,000	
Predicted changes in:			
Season length (days)	+ 25.8	- 7.3	
Catch (lbs.)			
Kodiak residents	+ 913,000	+ 3,457,000	+ 4,370,000
Alaska Pen. residents	+ 12,000	-0-	+ 12,000
Other AK residents	+ 45,000	- 353,000	- 308,000
Outside residents	- 969,000	- 3,105,000	- 4,074,000
Gross earnings (in 1981 $)			
Kodiak residents	+ $719,000	+ $1,407,000	+ $2,126,000
Alaska Pen. residents	+ 9,000	-0-	+ 9,000
Other AK residents	+ 35,000	- 144,000	- 109,000
Outside residents	- 763,000	- 1,264,000	- 2,027,000
Percent changes in catch and earnings			Catch / Earnings
Kodiak residents	+ 9%	+ 85%	+ 32% / + 23%
Alaska Pen. residents	+ 46	-0-	+ 8 / + 13
Other AK residents	+ 37	- 9	- 7 / - 6
Outside residents	- 52	- 5	- 7 / - 8

Table B-4. Predicted Effects of Instituting a 100-Pot Limit in the 1980/81 Kodiak Tanner Crab Fishery.

	ADJUSTED MODEL		
	KODIAK	BERING SEA	NET CHANGE
Actual 1981 catch (lbs.)	11,676,224	67,311,373	
Season length (days)	60	90	
Predicted 1981 catch (lbs.)	11,652,000	67,310,000	
Predicted changes in:			
Season length (days)	+ 132.0	- 16.3	
Catch (lbs.)			
Kodiak residents	+ 1,566,000	+ 9,358,000	+ 10,924,000
Alaska Pen. residents	+ 62,000	+ 1,000	+ 63,000
Other AK residents	+ 232,000	- 851,000	- 619,000
Outside residents	- 1,860,000	- 8,508,000	- 10,368,000
Gross earnings (in 1981 $)			
Kodiak residents	+ $1,232,000	+ $3,808,000	+ $5,040,000
Alaska Pen. residents	+ 49,000	a/	+ 49,400
Other AK residents	+ 183,000	- 346,000	- 163,000
Outside residents	- 1,464,000	- 3,463,000	- 4,927,000

Percent changes in catch and earnings			Catch	Earnings
Kodiak residents	+ 16%	+ 231%	+ 80%	+ 55%
Alaska Pen. residents	+ 238	+ 1	+ 43	+ 70
Other AK residents	+ 188	- 21	- 15	- 9
Outside residents	- 100	- 14	- 17	- 19

a/ Catch is less than 500 lbs.

Implications of the Additional Data

The primary conclusion to be drawn from analysis of the additional data from the 1980-81 season is that who gains and who loses in the reallocation a pot limit or an exclusive area induces will depend on circumstances of the fishery at time it is being regulated. While the exclusive registration in the Alaska Peninsula area appears to benefit Alaska Peninsula residents in that area, the reallocation in 1980-81 would have been from Outside residents to Alaska Peninsula residents, while in 1982-83 it would have been a reallocation from Kodiak residents to Alaska Peninsula residents. It should not be difficult to envision circumstances were exclusive registration would reallocate away from Alaska Peninsula residents in the Alaska Peninsula, if conditions (i.e., stock size and efforts) were sufficiently unattractive in other areas that vessels being forced to choose by exclusive registration in the Alaska Peninsula chose the Alaska Peninsula as their preferred place to fish. By way of example, one need only look at the king crab fishery where Kodiak has been closed for the last two years, as has Dutch Harbor, and the Bristol Bay, while open this year for small harvests, was closed last year. One can imagine the effect on catches by Alaska Peninsula residents had the Alaska Peninsula king crab fishery been open during this period (it was not); it would have provided a focal point for all the effort in the king crab fishery, and could well have resulted in vessels choosing to fish the Alaska Peninsula even in spite of exclusive registration.

The 1980-81 and 1982-83 season data result in fairly similar projections as to the effects of pot limits in the Kodiak fishery. That is, the net change in catches and earnings result in Kodiak residents gaining and Outside residents losing catch and gross earnings.

A Qualification on the Interpretation of the Empirical Results

The model's predictions must be used only in the broadest sense of determining directions of change and the rough magnitudes involved. This is an especially important qualification, since any model requires a number of simplifications and arbitrary decisions as to the mechanics of its operation, and this model is no exception. There is very little direct evidence about the effects of pot limits and exclusive areas on the allocation of catch, so we are forced to address these policies in a "what if," or simulation, fashion based on our understanding of fleet behavior (which is by no means perfect) and catch relationships. It is often difficult to obtain data which represents all the influences we would expect to affect catches and their allocation.

There is room for debate about the empirical catch-effort and vessels-lifts equations, and how the decision criteria are applied to determine vessel movements. A number of assumptions about which vessels move, and to where, were necessary. Other sets of criteria than the ones that we used could result in different patterns of allocations; the extent of such differences is not easily determinable. Thus, modeling such as this is probably useful for determining the direction of impact and magnitudes of change, but extreme caution should be used in making inferences more specific than this.

9/27/84

Review of Board Decisions on Tanner Crab

The Board began today's meeting on Tanner crab by expressing their concern over the future use of pot limits and exclusive registration areas as management tools. The Board is of the opinion that these measures have a place in the management of shellfish off Alaska given the appropriate conditions. In future decision-making, the Board may consider pot limits or exclusive registration areas as a management alternative.

Southeast District Season Dates and Exclusive Registration

The Board moved to reconsider action taken yesterday (9/25/84) on Proposal #3. Yesterday's decision to have the Yakutat and Southeast Tanner crab districts opened on January 15 was based on the necessity to have coordinated season openings in all Gulf of Alaska non-exclusive areas (i.e. Chignik, South Peninsula, Kodiak and Yakutat) as a method of distributing effort. The Board also wanted the Southeast district to open at the same time as the Westward fisheries in case exclusive registration is not approved or implemented by the federal government.

However, due to the icing of bays, weather, and poor quality of crab in Southeast during January, the Board chose to rescind yesterday's decision in Southeast and have the district opened on February 10.

This action was also determined necessary because it undermined the Board's argument for the need of exclusive registration in the Southeast district. The Board decided to maintain the exclusive registration designation in the Southeast district based on the need for a later season than the Westward fisheries, the fact that this fishery is conducted within state waters, and that an absence of exclusive registration could result in an influx of effort by large, mobile vessels that could shorten the season and risk dangers of overharvesting the resource. It was recognized that there is a management problem in this district, and the Board wishes to avoid the reoccurrence of the problems experienced in the 1982/83 fishery.

The Board chose to maintain yesterday's decision to repeal exclusive registration in the Yakutat District. This fishery is primarily conducted in federal waters and with a season opening date (Jan. 15) the same as the Westward fisheries, exclusive registration was determined unnecessary in this area.

Kodiak - Pot Limits

The Board moved to reconsider proposal #4. This action was based on the desire to minimize confusion among fisherman given the liklihood of conflicting state/federal regulations on pot limits. It was also recognized that enforcement of conflicting regulations would be difficult.

An implementation date of the 200-pot limit, subject to further consideration in March, was added to the proposal. The proposal was amended to read: Suspend the pot limit in the Kodiak District Tanner crab fishery until January 1, 1986. This addition was to achieve two objectives. First, it expresses the Board's desire to use this measure in the near future and the Board wished to discourage the industry from making large investments in new gear until a final decision can be made.

Second, the Board expressed a need to develop comprehensive management goals for the Tanner crab fishery and to determine the utility of pot limits to achieve those goals. . They asked that a workgroup from ADF&G with assistance from the Council and NMFS, work with a Board subgroup in developing a set of management goals. From these goals, the Board would establish comprehensive policy for managing the Tanner crab fishery. A fishery management plan incorporating these goals will be prepared for presentation to the Board and Council at its next joint meeting. It was hoped that the workgroup could use the proposed joint king crab plan and the existing federal Tanner crab FMP as a model towards developing a cooperative more effective state/federal management program.

REPORT TO ALASKA BOARD OF FISHERIES

AND

NORTH PACIFIC FISHERIES MANAGEMENT COUNCIL

ON

BERING SEA AND ALEUTIAN KING CRAB

AND

WESTWARD REGION TANNER CRAB

By

Martin F. Eaton

and

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SEPTEMBER 1984

ANCHORAGE, ALASKA

King Crab

Introduction

The Westward Region is comprised of king crab registration area K, M, O, R, Q and T (Figure 1). Of these areas, only K and M are not included in the Council's king crab management plan. During the 1983-84 king crab season, the region catch reached 25.0 million pounds compared to 38.5 million pounds harvested in 1982-83 (Table 1).

Dutch Harbor Brown Crab

The 1983-84 fishery opened on November 10, 1983. Thirteen vessels received initial inspections, of which only ten delivered 174,000 pounds in November. Effort and landings in the fishery continued to increase, and in January over 913,000 pounds were delivered by 39 vessels. Catches were reported to be concentrated on the western boundary of Dutch Harbor and the eastern boundary of the Adak registration areas.

With the apparent overlap of the fishery in the Amukta Pass area, ADF&G staff proposed moving the western boundary of the Dutch Harbor area from 172° W. longitude to 171° W. longitude allowing for the majority of the area fished for brown king crab to be in the non-exclusive Adak registration area. To further assist in the development of the brown king crab fisheries, staff also recommended that the Dutch Harbor area; as well as the Bering Sea and Bristol Bay areas, brown king crab fishery be regulated by a permit rather than establish harvest guidelines and season date. Both proposals were adopted by the Board.

The 1983-84 seasons catch for the Dutch Harbor brown king crab fishery totaled over 2.3 million pounds, or twice as much as the 1982-83 fishery. Catch per pot was 11 crab, three more than during 1982-83 and crab averaged 5.5 pounds.

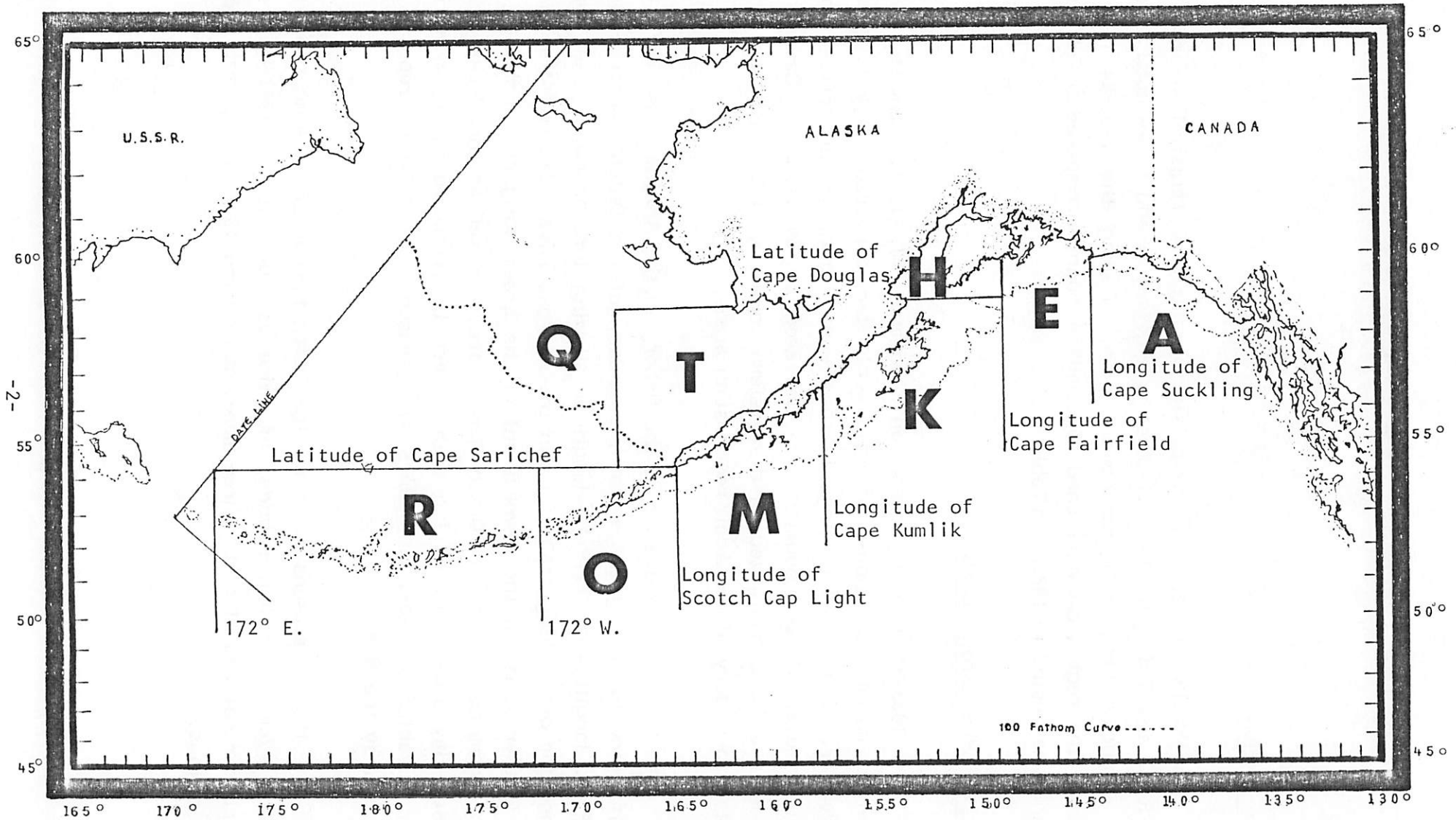

Figure 1. King crab statistical areas:

A - Southeastern Alaska
E - Prince William Sound
H - Cook Inlet
K - Kodiak
M - Alaska Peninsula
O - Dutch Harbor
R - Adak
Q - Bering Sea
T - Bristol Bay

Table 1. Historical king crab catch by registration area for Alaska's Westward Region (in thousands of pounds), 1970 to 1983.

