

MEMORANDUM

TO: Council, SSC and AP Members
FROM: Clarence G. Pautzke
Executive Director
DATE: April 14, 1994
SUBJECT: Salmon Bycatch

ESTIMATED TIME

2 HOURS

ACTION REQUIRED

(h) Review the following salmon bycatch items:

1. Final review of Area 517 and CVOA observer requirements.
2. Initial review of hotspot closure authority.
3. Initial review of alternatives for salmon retention and delivery to food banks, and
4. Progress report on the Salmon Foundation.

BACKGROUND

1. Area 517/CVOA Observer Requirements

During the 1993 BSAI pollock 'B' season fishery, a record 238,000 chum salmon were taken as bycatch. Although this bycatch may have had minimal impact on salmon returning to the Alaska-Yukon-Kuskokwim (AYK) Region in 1993, the Council remained concerned about the decline of the AYK chum salmon run and wanted the ability to collect additional data on salmon bycatch by increasing observer coverage during the pollock 'B' season fishery.

In January, the Council requested NMFS to prepare an analysis of a regulatory amendment to increase observer coverage for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery. Specifically, observer coverage would be increased so that: (1) two NMFS-certified observers would be required onboard all trawl vessels greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517. Another alternative, developed by NMFS, would require two observers be present on mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery. Under this alternative, additional observer coverage on catcher processors or catcher vessels fishing in these areas would not be required.

At this meeting, NMFS will present a draft analysis for a proposed regulatory amendment to increase observer coverage and increase data collection by vessels fishing in area 517 and the CVOA.

The proposed requirements, if approved, would be in addition to the Pacific cod observer requirements passed by the Council last September and implemented by NMFS February 13 and further modified on March 29. As modified, the rule calls for any vessel in area 517 between 60 feet and 125 feet LOA, trawl, hook-and-line, pot, or jig, to have an observer on the vessel each day it participates in any directed groundfish fishery during the Pacific cod directed fishery for that gear type.

2. Hotspot Closure Authority

David Ackley (ADF&G) has prepared a discussion paper that analyzes alternatives for salmon bycatch management through hot-spot authority. The alternatives define areas for closures based upon existing management areas coincidental with high chum salmon bycatch, as well as other discrete areas. Defining such areas for hot-spot implementation allows non-discretionary closure ability by the NMFS Regional Director. The seven alternative areas were based on existing management areas or on 30 mile-by-30 mile blocks (1/2° latitude by 1° longitude). The alternative areas examined are:

1. A 15-mile buffer extending from the 200 m depth contour as in Amendment 21b.
2. The contour buffer and two blocks above Unimak Island and the horseshoe as in Amendment 21b.
3. The CVOA.
4. Area 517.
5. 9 blocks, largely in the northern half of the CVOA.
6. 5 blocks in the north-central CVOA.
7. 7 blocks, largely in the north west part of the CVOA.

An executive summary of the discussion paper, along with several figures, is attached as Item D-3(h)(1). The Council may consider revising the analysis into an EA/RIR (with the addition of an economic impact analysis) for plan amendment, to be further reviewed in June or September. Final action could then be taken in September or December, and regulations could be in place for the 1995 BSAI pollock 'B' season.

3. Salmon Retention and Delivery to Food Banks

In September, the Council adopted a salmon bycatch control policy, which endorses the development of several initiatives to address salmon bycatch problems, including development of regulations requiring retention of salmon for processing and delivery to nonprofit foodbank organizations. As proposed, the groundfish plan amendments (BSAI Am. 26, GOA Am. 29) would authorize retention and processing of salmon taken as bycatch in trawl fisheries for donation to needy individuals. Alternatives considered in the analysis are:

Alternative 1. Status quo. Salmon retained only until observer has determined the number of salmon and taken scientific samples as required. No other type of retention would be authorized, and salmon must be discarded at sea as PSC.

Alternative 2. Mandatory retention and processing of salmon. All salmon taken as trawl bycatch would be required to be retained, processed for human consumption, and donated to foodbanks. This alternative was not fully evaluated, as NOAA GC has determined that NMFS lacks the statutory authority under the Magnuson Act to implement this alternative.

Alternative 3. Voluntary retention and processing of salmon. All salmon taken as trawl bycatch could be voluntarily retained and processed for foodbanks. This alternative would require that permits be issued to those processing, possessing, or distributing these salmon.

At this meeting, NMFS will present a draft analysis for proposed groundfish plan amendments to allow for retention of salmon taken as bycatch in the Alaska trawl fisheries. An executive summary is attached as Item D-3(h)(2).

4. Progress Report on the Salmon Foundation.

Among the provisions of the Council's salmon bycatch control policy is the establishment of the Salmon Foundation. John White, President of the Salmon Research Foundation, and other industry representatives will be available to present a status report on Foundation activities, including a review of the pollock "A" season chinook salmon bycatch, status of its research plan for stock identification, in-season feedback of salmon bycatch information, and other developments to date.

In addition to the formal report given to the Council, representatives from the Salmon Research Foundation are planning an informal question-and-answer type presentation to the public on Wednesday evening.