Year	K Kodiak	M Chignik South Pen	O Unalaska	R Adak W.Aleutian	Q Bering Sea	T Bristol Bay	U.S.	Foreign	Total
1970-71	11,719.9	3,425.7	9,652.0	16,557.0	NF	8,559.0	49,913.6	12,930.0	62,843.6
1971-72	10,884.1	4,123.1	9,391.6	15,475.9	NF	12,995.0	52,869.7	6,188.0	59,057.7
1972-73	15,479.9	4,069.3	10,450.4	18,746.2	NF	21,744.9	70,490.7	4,721.0	75,211.7
1973-74	14,397.3	4,260.6	12,722.7	9,761.0	1,276.6	26,913.6	69,331.8	1,279.0	70,610.8
1974-75	23,582.7	4,572.1	13,991.1	2,754.5	7,107.3	42,266.3	94,274.0	2,618.0	96,892.0
1975-76	24,061.6	2,605.3	15,906.6	414.0	2,433.7	51,326.2	96,747.4	NF	96,747.4
1976-77	17,966.8	958.8	10,198.4	CLOSED	8,356.1	63,919.7	101,130.4	NF	101,130.4
1977-78	13,503.6	726.3	3,684.4	952.9	5,732.9	69,967.8	94,567.9	NF	94,567.9
1978-79	12,021.8	3,093.8	6,824.1	808.3	9,567.4	87,618.3	119,933.7	NF	119,933.7
1979-80	14,608.9	4,453.5	14,979.9	490.7	9,286.4	107,828.0	151,647.4	NF	151,647.4
Subtotal	158,226.6	32,019.1	107,801.2	65,960.5	43,760.4	493,138.8	900,906.6	27,736.0	928,642.6
Average	15,822.6	3,201.9	10,780.1	6,596.0	6,251.5	49,313.9	90,090.7	5,547.2	92,864.3
1980-81	20,448.6	5,080.6	18,902.5	1,419.5	13,869.9	129,947.7	189,668.8	NF	189,668.8
1981-82	24,237.6	3,147.5	5,115.3	2,774.0	16,425.6	33,591.4	85,291.4	NF	85,291.4
1982-83	8,729.7[1]	1,627.7	1,616.2[1]	9,708.1	13,815.9	3,000.2	38,497.8	NF	38,497.8
1983-84	56.3[1]	CLOSED	2,213.3[1]	9,919.4	12,897.9	CLOSED	25,086.9	NF	25,086.9
Subtotal	53,472.2	9,855.8	27,847.3	23,821.0	57,009.3	166,539.3	336,655.1	NF	338,544.9
Average	13,368.0	2,463.9	6,961.8	5,955.3	14,252.4	41,634.8	84,636.2	-	84,636.2

[1]Brown crab catches reported July 1 - June 30.

The Dutch Harbor brown king crab fishery reopened by permit on July 1. Eight vessels registered for the fishery. Two processors, one out of Chernofski Harbor and the other in Akutan, bought crab in July; but due to poor market conditions and obligations to other fisheries, the processor at Chernofski left the area to process herring. To date, 652,000 pounds has been landed by a total of ten vessels including three catcher/processors. Six vessels are still actively fishing. The Department is projecting a harvest of approximately two million pounds for 1984-85.

Bering Sea Brown King Crab

The Northern District brown king crab fishery opened on May 1, 1984 with the Pribilof District opened by emergency order at the same time. Tank inspections were given to only five vessels. Effort and catches remained small due to poor market conditions, a low price of only $1.50 a pound and very poor crab quality. Several processors in the area and at the Pribilofs took early deliveries of the Pribilof crab but refused to continue buying because of the poor quality.

A total of over 200,000 pounds of crab have been taken from the Pribilof area since the May 1 opening, and although the average weight for May was 3.4 pounds, the processors refused to continue buying due to poor recovery. Average weight dropped to 2.8 pounds a crab in June.

The 1983-84 season total for the Pribilof brown king crab fishery is over 856,000 pounds; of which 569,000 pounds came in November 1983 after the Pribilof blue king crab closure.

There has been no effort on landings reported from the Northern District, and although the Pribilof fishery remains open under permit, no interest has been expressed for the area.

Adak Brown King Crab Fishery

The 1983-84 Adak brown king crab fishery opened November 10. Registrations were given to 130 vessels, of which 14 were catcher/processors.

The fishery started off very fast with 126 vessels landing over 1.9 million pounds in November. Vessel effort and catch increased again in December; 138 and 2.5 million pounds, respectively. The majority of the crab was processed on the grounds by ten floating processors. Prices fluctuated wildly at the beginning of the season, as processors tried to get as much product as possible. Average price for the season was $2.75 a pound.

After the first of the year, effort dropped off considerably as catch declined from November's eight crab a pot to only six crab a pot in February. Over two-thirds, 5.8 million pounds, of the seasons total of 8.1 million pounds was harvested in November, December and January. The remainder of the season was hampered by bad tides and poor weather conditions, further dropping the catches and decreasing vessel effort.

A total of 157 vessels delivered brown king crab from the Adak area, 58 vessels more than during the 1982-83 season. The total season's catch was 8.1 million pounds averaging seven crab a pot, three crab less than last year. The average weight of 5.3 pounds a crab is idential for both years.

The Adak area (R) will open on November 10 for both brown and red king crab. No population assessment surveys have been done since 1977. The projected harvest is based solely on past commercial harvest statistics.

The 1984-85 king crab season opened on August 1 in Norton Sound. The Department of Fish and Game and National Marine Fisheries Service are projecting a 1984-85 king crab harvest of approximately 22 million pounds (Table 2).

Table 2. 1984-85 Westward Region seasons and projected king crab harvest levels.

RED AND BLUE KING CRAB

Area	Season	Projected Harvest
Norton Sound (Q)	August 1-September 22	400,000
Kodiak (K)	CLOSED	-0-
South Peninsula (M)	CLOSED	-0*
Dutch Harbor (O)	November 10	NA
Bristol Bay (T)	October 1	2.5 to 6.0 mil.lbs.
Pribilof (Q)	October 1	0.5 to 1.0 mil.lbs.
St. Matthew (Q)	September 1	2.0 to 4.0 mil.lbs.
Adak (R)	November 10	1.5 to 3.0 mil.lbs.
	Total	6.9 to 14.4 mil.lbs.

BROWN KING CRAB

Area	Season	Projected Harvest
Kodiak (K)	January 1-December 31[1]	.1
South Peninsula (M)	January 1-December 31[1]	.0
Dutch Harbor (O)	January 1-December 31[1]	2.0
Bristol Bay (T)	January 1-December 31[1]	.0
Pribilofs (Q)	January 1-December 31[1]	.5
Adak (R)	November 10-April 15	8.0
	Total	10.6

*Survey data is still under analysis, but preliminary results indicate few legal crab.

[1]Permit only fisheries.

Norton Sound

The fishery was opened on August 1 and closed on August 15 with a harvest of 387,248 pounds. Eight fishing vessels averaged 14 crab a pot, which weighed 2.8 pounds each. The fishermen were paid $1.00 to $1.25 a pound.

St. Matthew

The season opened on September 1, 1984 for a 2.5 to 4.0 million pound harvest guideline based on the 1984 NMFS survey. Tank inspections were given on the grounds 24 hours prior to the opeing to 89 vessels, 75 less than last year and included 11 catcher/processors, two less than last year. Gear was not allowed on the grounds until the season opened on September 1. Seven floating processors were present, on which the Department had three samplers. Price was agreed on by only a few of the processors prior to leaving for the grounds and varied from $1.50 a pound to $1.86 a pound. By the fifth day of the fishery, due to smaller than expected crab, all processors on the grounds were paying only $1.50 a pound.

The fishery lasted a total of six days with a season harvest of approximately four million pounds. Catcher/processors took approximately 13 percent, or over 520,000 pounds of the total catch. A total of 14,800 pots were estimated to be on the grounds, which is 23,000 less than the 1983-84 season and can probably be attributed to the decreased harvest guideline, less vessel effort and the expectations of a short season. Although the harvest guideline was less than half of the 9.5 million pounds taken during the 1983-84 season. Catch per pot averaged 12, and the crab averaged 4.5 pounds, compared to last season's 14 crab a pot and 4.8 pounds a crab.

Five days after the opening on September 6, with only one million pounds either landed or accounted for, but 3.2 million pounds estimated to have been on board vessels or in the gear, the closure announcement was made for twelve noon September 8. As has been experienced in the past two seasons, catches remained good throughout the season accounting for the four million pounds harvested for the season.

Unlike the 1983-84 season, the entire Northern District of the Bering Sea area closed to the taking of king crab. The St. Lawrence section of the Northern District had opened concurrent to the Norton Sound section on August 1; and although there was small effort, two or three vessels, there was no reported landings from the area. During the 1983-84 season, 13 vessels landed over 52,000 pounds of which 19,000 pounds may have come from the closed waters around the St. Matthew fishing grounds.

1984-85 Fisheries

The Pribilof and area T fisheries will open on October 1. The harvest in both areas will probably not exceed the lower end of the range, 500,000 pounds for the Pribilofs and 2.5 million pounds for area T.

The Department has closed both Kodiak (K) and South Peninsula (M) to red king crab fishing for the fishing season 1984-85 and expects to issue an emergency order closing Dutch Harbor to red king crab fishing, as soon as the survey data is analyzed.

In 1984, the harvest of brown king crab should surpass that of both red and blue crab. The brown crab harvest should comprise 50 percent of the pack, while blue and red should account for 25 percent each.

TANNER CRAB

Introduction

The fisheries management plan for tanner crab off Alaska was adopted in December of 1978. It covers all existing state tanner crab fisheries in the Westward Region, which are separated into six management areas. The general boundaries of this area are depicted in Figure 2. This report will cover the 1984 fisheries and status of stocks by district (Table 3).

Kodiak District

The season opened on February 10 with a preseason forecast of 14.5 to 24.3 million pounds; however, fishermen did not commence fishing until February 24 because of a price dispute. A fleet of approximately 303 vessels fished compared to 350 that fished in 1983.

The final harvest was 14,478,066 pounds purchased by 13 shorebased processors and seven floating processors. The fishermen were paid an average price of $1.20 a pound. Three joint emergency orders and field orders were issued closing the Eastside section on March 17, followed by the North Mainland on March 23, with the rest of the district closing on April 1.

Stock Status

A survey was completed in August to determine population estimates for 1984. Preliminary information gathered during the survey indicates that the harvest should be one-half of the 1984 harvest of seven to ten million pounds.

Chignik District

The season opened on February 10 and closed on March 13. Approximately 17 vessels delivered 659,000 pounds compared to 70 vessels in 1984, down three million pounds from 1983. The harvest was at the upper end of the preseason midpoint of .75 million pounds.

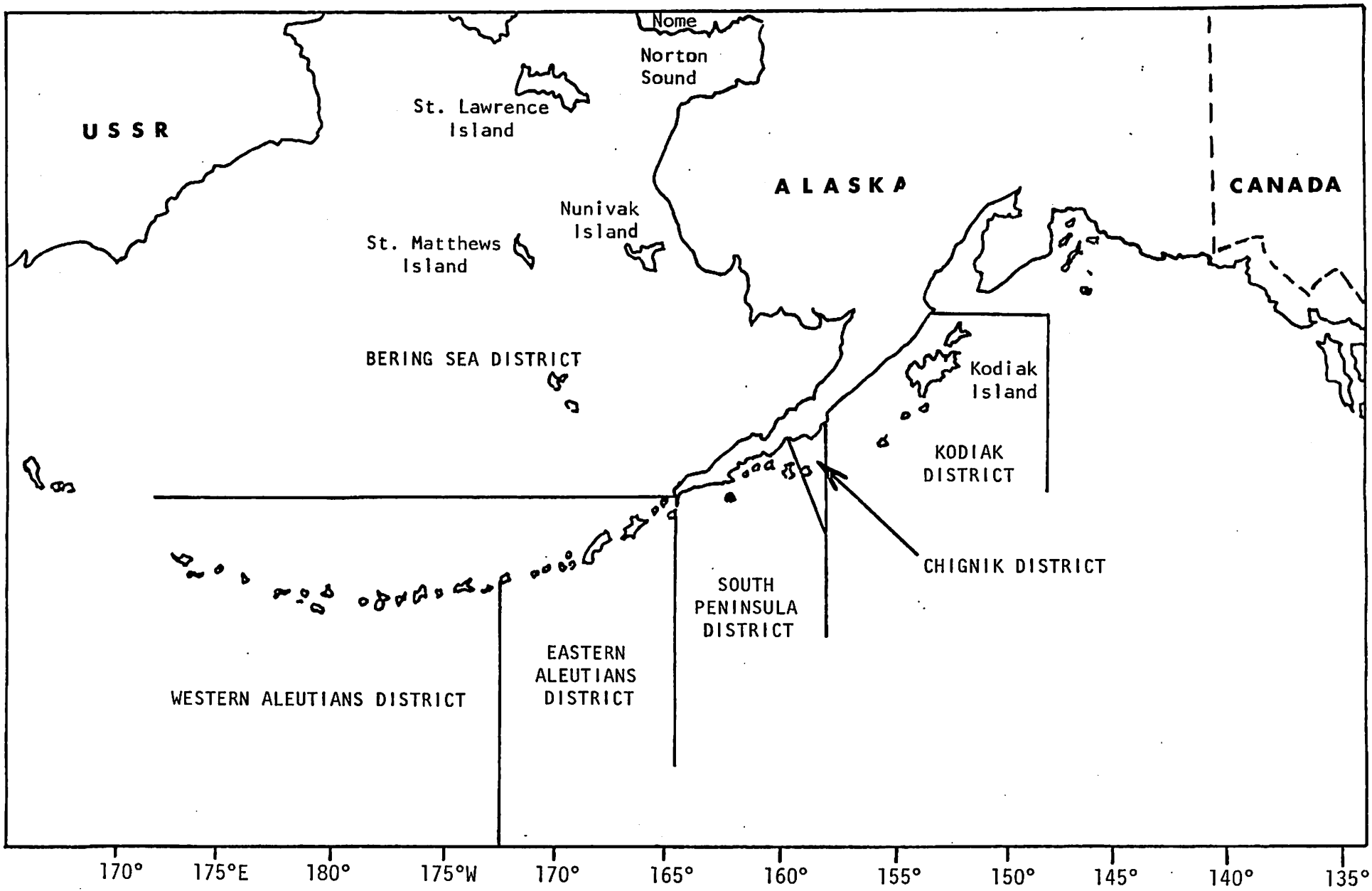

Figure 2. Westward Region Tanner crab district.