DRAFT EXECUTIVE SUMMARY**SALMON BYCATCH IN THE BERING SEA TRAWL FISHERIES AND ALTERNATIVES FOR HOT-SPOT CLOSURE.**

This discussion paper contains an analysis of alternatives for salmon bycatch management through hot-spot authority. An update of chinook salmon bycatch as presented in Amendment 21b is provided in this document. Alternatives for chum salmon bycatch management in this document define areas for closure based upon existing management areas coincidental with high chum salmon bycatch, as well as discrete areas within larger management areas. Predefinition of areas for implementation of hot-spot authority allows non-discretionary closure ability by the Regional Director of the National Marine Fisheries Service (NMFS). Hot-spot authority without predefined areas for closure severely impacts the ability of NMFS to implement closures in a manner timely enough to be effective in bycatch management.

Chum salmon**Purpose of and need for proposed action**

In 1993, the chum salmon bycatch in the Bering Sea of approximately 245,000 salmon more than tripled the previous high bycatch level, and was six times the bycatch level seen in the previous two years. Concerns about chum salmon bycatch were exacerbated by the poor returns to Western Alaskan systems in the same year. Commercial, sport and subsistence fisheries were closed in several of the Western Alaskan districts in 1993 because of poor returns, and projections for 1994 are for below average returns in many districts as well. The intercepted chum salmon were primarily in the size range of 3 year-old fish which would be expected to mature in the following year. The chum salmon were also captured after most of the Western Alaskan chum salmon would have returned to their native systems. Little is known about the potential impacts bycatch may have had on the following year returns, especially since stock composition of the bycaught salmon is unknown.

The purpose of this analysis is to provide managers with information needed to take possible action to reduce chum salmon bycatch in 1994 and/or subsequent years. However, although providing much of the data necessary for an EA/RIR, this analysis does not include the complex economic analysis an EA/RIR might require. This analysis examines domestic fisheries in 1990 - 1993 for patterns in chum salmon bycatch, however only the fisheries conducted in 1993 were in spatial and temporal patterns similar to those anticipated in the future. In this discussion paper, areas for potential closure were defined based on the patterns in other salmon bycatch, especially in 1993. It is possible that more refined or alternative areas may become apparent as additional information becomes available. The smallest unit examined for potential closure in this document was the 1/2° latitude by 1° longitude block. The distribution of chum salmon noted in historical fisheries covers a fairly large area, and is not necessarily confined to smaller discrete areas. Given the annual and inter-annual spatial distribution of high bycatch observations, a trade-off between potential groundfish catch and potential salmon bycatch becomes apparent. Either larger areas must be chosen in order to maximize potential bycatch savings, or smaller areas must be chosen in order to minimize closure impacts on existing groundfish fisheries.

Alternatives considered

In order to be effective for management, hot-spot authority requires the establishment of predefined areas for non-discretionary closure. A suite of alternative areas has been examined in this document. The areas described below were based largely on existing management areas or on 30 mi by 30 mi (1/2° latitude by 1° longitude) blocks corresponding to high other salmon bycatch. With the exception of a 15 mile buffer extending to either side of the 200 m depth contour, square blocks or areas previously defined (such as NMFS management area 517 and the CVOA) were chosen for ease of enforcement. In several alternative areas, blocks were selected which would maintain access to the lucrative "horseshoe" area which, although containing other salmon bycatch, did not account for inordinantly high other salmon bycatch. The seven alternative areas and two sub-alternatives examined in this report are as follows: 1) a 15 mi buffer extending from the 200 m depth contour as in Amendment 21b; 2) the contour buffer and two blocks above Unimak Island and the horseshoe as in Amendment 21b; 3) the CVOA; 4) Area 517; 5) 9 blocks, largely in the northern half of the CVOA; 6) 5 blocks in the north-central CVOA; 7) 7 blocks, largely in the north west of the CVOA.

Most of the other salmon bycatch was found to occur during the months of July - October, primarily in August and September. Other salmon bycatch was also found to occur primarily on the shelf between the 200 m depth contour and the 100 m depth contour between Unimak Island and the Pribilof Islands. Thus the majority of other salmon bycatch occurs within the CVOA. The two alternatives which would provide some savings to other salmon and historically accounted for the least amount of groundfish catch were alternatives 5 and 6 which would restrict access to the northern portion of the CVOA.

Chinook Salmon

Amendment 21b provided an analysis of chinook salmon bycatch from foreign and Joint Venture fisheries, as well as from domestic fisheries from 1989 - 1991. Included in the present document is an analysis of the patterns in chinook salmon bycatch from the 1992 and 1993 domestic fisheries. As indicated in the amendment, there were approximately 37,000 chinook bycaught in 1992. In 1993, approximately 46,000 chinook were bycaught, and as of 4/2/94, an estimated 35,000 chinook have been bycaught in Bering Sea trawl fisheries.

As was found from previous historical data, chinook salmon bycatch occurs primarily along the 200 m contour and in the vicinity of the horseshoe and Unimak Island during the months of January - April and September - December. Thus the majority of chinook salmon bycatch occurs within a 15 mi buffer extending from the 200 m contour and in the Unimak Island blocks as defined in Amendment 21b. As an exception, there was also high chinook salmon bycatch in 1992 near the Pribilof Islands, and in an area north of the Unimak Island blocks.

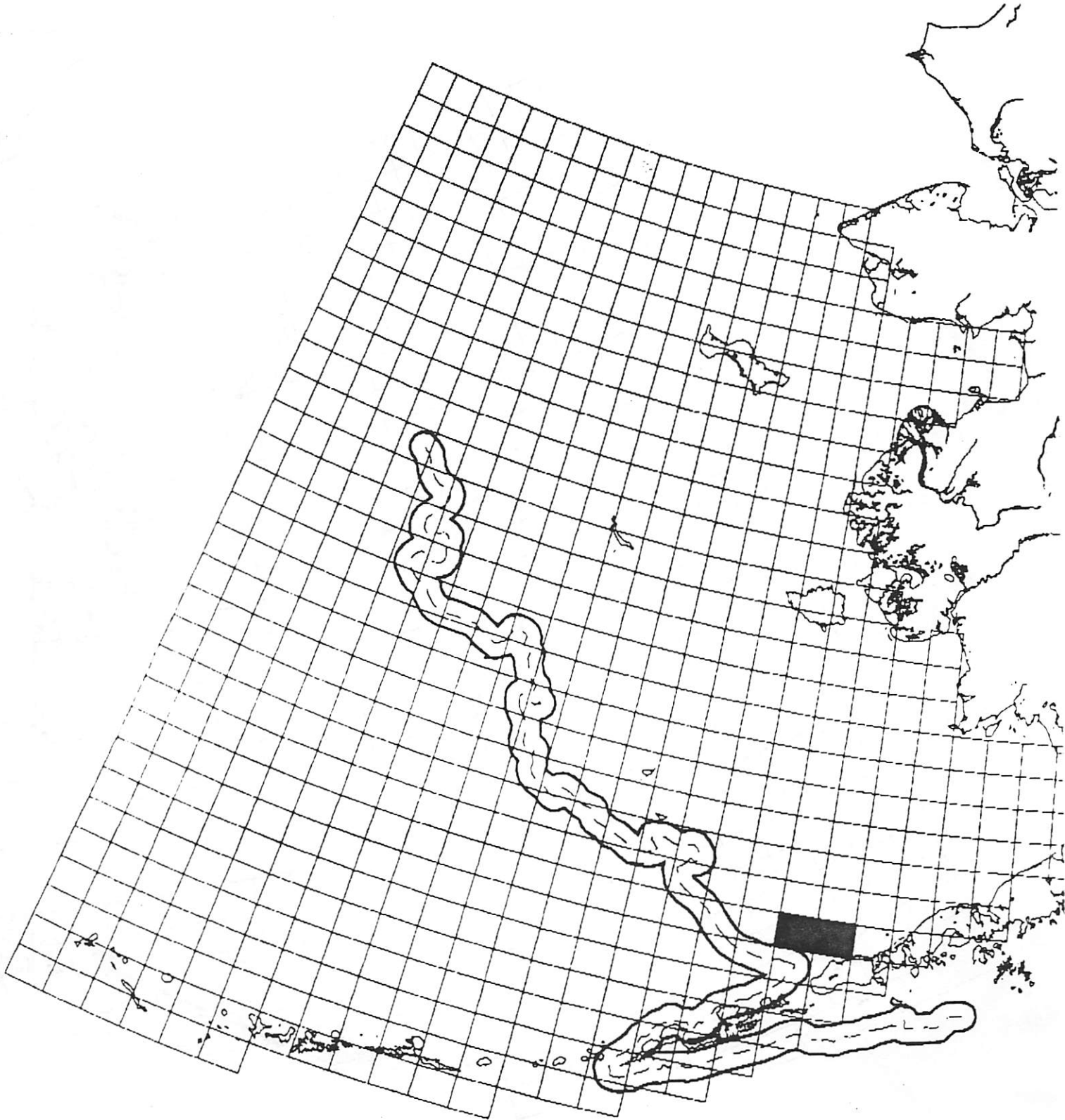
Two alternatives are investigated in this document which would not require the entire contour to be closed as a means to manage chinook salmon bycatch. Based on the distribution of chinook salmon bycatch in 1990-1993, 8 blocks and 9 blocks were chosen for potential closure. Although accounting for a large portion of the chinook salmon bycatch, and potential savings given a closure, there is still a high probability of encountering chinook salmon anywhere along the 200 m contour during the months of January - April and September - December. Increased effort along the contour with subsequent bycatch could result in reduced savings to chinook salmon given closure of those blocks.