Table 3. Historical Tanner crab C. bairdi and C. opilio catch (in pounds) for Alaska' Westward Region, 1965-1984.

Year[1]	Kodiak	Chignik[2]	S.Peninsula	E. Aleutians	W.Aleutians	Bering Sea C. opilio	Bering Sea C. bairdi	Total U.S. Harvest	Total Foreign Harvest
1965	0	0	0	0	0	0	0	0	3,936,000
1966	0	0	0	0	0	0	0	0	7,290,000
1967	110,961	0	5,000	0	0	0	0	115,961	24,000,000
1968	2,560,687	0	131,700	0	0	0	17,900	2,710,287	30,940,000
1969	6,796,477	0	644,400	0	0	0	1,008,900	8,449,777	47,668,000
1970	7,749,859	0	2,022,427	0	0	0	1,487,161	11,259,447	47,828,000
1971	7,436,414	152,256	2,140,755	0	0	0	166,100	9,875,888	39,886,000
1972	11,898,054	23,343	3,618,883	0	0	0	119,200	15,662,354	31,186,000
1973	31,113,459	747,788	5,615,563	62,128	168,354	0	301,348	38,008,640	27,886,000
1974	25,479,717	4,202,671	9,503,366	498,836	71,887	0	5,044,197	43,409,968	27,912,000
1975	17,535,844	3,649,444	5,195,800	77,164	3,350	0	7,028,378	33,225,873	18,456,000
1976	23,446,245	6,926,161	11,201,941	534,295	62,180	0	22,341,475	64,818,920	19,286,000
1977	20,720,079	5,672,919	6,773,838	1,301,654	0	0	51,876,235	86,405,326	21,520,173
1978	33,271,472	4,693,830	7,446,270	2,624,016	237,512	1,715,636	66,115,621	116,014,238	33,057,796
1979	29,173,807	2,536,105	8,684,408	1,092,311	197,244	32,187,039	43,518,226	116,411,771	32,914,536
1980	18,623,875	3,517,920	3,961,251	879,807	337,297	39,572,668	36,614,315	103,507,133	15,636,125
1981	11,748,629	3,653,723	3,294,106	654,514	220,716	52,753,034	29,732,086	102,056,808	NF
1982	13,756,159	3,240,526	4,589,042	739,694	838,627	29,371,474	11,006,779	63,542,301	NF
1983	18,927,061	3,497,370	2,863,798	547,830	539,171[3]	26,128,410[4]	5,273,881	57,777,521	NF
1984	14,478,066	659,043	1,789,883	239,395	70,082[3]	23,898,610[4]	1,208,223	42,343,302	NF
TOTAL	294,826,865	43,173,149	79,482,431	9,251,644	2,746,420	205,622,871	281,766,995	916,874,355	429,402,630
AVERAGE	16,379,270	3,083,796	4,415,690	770,970	228,868	29,375,267	16,574,529	50,937,465	26,837,664

SOURCE: Westward Regional Shellfish Management Office (9/15/84).

[1] Calendar year.

[2] Chignik and South Peninsula catches combined 1967 through 1970.

[3] January through April 1984.

[4] Season still open - harvest through July 30, 1984.

South Peninsula District

The season opened on February 10, also. Sixty-one vessels, compared to 70 vessels in 1983, landed 1.8 million pounds or one million pounds less than the 1983 harvest. The Department had predicted that 2.75 million pounds would be harvested prior to the season.

Stock Status

Both districts were surveyed in July and August of 1984. A preliminary abundance estimate indicates a sharp decline for Chignik, with the 1983 South Peninsula harvest similar to the 1984 harvest.

Eastern Aleutians

The 1983-84 Eastern Aleutian tanner crab fishery opened on February 15, 1984. Initial inspections were given to 12 vessels, eight of which were small vessels under 50 feet and eligible for the Unalaska Bay area designated by the Board of Fisheries during the Spring 1983 meetings, as an area exclusive for 50 foot and under vessels.

Although several large Bering Sea type vessels registered for the area, they found little or no crab and transferred to the Bering Sea by the end of the month without making a landing. March had the most vessel effort, primarily by small vessels of the limited seiner class and smaller, fishing the local bays. The catch for the month totaled over 164,000 pounds, well over one-half of the seasons catch of 239,000 pounds. Effort declined after March, and by the regulation closure in mid June, only two vessels were fishing; and they had their gear out of the water and were preparing for salmon and halibut fishing prior to the closure.

The seasons total catch of over 239,000 pounds was less than half the 1982-83 seasons catch of 548,000 pounds. Vessel effort was seven less than 1982-83 but can probably be attributed to lower prices, same as the Bering Sea price of $.95 and the unavailability of crab.

Western Aleutians

The 1983-84 Western Aleutian District tanner crab fishery opened concurrently to the Adak king crab fishery on November 10. Vessels with a tanner crab market received tank inspections, but only 17 vessels delivered crab during November. Catches of tanner crab did not really develop, as most vessels targeted on the deep water brown king crab; and the tanner crab fishery has historically been an incidental fishery to the shallower red king crab.

During November, more effort had shifted to the red king crab fishery; and 27 vessels delivered 166,000 pounds of tanner crab or almost one-half the season total of 384,000 pounds and 100,000 pounds less than the total of the 1982-83 season. After the closure of the red king crab fishery in mid-December, effort continued to decline and only 28,000 additional pounds were landed after the first of the year. A total of 31 vessels, one-half as many as last season, landed tanner crab during the 1983-84 season. Average weight of 2.2 pounds a crab and catch per pot of eight were identical to last season.

Bering Sea District

The Bering Sea District of registration area J opened to fishing on February 15, 1984. Initial tank inspections were given to only eight vessels. The small effort can again be attributed to vessels fishing in the Kodiak and South Peninsula/Chignik districts, which had larger projected harvest guidelines than that of the Bering Sea District. Initial price paid per pound was $.95 for Chionoecetes bairdi and $.30 for Chionoecetes opilio.

Like the 1982-83 season, effort shifted to the Bering Sea District in mid March, but unlike previous years, effort targeted on the lower price but more abundant C. opilio. Projected harvest estimates of C. opilio in the Bering Sea for the 1983-84 season totaled over 49 million pounds, while C. bairdi estimates were only 7.1 million pounds.

The greatest effort for C. bairdi occurred in April, historically the most productive month for the species. A total of over 660,000 pounds, over one-half of the total season catch of 1.2 million pounds, was delivered by 34 vessels. For the same month, over 3.9 million pounds of C. opilio was delivered primarily by the same vessels fishing for C. bairdi. Vessel effort began to shift to the more productive C. opilio grounds by late April, and by May the C. opilio catch reached over 9.1 million pounds compared to only 137,000 pounds of C. bairdi. Average catch per pot of C. opilio was 163 crab averaging 1.1 pounds a crab.

The June effort continued on C. opilio by the entire fleet with only 4,000 pounds of C. bairdi landed for the month. The C. bairdi season closed on June 15 with a total catch of only 1.2 million pounds having been landed by 41 vessels. Average weight was 2.34 pounds a crab and average catch per pot was eight crab, identical to the 1982-83 season.

Because of good marketing prospects and the large demand for tanner crab, the C. opilio fishery continued until late August when it was closed by emergency order. On August 1, the state and federal regulation closed the tanner crab fishery in the Bering Sea, but due to the productivity of the fishery and the untouched quota north of 58° N. latitude, the season for C. opilio was extended north of 58° N. latitude until August 22 when it closed to allow for an orderly opening of the St. Matthew king crab fishery on September 1.

Vessel effort declined in July, when other commitments to tendering and joint ventures caused vessels to leave the fishery. Five vessels did shift their effort to the area north of 58° in August. Catches remained small and reports were received that the crab were poor in quality. One processor remained on the grounds until just prior to the closure date. A total of 690,000 pounds was harvested from north of 58°.

A total of 24.4 million pounds of C. opilio was harvested by 45 vessels during the 1983-84 fishery with over 19.8 million pounds coming in from the

Pribilof subdistrict. Crab averaged 1.1 pounds and catch per pot was 147, considerably higher than the 83 crab per pot during the 1982-83 season.

Due to the demand for tanner crab and interest expressed by the industry for this crab, and a large portion of the quota north of 58° being unharvested; the State of Alaska initiated the emergency order to reopen the C. opilio fishery north of 58° N. latitude on September 15, seven days after the St. Matthew king crab closure. Tank inspections were given to two vessels , one of which was a catcher/processor; and no processors remained in the northern area to process C. opilio. Effort in the fishery will probably continue after the closure of the Bristol Bay and Bering Sea fishery.

PRELIMINARY RESULTS OF THE 1984 EASTERN BERING SEA CRAB SURVEY AND THE CURRENT STATUS OF CRAB STOCKS

Report To: North Pacific Fishery Management Council, The Alaska Board of Fisheries, and U.S. Section of the International North Pacific Fisheries Commission

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THE SURVEY

The 1984 survey consisted of 434 successful trawl tows and covered an area of approximately 132,000 square nautical miles. The 1984 survey area was nearly identical to that of the previous four years and covered the geographic ranges of all commercially exploited segments of crab stocks except for golden king crab.

The survey was conducted by the NOAA R/V Chapman and the University of Washington R/V Alaska (charter) between June 9 and August 10. Methodology was similar to that of previous surveys in that most tows were made at the centers of squares defined by a 20 x 20 nautical mile grid. The 1984 survey, however, included additional tows that were not made at the centers of squares. These were either for vessel-gear comparison studies or to obtain more data on Bristol Bay red king crab. For example, the R/V Alaska made 23 additional tows in Bristol Bay (August 5-10) that were targeted on increasing the precision of population estimates and obtaining data on the reproductive condition of red king crab. Bottom tending characteristics of the trawls appeared to be similar to those of trawls used in previous years, and procedures for estimating abundance were identical to those of previous years.

STATUS OF STOCKS

Red King Crab. Legal male crab were sparsely distributed in Bristol Bay and their distribution also extended into the Northern District (Fig. 1, N. of 58°39"). Some few red king crab were also found near the Pribilof Islands but their contribution to overall abundance in the eastern Bering Sea is negligible. Abundance of legal and pre-recruit males increased by 16.2 and 93% respectively, relative to 1983 (Table 1), but the abundance of both groups remains low relative to the history of the survey. Size-frequency data (Fig. 2) indicate that the population is recovering but should be cautiously interpreted because most of the crab that make up the dominant mode (70 - 90 mm) were taken in only five tows. The abundance of mature (>90 mm) females in Bristol Bay increased from 9.7 to 17.5 million crabs. Data collected in June showed that some females were not carrying eggs but the August data indicated that virtually all females were ovigerous. The June data were evidently collected during the latter portion of the mating period. Reproduction within the population, hence, appears normal although most of the mature females are small and egg production will be lower than average.

The fishery was closed in 1983 due to the low abundance of all components of the population (Fig. 2). Incidental catch in groundfish trawl fisheries was approximately 412,000 crab of both sexes as of September 1, 1984 and therefore considered insignificant relative to the total population estimate of 171.7 million. The fishery will be opened on October 1, 1984 with a guideline harvest of 2.5 to 6.0 million pounds relative to an

Estimated stock of 15.5 (± 5.2) million pounds in Bristol Bay (Area T). Harvests are expected to be in the lower portion of the guideline harvest range and relationships between estimated abundance and catch per pot lift suggest that the fleet average will be two to three crab per pot (Fig. 3). Overall, the 1984 fishing will probably be similar to that of 1982 when 90 vessels landed 3.0 million pounds and averaged 4 crab per pot lift.

Pribilof Islands Blue King Crab. Legal males were sparsely distributed and found to the north of the islands (Fig. 4). Abundance of legal and pre-recruit males is at a historical low (Table 1) and declined by 62.5 and 53.8 percent respectively, relative to 1983. Size frequency data show declines in almost all segments of the population over the past three years (Fig. 5). Size-frequency data do, however, show some crab less than 30 mm in both 1983 and 1984. Crab in this size range have never before been taken in the survey and their occurrence may indicate highly successful larval settlement. The abundance of mature (>90 mm) females declined from 9.3 to 3.1 million crab. Approximately 50% of the mature females were barren but this is a normal occurrence in blue king crab due to their biennial spawning cycle.

The 1983 fishery produced 2.2 million pounds landed by 126 vessels with an average of 4 crab per pot lift. The 1984 fishery will open October 1 with a guideline harvest of 0.5 to 1.0 million pounds as compared with an estimated 4.0 (±1.6) million pounds of legal stock. Relationships between estimated abundance and catch rates suggest that the fleet average will be about one

crab per pot (Fig. 6). Estimates of incidental catch are not available for 1984 but have been less than 50,000 crab in previous years for the combined Pribilof and St. Matthew Island areas.

St. Matthew Island Blue King Crab. Legal males were found south and west of the island and occurred in two patches (Fig. 4). One area of abundance was immediately adjacent to the island while the other was offshore to the west. The abundance of pre-recruit and legal crab has been declining over the past three years (Table 1). Over the past year, pre-recruit abundance declined by 68.4% and legal abundance declined by 52.9%. Female abundance is not well estimated by the survey due to their rocky, inshore habitat. Size-frequency data show the passage of a single large modal group of males through the fishery and indicate that the population will continue to decline (Fig. 7). As was true in the Pribilof Islands, there are indications of successful larval settlement over the past two years.