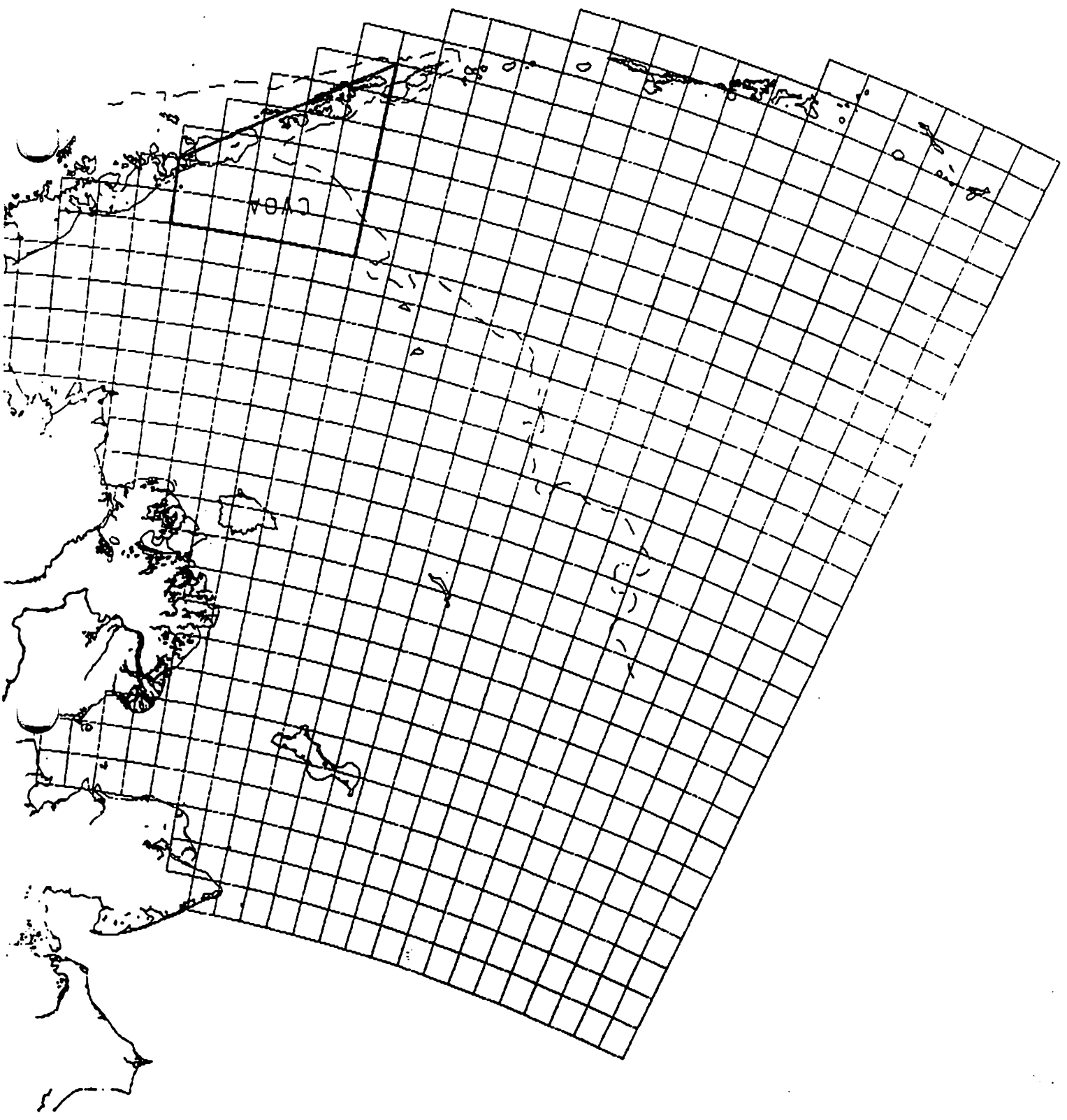
Figure 1.

Bering Sea with 200 m depth contour portrayed as a dashed line. A buffer extends 15 mi on each side of the contour. The two 1/2° latitude by 1° longitude "Unimak blocks" are blackened.

Alternative 1

Alternative 2





Alternative 3

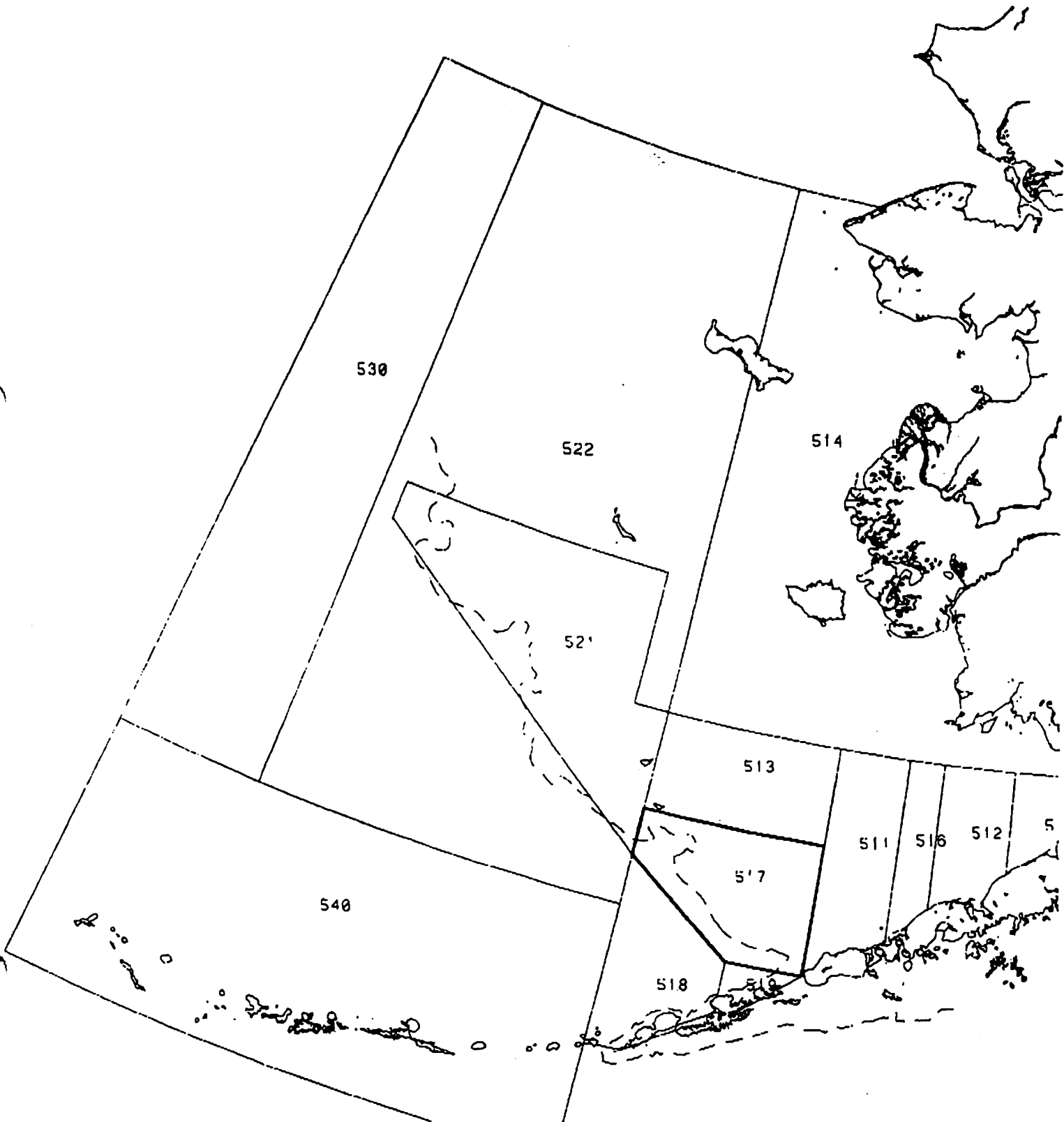
The location of the catcher-boat operational area (CVOA) in the Bering Sea. Northern boundary is 56° N latitude, western boundary is 168° W longitude, and eastern boundary is 163° W longitude.