The 1984 fishery opened on September 15 with a guideline harvest of 2.0-4.0 million pounds and 89 vessels participated. Preliminary Alaska Department of Fish and Game (ADF&G) statistics indicate that 3.8 million pounds were landed in a one-week season with an average weight of 4.5 pounds and an average catch rate of 12 crab per pot lift. Estimated exploitation rates were, hence, about 844,400 crab out of an estimated legal stock of 1.6 million legal crab or 53%. This harvest rate was in accordance with Board and Council guidelines established in March 1984 that allowed for a liberal harvest if the legal stock was composed

largely of post-recruit crab (see Fig. 7). Comparative figures for 1983 were 164 vessels landing 9.4 million pounds or 1.9 million crab for an estimated exploitation rate of 57% and an average catch rate of 14 crab per pot. There are no separate estimates of incidental catch for the St. Matthew population and little trawling occurs on these grounds.

Tanner crab (*C. bairdi*). Legal males were sparsely distributed in Bristol Bay and continental slope areas with an area of relatively high abundance in inner Bristol Bay (Fig. 8). The abundance of pre-recruit and legal male *C. bairdi* has been generally declining from 1975 onward and is now at a historical low (Table 2). Over the past year the abundance of pre-recruit and legal crab declined by 33.8 and 13.4 percent respectively. The abundance of large mature (>85 mm) females declined from 45.4 million in 1983 to 33.4 million in 1984 (26.4%). More than 90% of the mature females were gravid. Size-frequency data show that continued declines may be expected (Fig. 9). A trough in the size frequency distribution at 70 to 90 mm is particularly ominous and probably indicates that the legal stock will reach an all-time low in three to four years.

According to preliminary ADF&G statistics, the 1984 fishery produced 1.2 million pounds landed by 41 vessels with an average catch of 8 crab per pot. Landings and catch rates were the lowest since 1973 (prior to the advent of a directed fishery). There, was, however, little effort targeted on *C. bairdi* since most vessels targeted on *C. opilio* in areas where *C. bairdi* are scarce or absent. There were an estimated 12.4 (± 1.9) million

pounds available during 1984. Catch rates for *C. bairdi* were simply too low to attract a directed fishery. Comparative statistics for 1983 were 108 vessels with landings of 5.3 million pounds and an average catch rate of eight crab per pot. Relationships between population estimates and catch rates indicate that the 1985 fleet average will be less than eight crab per pot (Fig. 10). No 1985 guideline harvest levels have been determined. Separate incidental catch rates are not available for individual species of tanner crabs but the incidental catch for both species was 1.3 million crab as of September 1 while the total population estimate for *C. bairdi* was 281.5 million crab. Historically, *C. opilio* has been the dominant species in the incidental catch.

Tanner Crab (*C. opilio*). The legal size limit for this species is 78 mm but they are not currently landed at sizes smaller than 95 mm. Additionally, there are frequently higher prices paid for large (>110 mm) crab. In the following discussion, the designation "pre-recruit" (95 to 109 mm) and "large" reflect the history of the fishery in that crab less than 110 mm were not usually landed prior to 1983. The size of crab entering the fishery results from market conditions and both the "pre-recruit" and "large" size categories are currently being landed.

The distribution of large males showed an area of high concentration in a broad band north of the Pribilof Islands (Fig. 11). There were also areas of high abundance in the extreme northwestern portion of the survey area and there are probably some large crab in unsurveyed areas. The distribution of pre-recruits was similar to that of large males except that their

areas of highest abundance were slightly to the north. There has been very little fishing north of 58° and estimates of abundance (Table 2) probably reflect availability to the fishery even though an unknown portion of the commercially exploitable stock may be north of the survey area. There were substantial increases in the abundance of pre-recruit and large male *C.opilio* over the past year. Combining Districts, the abundance of pre-recruits increased from 141.6 to 170.4 million crab (20.3%) and the abundance of large males increased from 22.1 to 74.0 million crab (334.8%). Size-frequency data, however, indicate the passage of one or two large modal groups through the fishery and indicate declining recruitment over the next two to three years (Fig. 12). Recruitment patterns in this stock are not entirely clear as recruitment evidently occurs both through localized production and by immigration.

The 1984 fishery is currently open after a brief closure during the St. Matthew Island blue king crab fishery. Preliminary 1984 ADF&G statistics show participation by 45 vessels, landings of 24.4 million pounds and an average catch rate of 147 crab per pot. Currently there is an estimated 273.1 million pounds of exploitable stock within the survey area (164.4 ± 21.5 million pounds of "pre-recruits" and 108.7 ± 17.7 million pounds of "large" crab). Comparative fishery statistics for 1983 were 261 vessels landing 23.9 million pounds with an average catch rate of 83 crab per pot. Relationships between catch rates and population estimates indicate the catch rates in 1985 could be well in excess of 150 crab per pot (Fig. 13). No guideline

harvests for 1985 have been determined. Incidental catch of *C. opilio* is insignificant relative to an estimated total population of 2582.9 million crab.

Korean Hair Crab. The distribution of hair crab shows a major area of relatively high abundance surrounding the Pribilof Islands and a second area immediately north of the Alaska Peninsula (Fig. 14). The abundance of hair crab has been declining since 1981 (Table 3) and the abundance of large crab declined from 4.5 to 2.9 million crab (35.5%, all Districts combined) over the past year. Size-frequency data show a single mode in all years (Fig. 15) and provide little information on recruitment trends.

The fishery is largely incidental to tanner crabbing although there is some directed effort. Preliminary ADF&G statistics show 508,000 pounds for 1984 with six vessels making deliveries. Comparative statistics for 1983 were 575,000 pounds delivered by 52 vessels. Currently there are an estimated 5.5 (±1.1) million pounds of exploitable stock. The fishery and markets have both been intermittent and probably will remain so going into 1985. There are neither guideline harvest levels nor size limits for hair crab. There are no estimates of the incidental catch of hair crab in trawl fisheries.

Table 1. -- Population estimates for eastern Bering Sea king crabs from NMFS surveys (millions of crab).

Bristol Bay and Pribilof Red King Crab		
Year	Pre-recruits[1]	Legals[1]
1969	20.3	9.8
1970[2]	8.4	5.3
1972	8.0	5.4
1973	25.9	10.8
1974	31.2	20.9
1975	31.7	21.0
1976	49.3	32.7
1977	63.9	37.6
1978	47.9	46.6
1979	37.2	43.9
1980	23.9	36.1
1981	18.4	11.3
1982	17.1	4.4
1983	10.4	1.5
1984[3]	12.2	2.9

Table 1. -- (CONTINUED)

Pribilof Blue King Crab		
Year	Pre-recruits[1]	Legals[1]
1974	3.1	1.9
1975	8.0	7.5
1976	2.1	3.9
1977	2.2	9.4
1978	5.8	4.3
1979	1.5	4.6
1980	1.4	4.2
1981	1.4	4.2
1982	0.7	2.2
1983	0.8	1.3
1984[4]	0.3	0.6

Table 1. -- (CONTINUED)

Saint Matthew Blue King Crab		
Year	Pre-recruits[4]	Legals[4]
1978	3.3	1.8
1979	3.0	2.2
1980	3.0	2.5
1981	2.2	3.1
1982	3.3	6.8
1983	1.9	3.5
1984[3]	0.6	1.6

[1] The size groups 5.2" - 6.4" and > 6.5" have been used for pre-recruits and legals, respectively.
[2] Limited survey in 1971, not used for population estimates.
[3] Preliminary estimate subject to change upon further analysis.
[4] The size groups 4.3" - 5.4" and > 5.5" have been used for pre-recruits and legals, respectively.

Table 2. -- Population estimates for eastern Bering Sea tanner crabs from NMFS surveys (millions of crab).

Bristol Bay and Pribilof *C. bairdi*		
Year	Pre-recruits[1]	Legals[1]
1973	140.5	66.9
1974	255.0	130.5
1975	207.0	209.6
1976	136.6	109.5
1977	116.3	92.1
1978	81.2	45.6
1979	47.7	31.5
1980	65.0	31.0
1981	24.0	14.0
1982	46.9	10.1
1983	32.0	6.7
1984[2]	21.2	5.8

Table 2. -- (CONTINUED)

Bristol Bay and Pribilof *C. opilio*

Year	Pre-recruits[3]	Legals[3]
1973	38.7	84.7
1974	169.2	246.7
1975	247.4	274.8
1976	190.4	181.6
1977	196.6	137.3
1978	171.6	78.4
1979	146.3	106.3
1980	99.1	53.6
1981	62.7	15.7
1982	63.8	10.8
1983	91.6	12.9
1984[2]	104.1	54.0

Table 2. -- (CONTINUED)

Bristol Bay and Pribilof Hybrid Tanner Crab		
Year	Pre-recruits[a]	Large[a]
1975	13.2	33.8
1976	4.0	16.5
1977	9.6	15.4
1978	2.0	5.6
1979	3.0	5.1
1980	0.8	1.7
1981	0.5	0.8
1982	0.6	0.5
1983	0.4	<0.1
1984[a]	0.4	0.3

Table 2. -- (CONTINUED)

Northern District *C. opilio*		
Year	Pre-recruits[3]	Large[3]
1978	8.2	10.5
1979	20.8	6.6
1980	30.4	4.2
1981	17.1	6.5
1982	70.4	10.9
1983	50.0	9.2
1984[2]	66.3	20.0

[1] A legal size limit of 5.5" carapace width was imposed in 1976, but prior to this > 5.0" was used in the "Legal" column. In parallel, pre-recruit was 3.3" - 5.0" prior to 1976 and 4.3" to 5.5" since.

[2] Preliminary estimate subject to change upon further analysis.

[3] "Large" is > 4.3" as this has been the size of most interest to U.S. industry; pre-recruit is 3.7 to 4.3". Crab in both size groups have been landed in the past two years, however, and the minimum acceptable size is fluctuating with market conditions.

Table 3. -- Population estimates for eastern Bering Sea Korean hair crab from NOAA/NMFS surveys (millions of crab).

Pribilof District

Year	Pre-recruits[1]	Large
1979	2.9	8.4
1980	3.6	10.4
1981	4.3	13.0
1982	0.8	5.3
1983	0.3	2.5
1984[2]	0.3	1.9

Bristol Bay

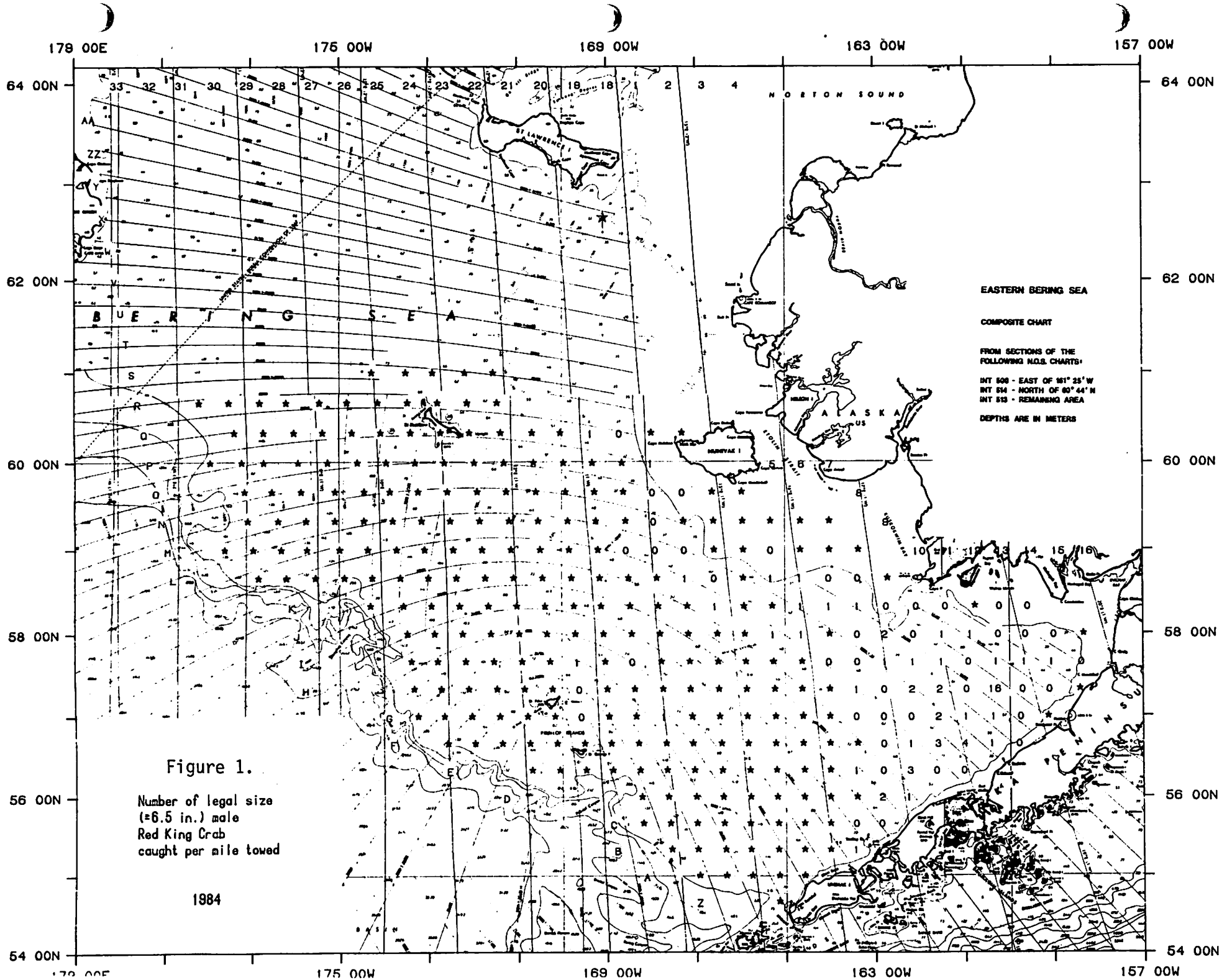
Year	Pre-recruits	Large
1979	1.2	6.3
1980	0.7	2.5
1981	0.4	2.7
1982	0.3	1.9
1983	0.3	1.6
1984[2]	0.2	0.8

Table 3. -- (CONTINUED)

Northern District		
Year	Pre-recruits	Large
1979	0.4	1.4
1980	0.8	0.8
1981	<0.1	0.2
1982	<0.1	0.5
1983	0.1	0.4
1984[2]	0.1	0.2

[1] "Large" is > 3.5" in width which is approximately the size at entry into the U.S. fishery; pre-recruit is 3.0" - 3.4".