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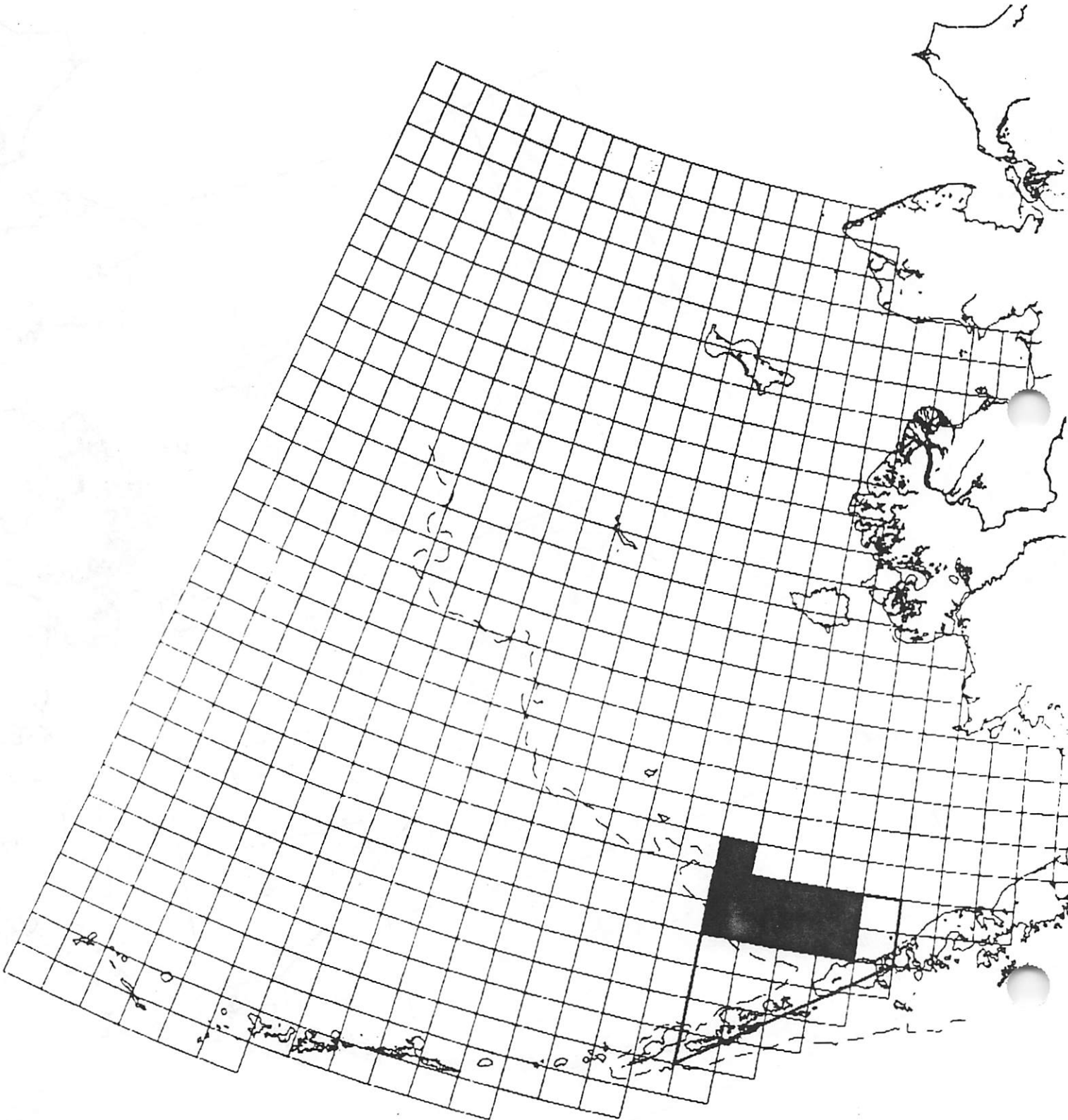
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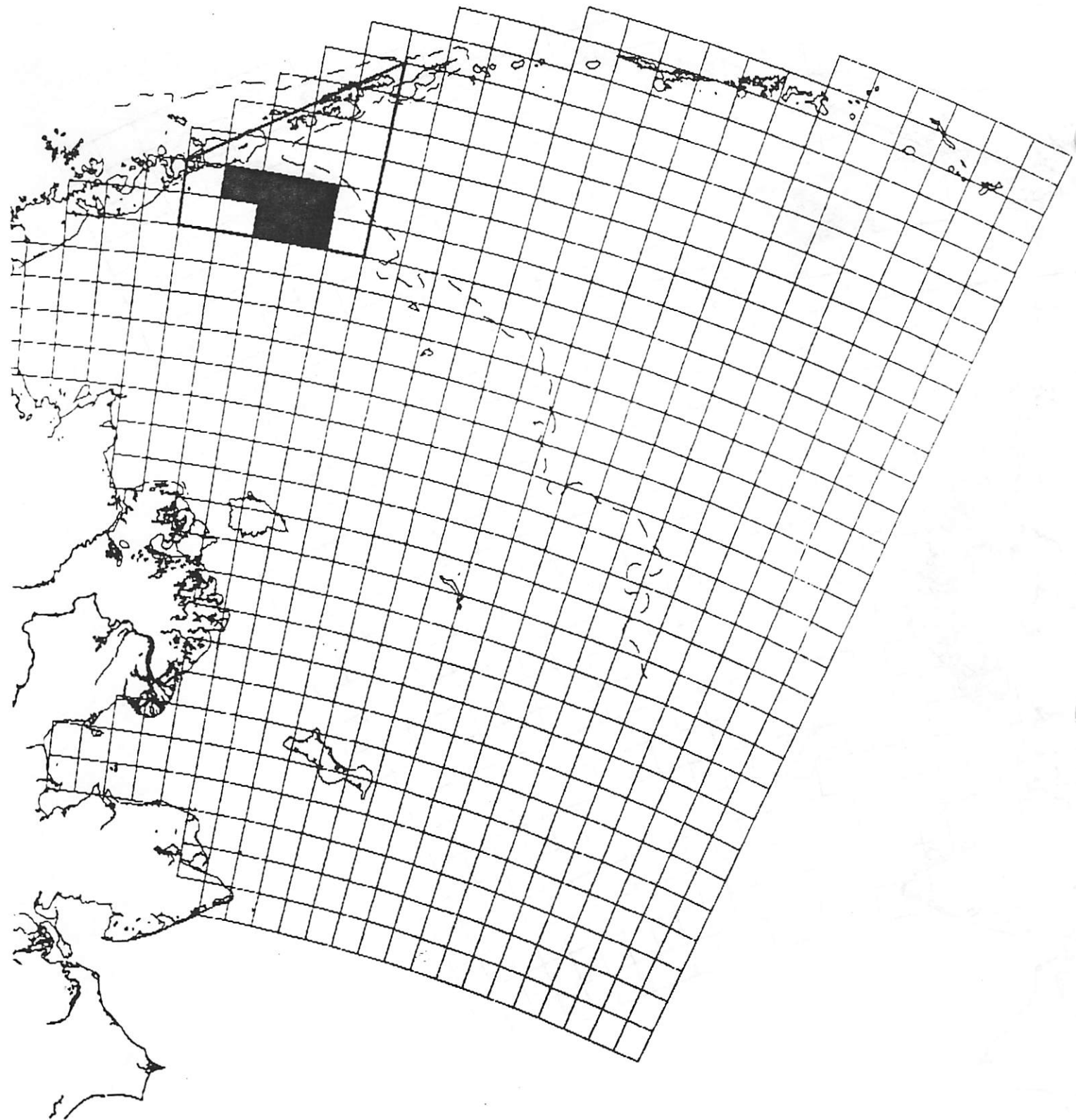
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Alternative 4