[2] Preliminary estimate subject to change upon further analysis.


179 00E
175 00W
169 00W
163 00W
157 00W
64 00N
62 00N
60 00N
58 00N
56 00N
54 00N
B E R I N G S E A
N O R T O N S O U N D
A L A S K A
EASTERN BERING SEA
COMPOSITE CHART
FROM SECTIONS OF THE FOLLOWING N.O.S. CHARTS:
INT 508 - EAST OF 161° 25' W
INT 514 - NORTH OF 60° 44' N
INT 513 - REMAINING AREA
DEPTHS ARE IN METERS
Figure 1.
Number of legal size (=6.5 in.) male Red King Crab caught per mile towed
1984

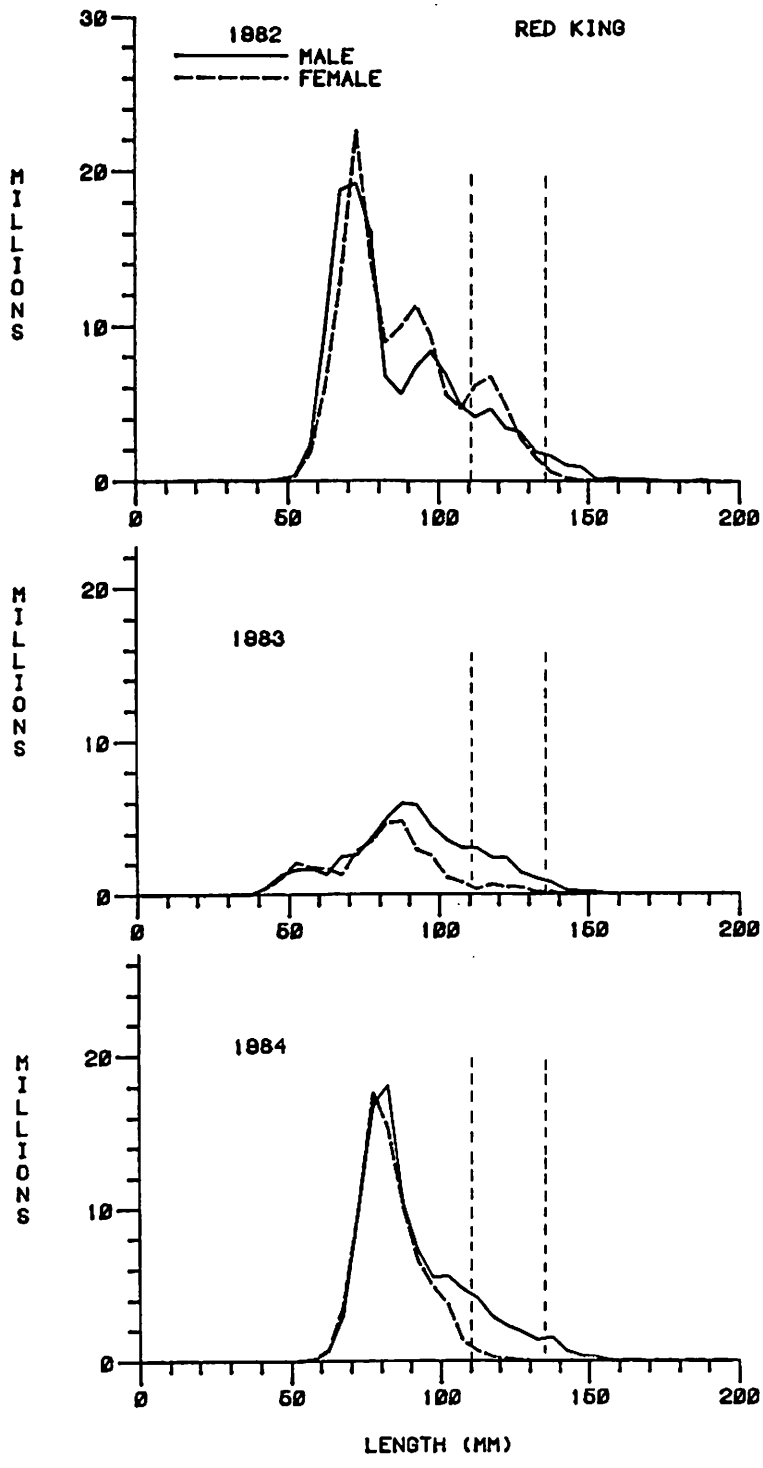


Figure 2. -- Estimates of abundance for male and female Bristol Bay District red king crab (P. camtschatica) by 5 mm length classes, 1982-1984. Dashed vertical lines indicate pre-recruit and legal sizes.

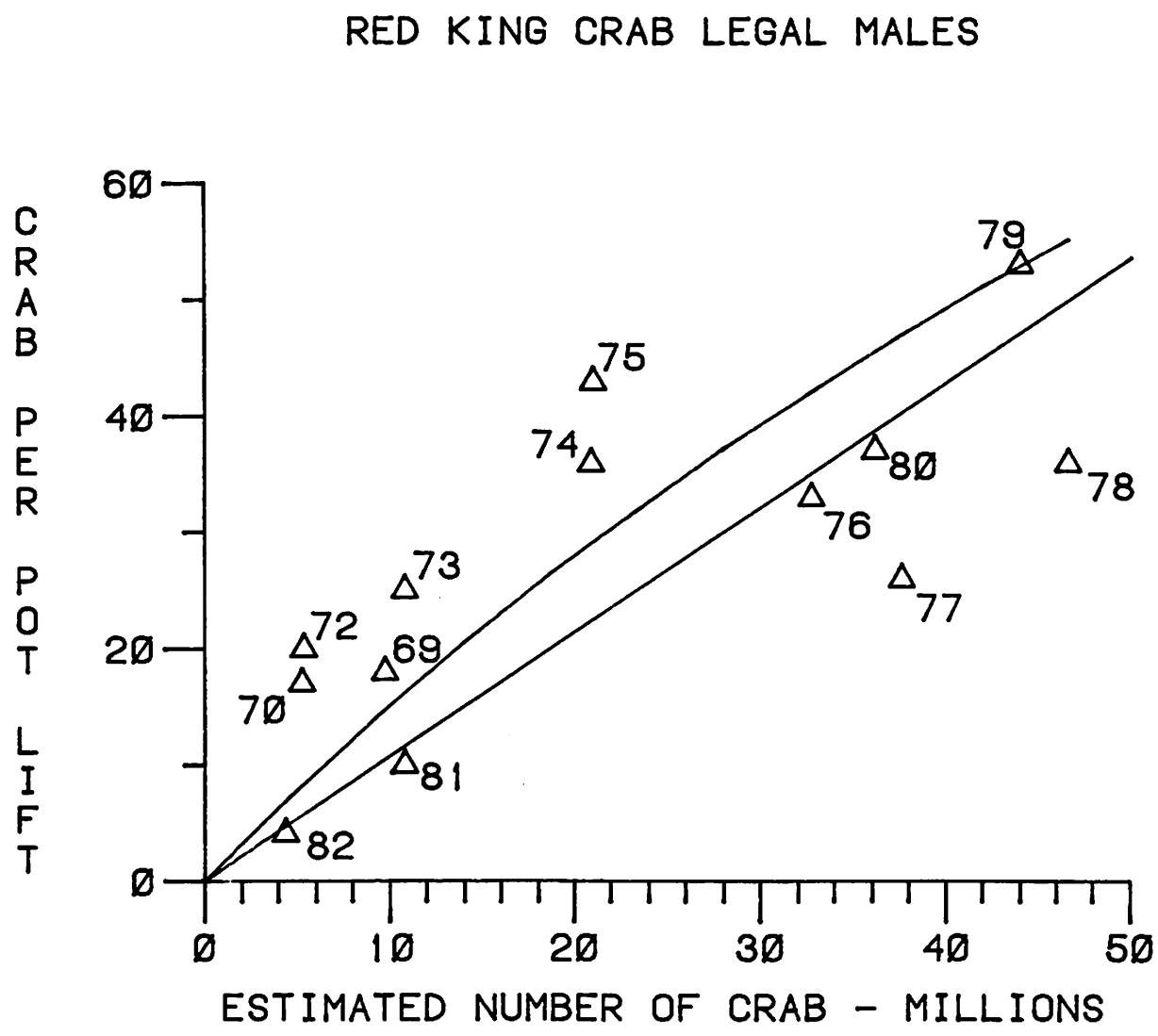


Figure 3. -- Relationship between the average number of red king crab (Paralithodes camtschatica) taken per pot in the U.S. fishery (year shown) and estimates of stock size from NMFS trawl surveys in the same year. There is no value shown for 1983 because no fishery occurred. The curved line assumes some limit to the number of crab a pot could catch.

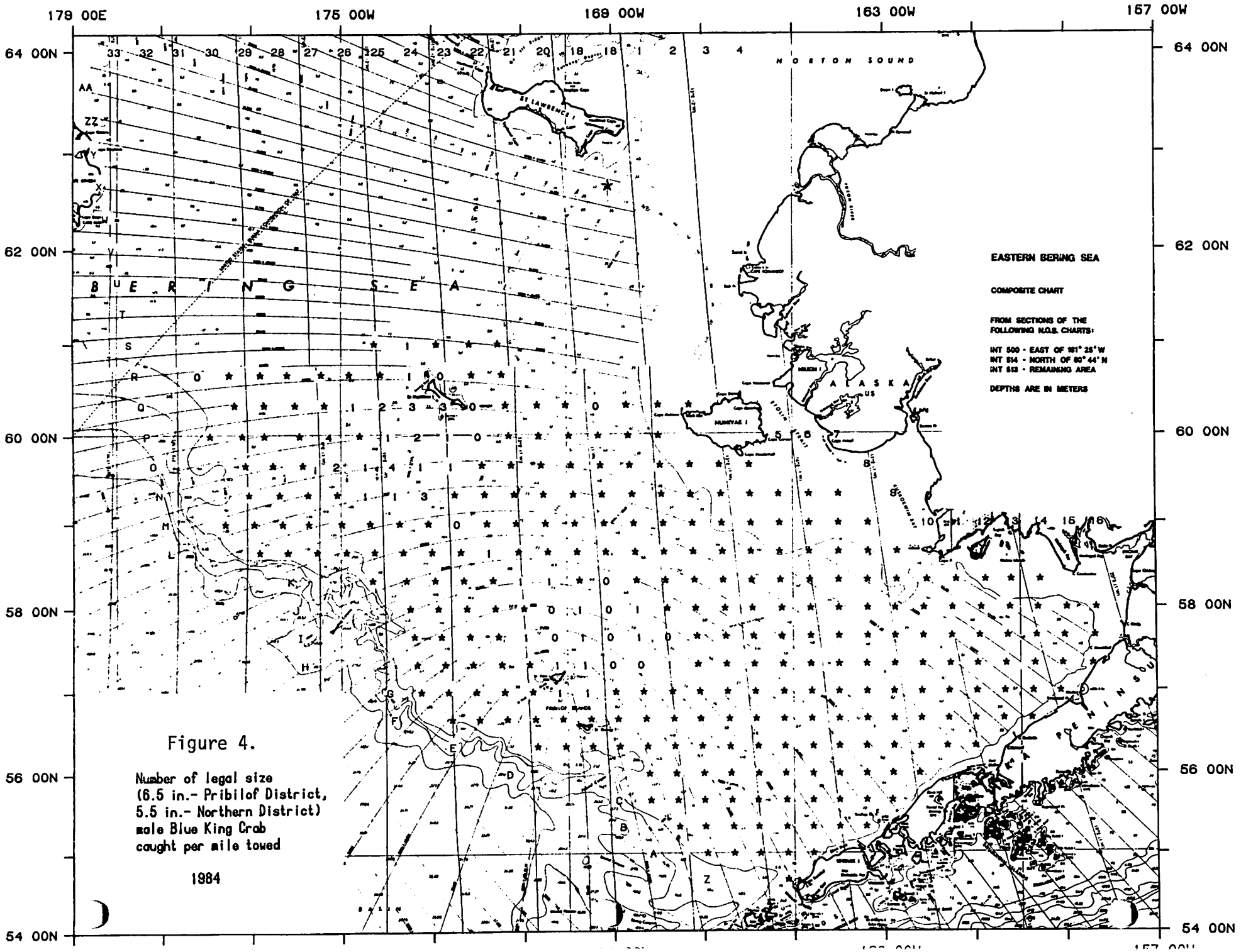


Figure 4.