Alternative 5





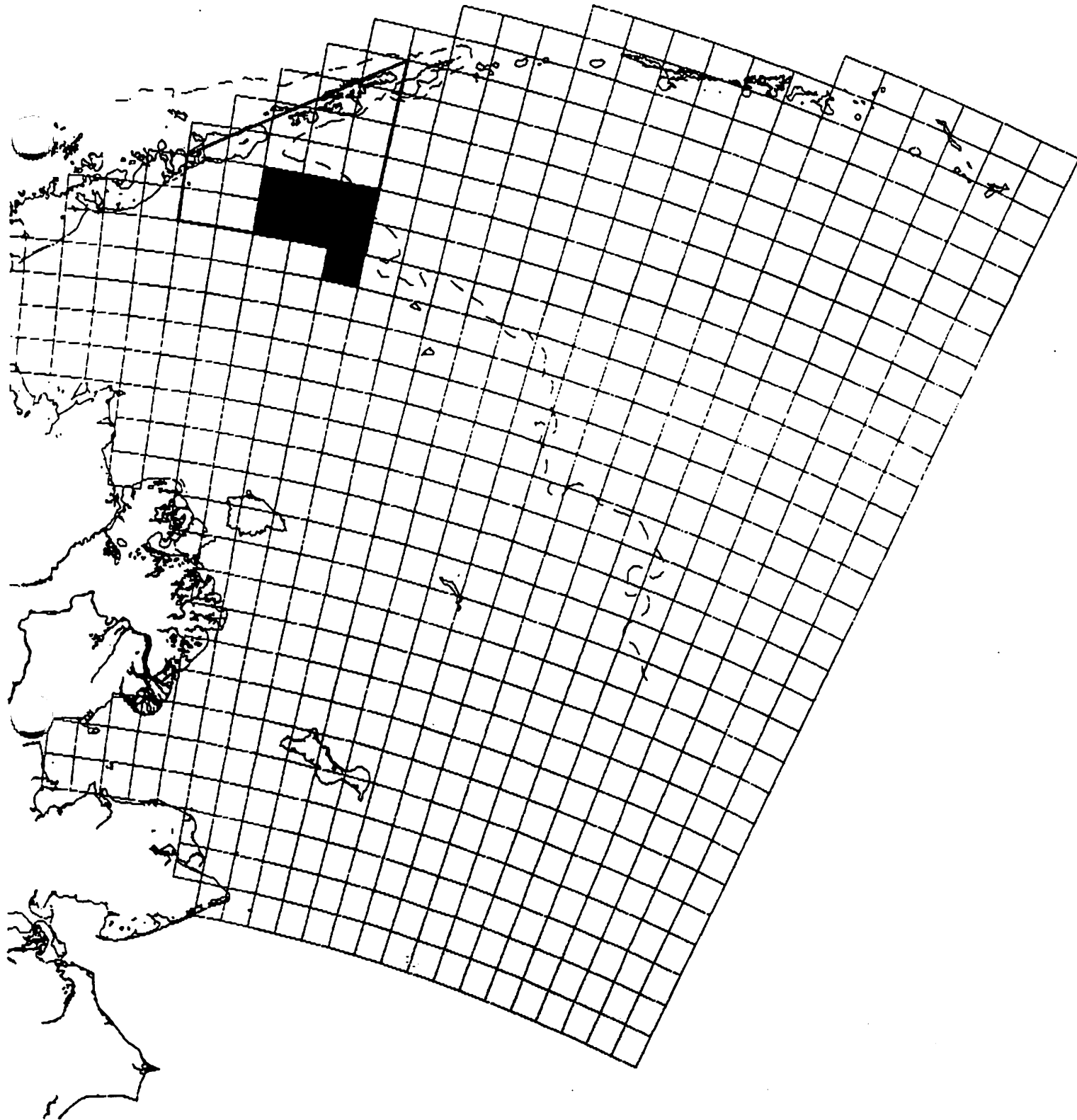
Alternative 6

5 Block Alternative shaded, CVOA highlighted.

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Figure 5.



Alternative 7

7 Block Alternative shaded, CVOA highlighted.

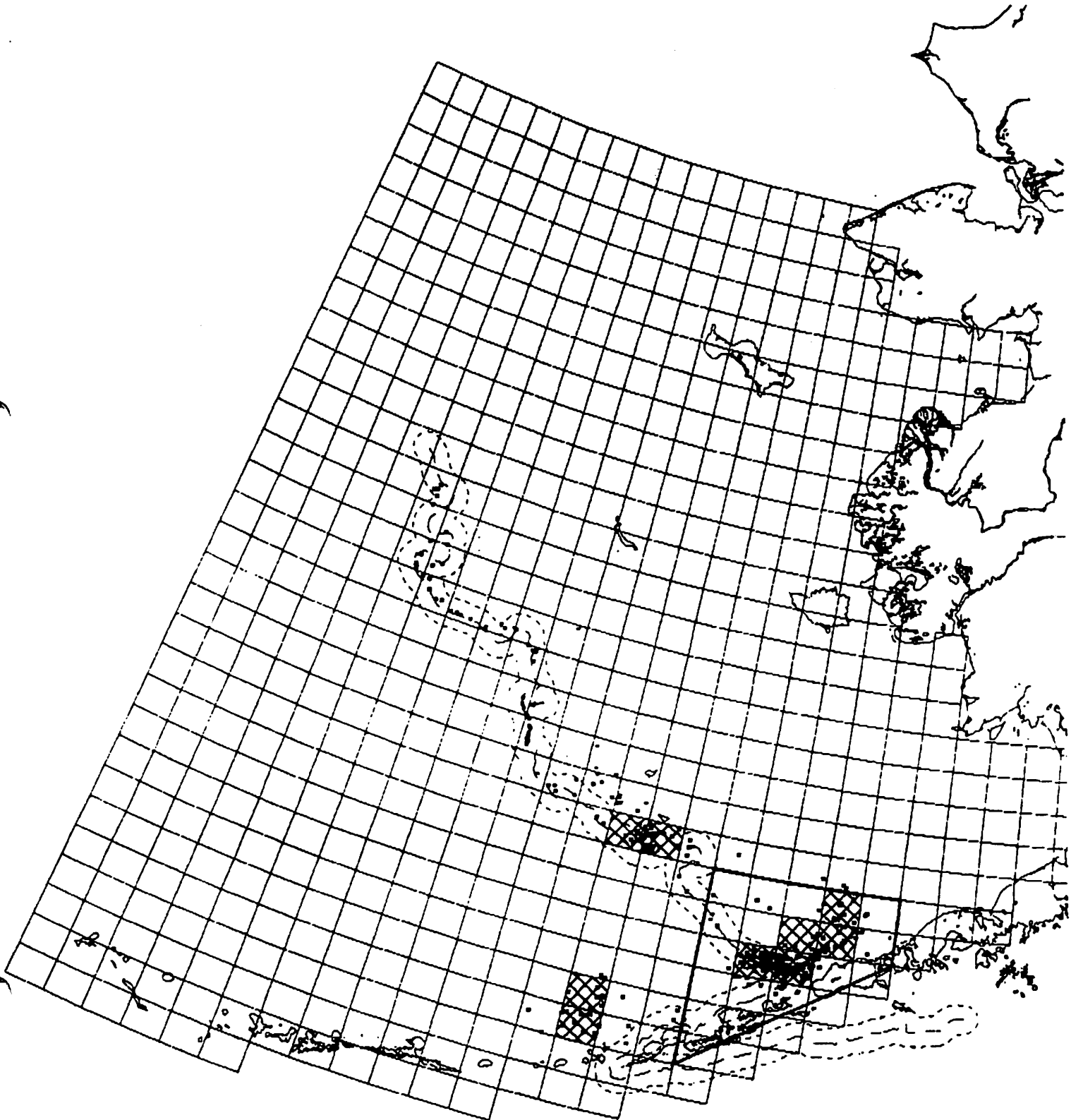
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Figure 40.