Number of legal size (6.5 in.- Pribilof District, 5.5 in.- Northern District) male Blue King Crab caught per mile towed

1984

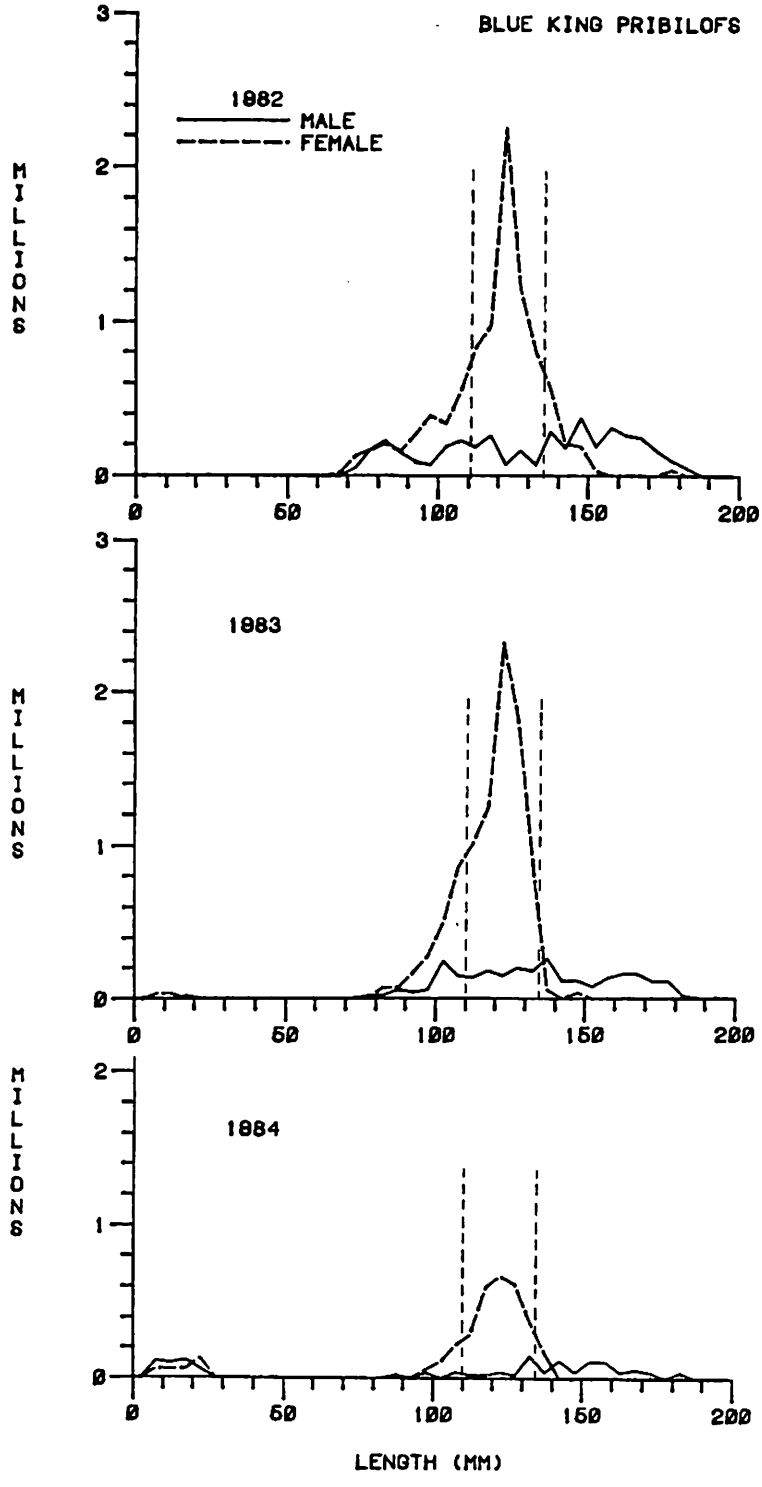


Figure 5. -- Estimates of abundance for male and female Pribilof Islands (Pribilof District) blue king crab (P. platypus) by 5 mm length classes, 1982-1984. Dashed vertical lines indicate pre-recruit and legal sizes.

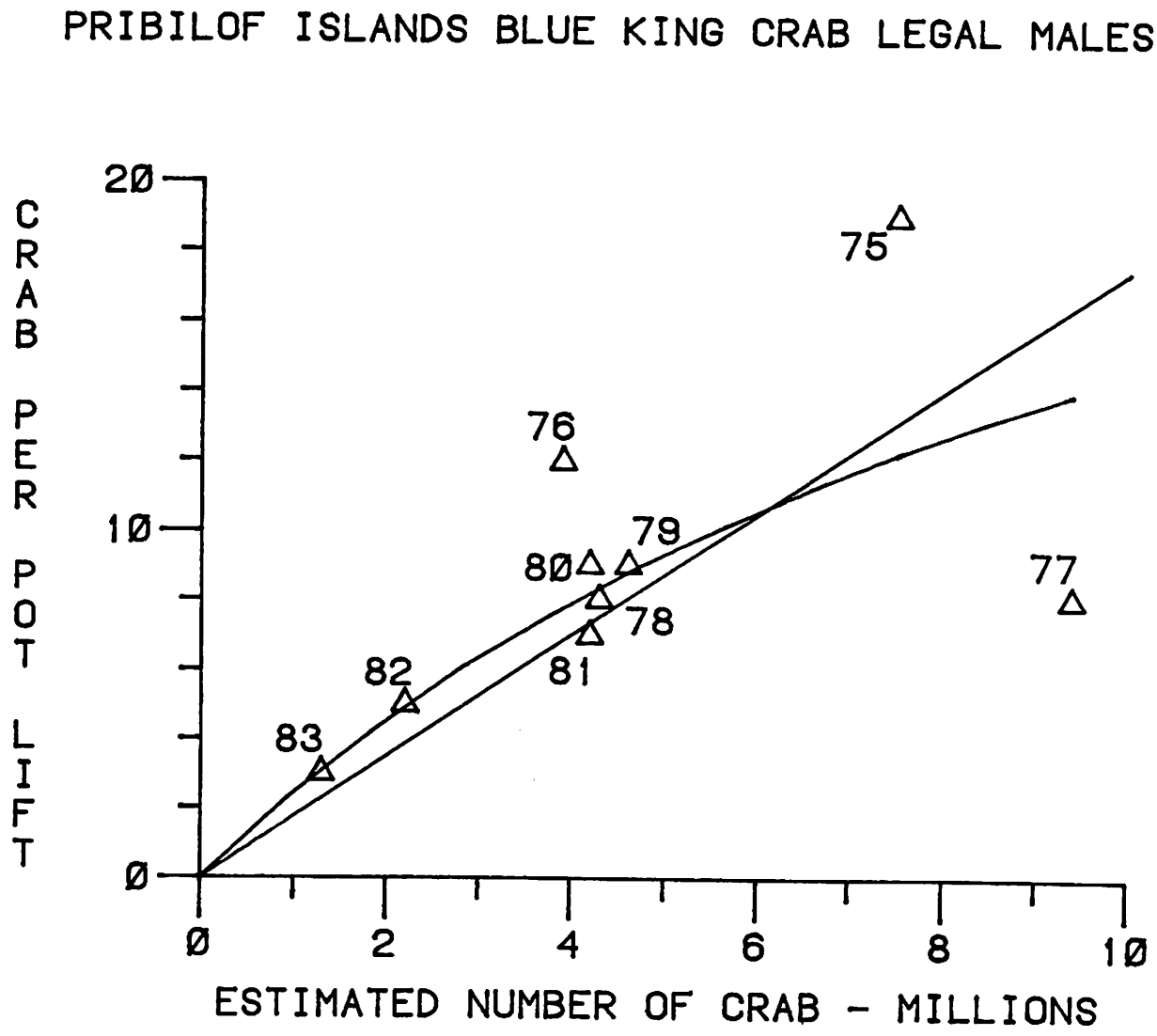


Figure 6. -- Relationship between the average number of Pribilof Island blue king crab (Paralithodes platypus) taken per pot in the U.S. fishery (year shown) and estimates of stock size from NMFS trawl surveys in the same year. The curved line assumes some limit to the number of crab a pot could catch.

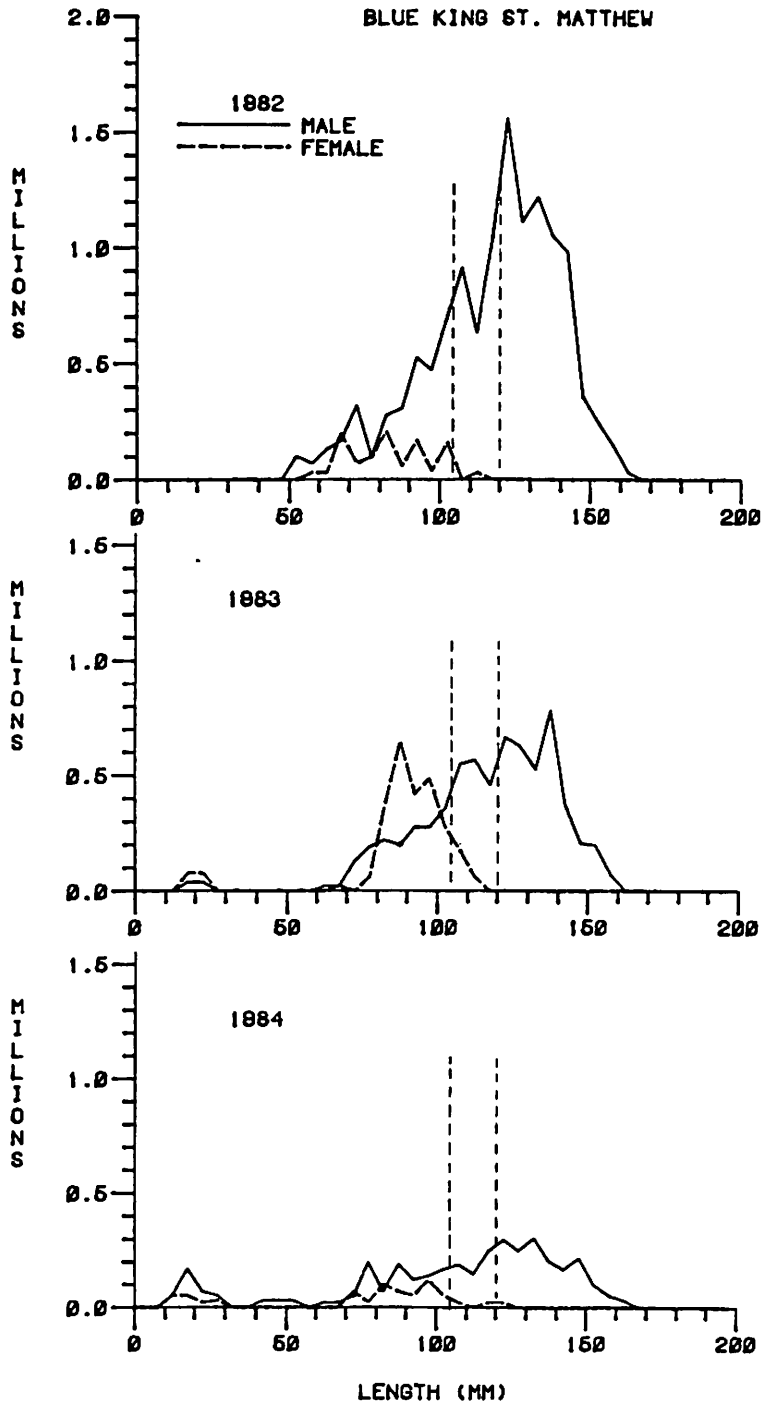


Figure 7. -- Estimates of abundance for male and female St. Matthew Island (Northern District) blue king crab (P. platypus) by 5 mm length classes, 1982-1984. Dashed vertical lines indicate pre-recruit and legal sizes.

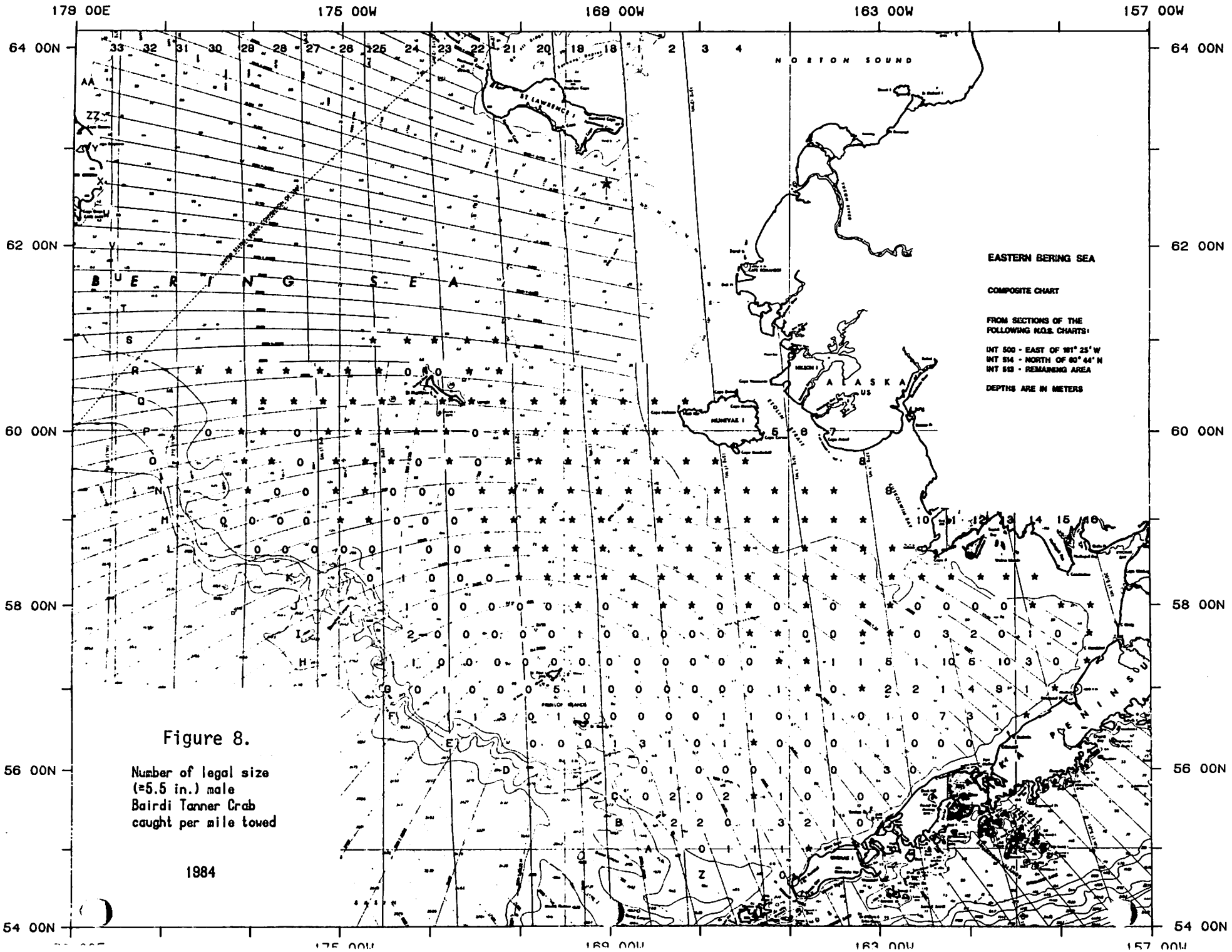


Figure 8.

Number of legal size (≥5.5 in.) male Bairdi Tanner Crab caught per mile towed

1984

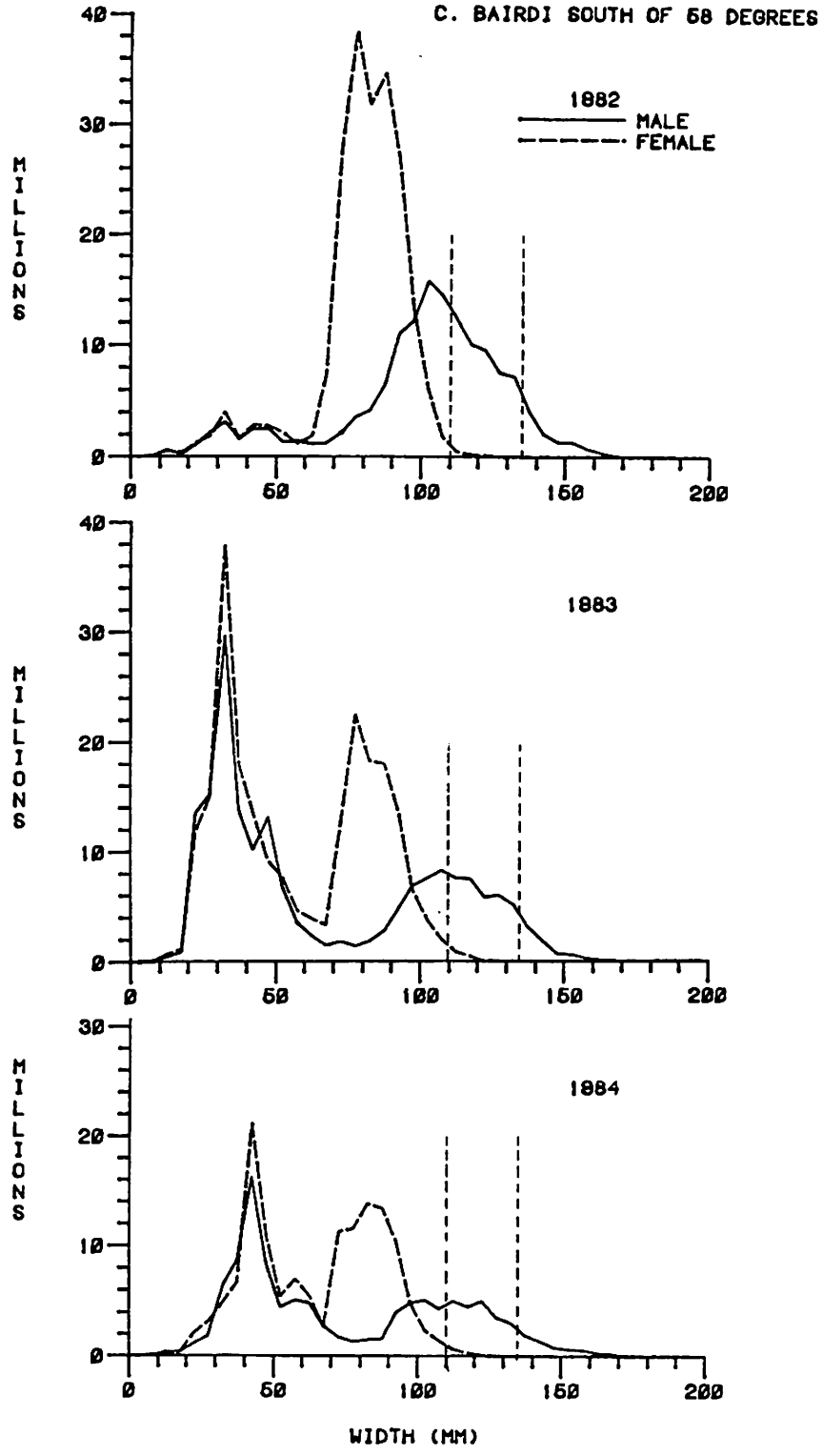


Figure 9. -- Estimates of abundance for male and female C. bairdi in the Bristol Bay and Pribilof Districts, by 5 mm width classes, 1982-1984. Dashed vertical lines indicate pre-recruit and legal sizes.

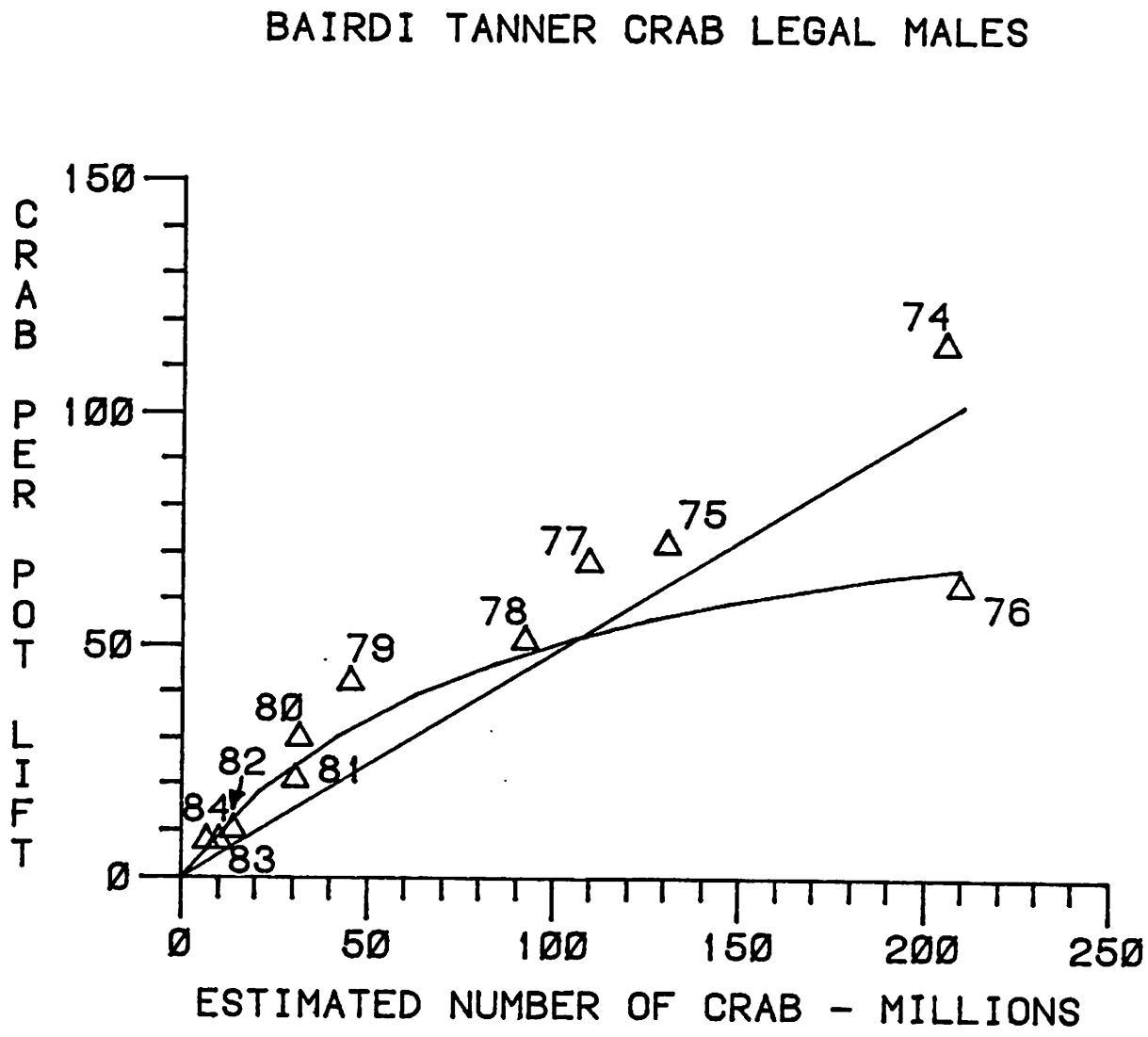


Figure 10. -- Relationship between the average number of tanner crab (Chionoecetes bairdi) taken per pot in the U.S. fishery (year shown) and estimates of stock size from NMFS trawl surveys in the preceeding year. In 1974, crab >4.7 in. included in stock size estimate: 5.5 in. size limit in effect from 1975 to present. The curved line assumes some limit to the number of crab a pot could catch.

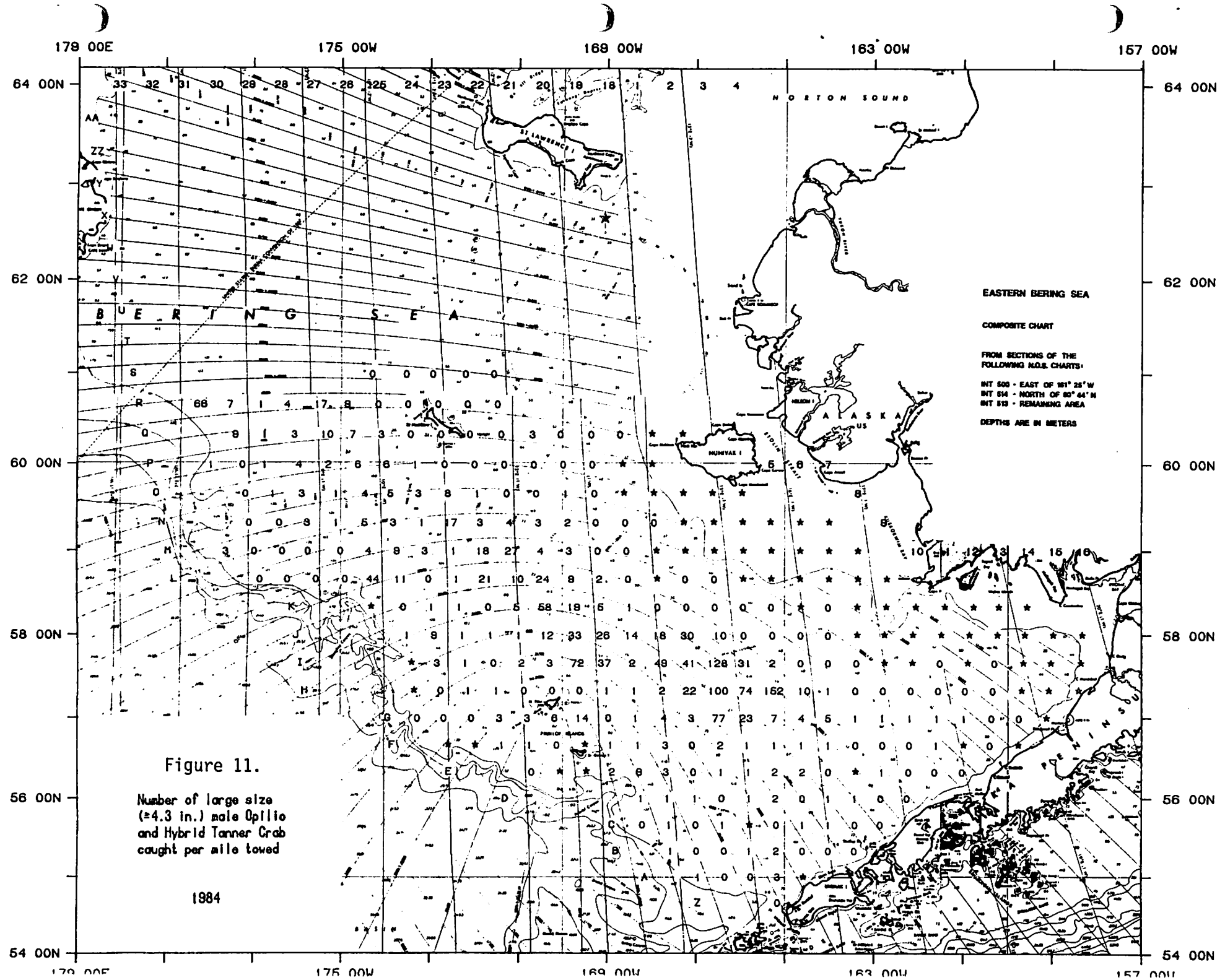


Figure 11.

Number of large size (≥4.3 in.) male Opilio and Hybrid Tanner Crab caught per mile towed

1984

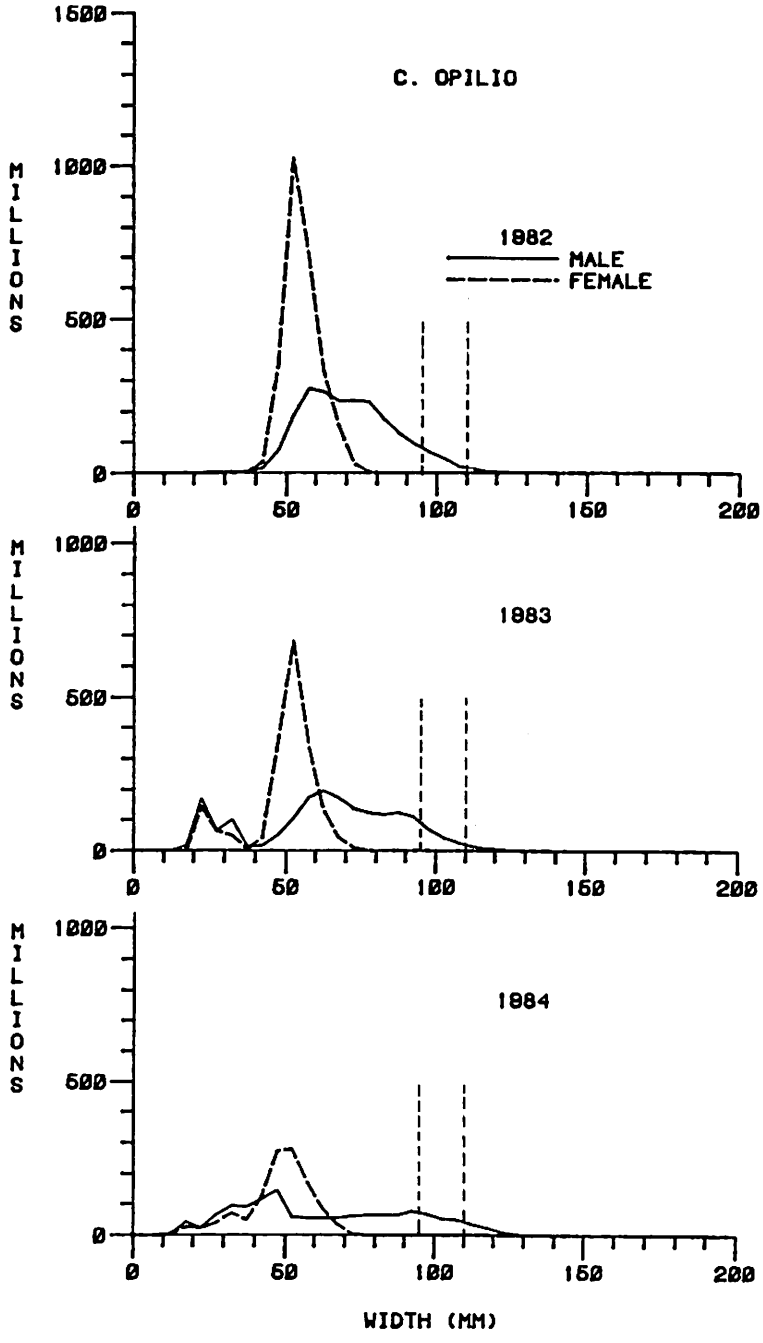


Figure 12. -- Estimates of abundance for male and female C. opilio in the combined Northern, Pribilof and Bristol Bay Districts, by 5 mm width classes, 1982-1984. Dashed vertical line indicate pre-recruit and large sizes.

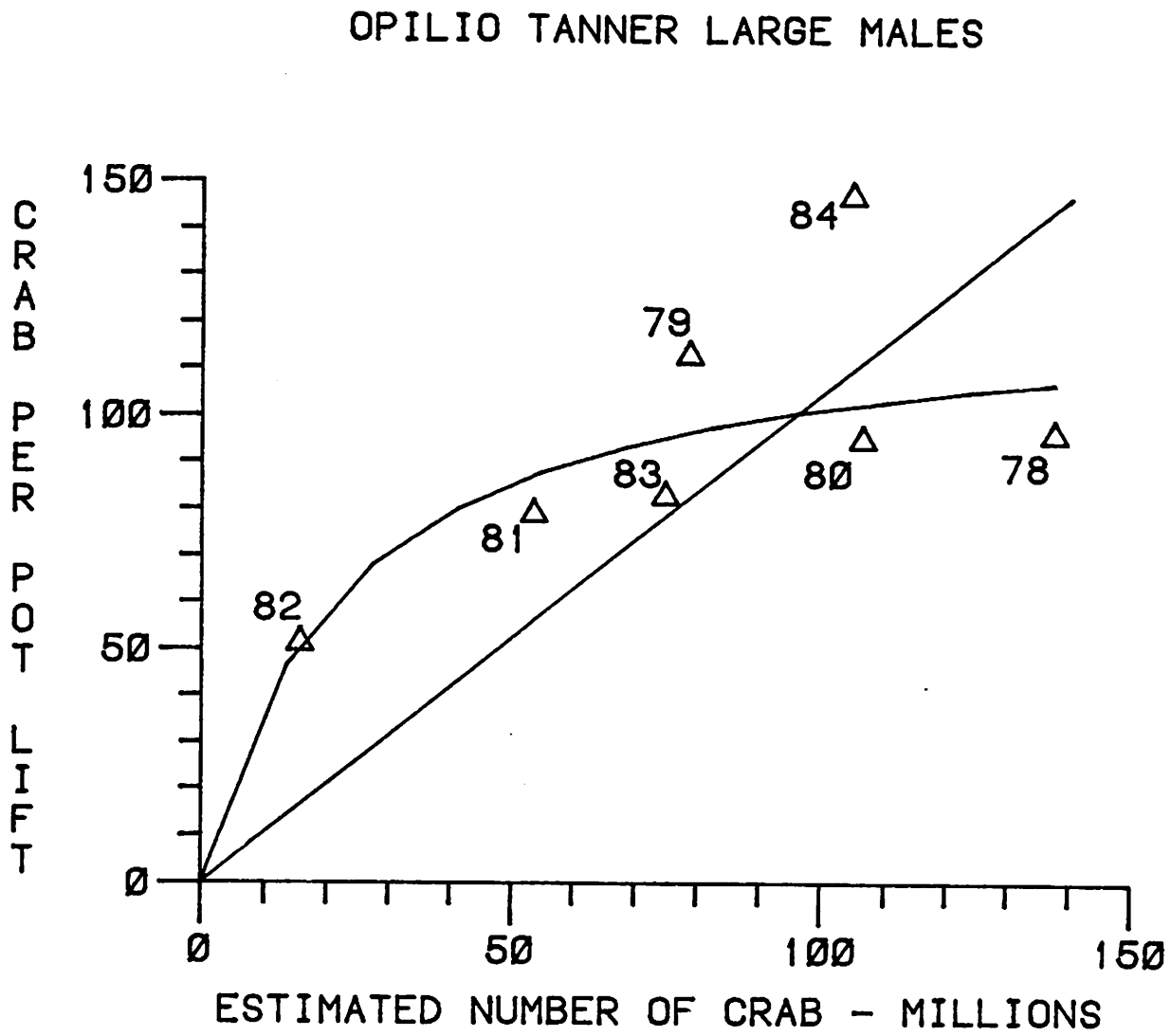


Figure 13. -- Relationship between the average number of tanner crab (Chionoecetes opilio) taken per pot in the U.S. fishery (year shown) and estimates of stock size from NMFS trawl surveys in the preceeding year. "Large" is >4.3 in from 1978-1982, >3.7 in from 1983 to present, and generally corresponds to minimum harvested size. Estimate of stock size excludes Northern District where commercial catches have been minimal. The curved line assumes some limit to the number of crab a pot could catch.

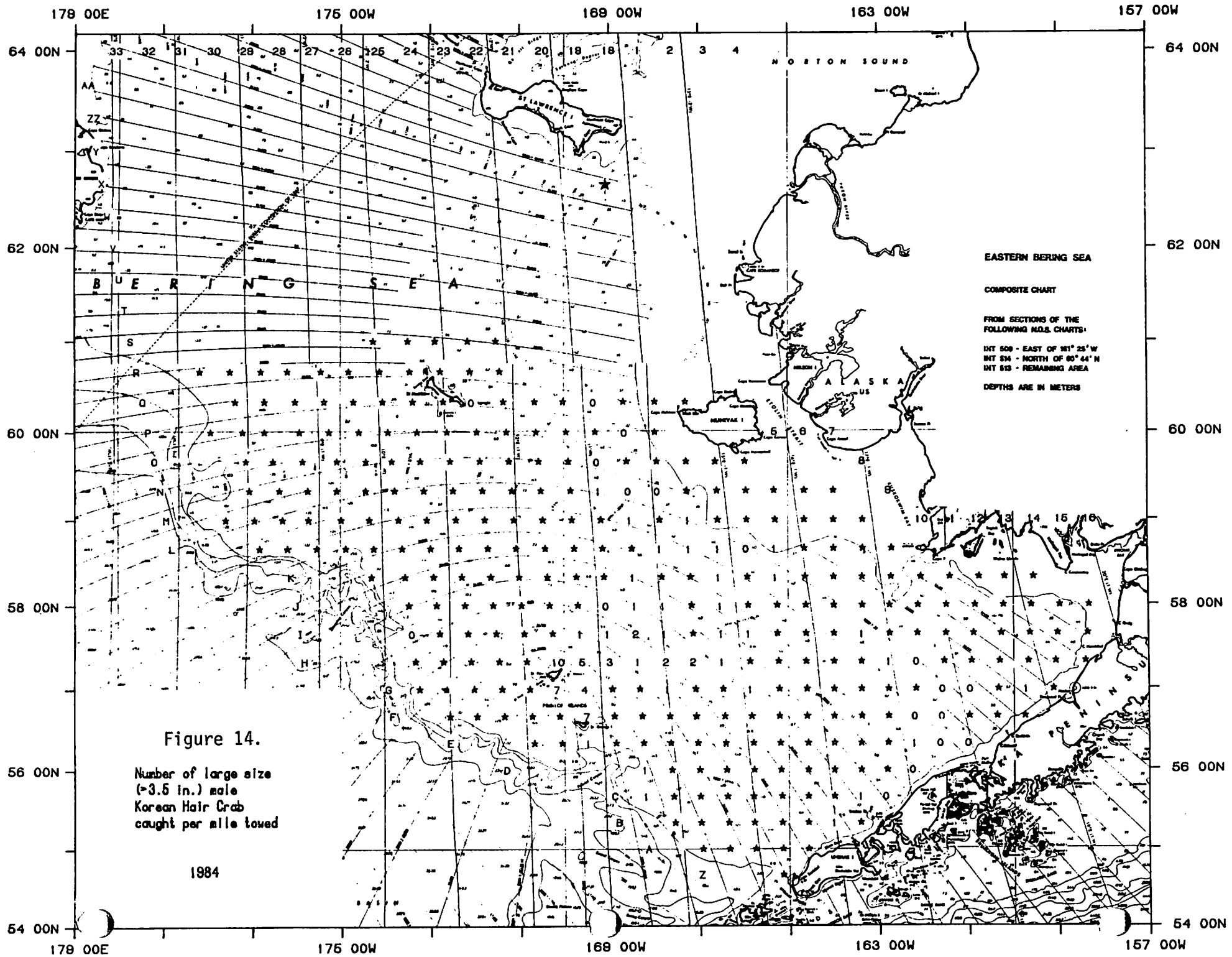


Figure 14.

Number of large size (>3.5 in.) male Korean Hair Crab caught per mile towed

1984

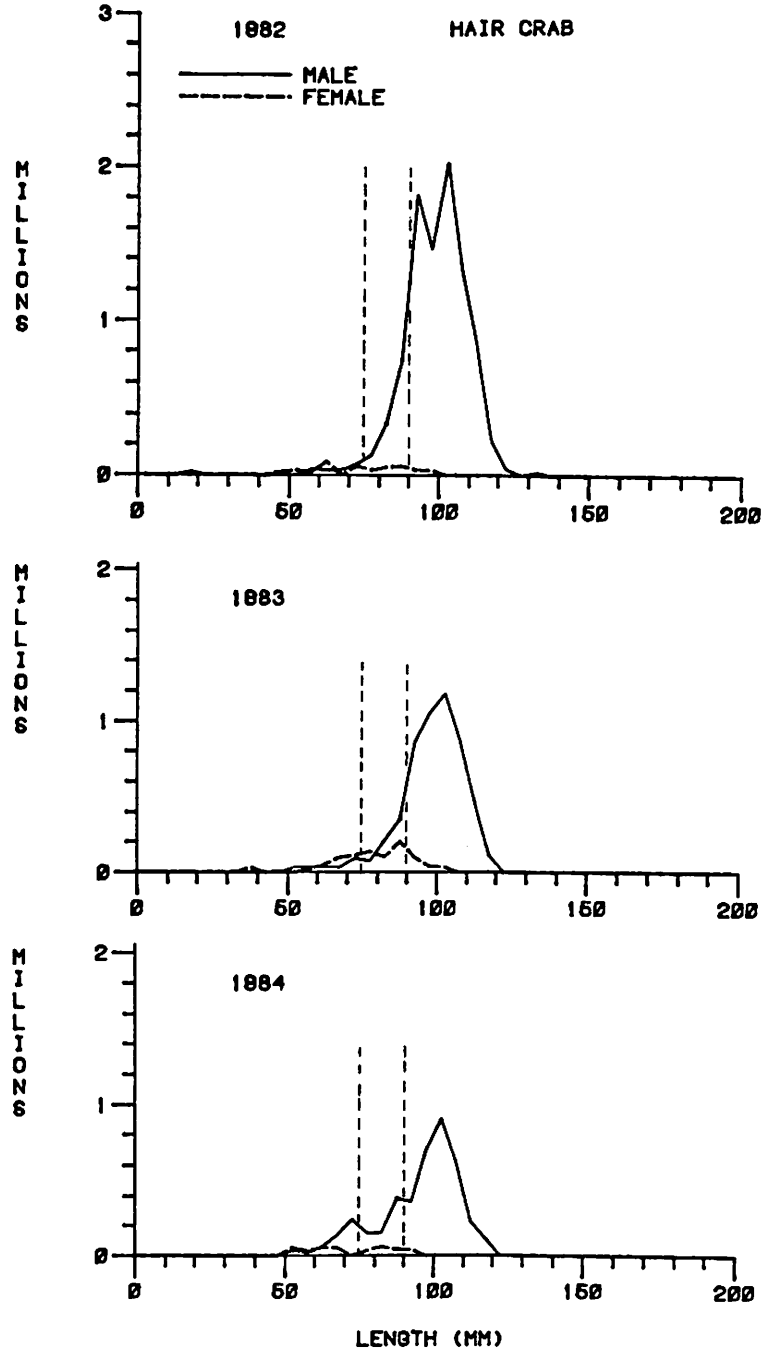


Figure 15. -- Estimates of abundance for male and female Korean hair crab (E. isenbeckii) in the combined Northern, Pribilof and Bristol Bay Districts, by 5 mm length classes, 1982-1984. Dashed vertical lines indicate pre-recruit and large sizes.