Hauls with a chinook salmon bycatch of more than 20 fish during the years 1990 - 1993 are plotted as dots. 200 m contour, contour buffer, and CVOA borders are indicated. 1/2° latitude by 1° longitude blocks with higher salmon bycatch are identified with cross-hatch.





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

April 13, 1994

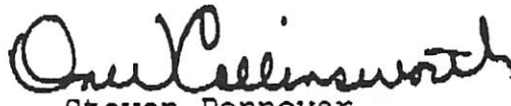


Mr. Clarence Pautzke
Executive Director, North Pacific
Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99510

Dear Clarence,

Enclosed is a draft environmental assessment/regulatory impact review (EA/RIR) for consideration by the North Pacific Fishery Management Council (Council). The EA/RIR assesses alternatives for retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to non-profit foodbank organizations. The Council requested NMFS to prepare this analysis at its September 1993 meeting for initial Council consideration at its April 1994 meeting. Our understanding is that if this analysis is approved by the Council for public review, final Council action on the proposed measure would be scheduled for the June 1994 meeting.

Sincerely,

for 
Steven Pennoyer
Director, Alaska Region

Enclosure



Executive Summary

Salmon are taken incidental to the Alaska groundfish trawl fisheries. These fish are dead when brought on board a vessel and must be returned to Federal waters as prohibited species once a NMFS-certified observer has determined the number of salmon and completed the collection of any biological or scientific data. At its September 1993 meeting, the Council adopted as a statement of intent a "Salmon Bycatch Control Policy." This policy endorsed the development of several different initiatives intended to address the salmon bycatch problem, including the development of regulations requiring retention of salmon for processing and delivery to nonprofit foodbank organizations. The Council's intent for these regulations was to reduce protein waste in the groundfish trawl fisheries, support separate industry initiatives to address the salmon bycatch problem by allowing for verification of the number of salmon taken as bycatch, provide additional opportunity to collect biological samples or scientific data, and potentially provide an incentive to vessel operators to take action to reduce salmon bycatch rates to avoid costs associated with retaining and processing salmon for human consumption.

The proposed action would authorize the retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals. This action would be implemented under Amendment 26 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Amendment 29 to the FMP for Groundfish of the Gulf of Alaska. The following three alternatives are considered:

Alternative 1 (Status quo). Under the status quo alternative, all bycaught salmon would be retained until a NMFS-certified observer has determined the number of salmon and collected any biological or scientific data. Salmon could not be retained for reasons other than the collection of biological or scientific data and ultimately must be discarded in Federal waters as a prohibited species.

Alternative 2 (Mandatory retention and processing of salmon and delivery to a foodbank organization). Under Alternative 2, FMP amendments would be implemented that require every salmon taken in the Alaska groundfish trawl fisheries to be retained, processed for human consumption, and donated to a nonprofit foodbank organization. NMFS's authority under the Magnuson Act to directly regulate harvesting and processing fishery resources is limited to the EEZ. NOAA General Counsel has determined that NMFS lacks the statutory authority under the Magnuson Act to implement all three parts of Alternative 2, i.e., retention, processing and delivery of salmon to a nonprofit foodbank organization. Given the lack of statutory authority to implement Alternative 2, this alternative is not developed further in this analysis except to provide a qualitative comparison with Alternatives 1 and 3.

Alternative 3: (Voluntary retention and processing of salmon for delivery to a foodbank organization). Under Alternative 3, FMP amendments would be implemented that authorize the voluntary retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals. This alternative would require that permits be issued to persons authorized to distribute salmon to needy individuals and that vessels and processors be issued permits authorizing the possession of salmon for delivery to an authorized distributor.

Neither Alternatives 1 nor 3 would be expected to change fishing activities in a manner that would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska trawl fisheries. Notwithstanding the statutory limitations of Alternative 2, the potential exists that costs associated with mandatory retention and processing of salmon could provide an incentive to vessels operators to take action to attempt to reduce salmon bycatch rates and possibly reduce overall salmon bycatch amounts. None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

Based on the average number of salmon taken during the 1992 - 1993 trawl fisheries (242,000 fish) and assuming that all salmon are retained and processed for distribution to needy individuals under Alternative 2, the total burden to the Alaska trawl industry resulting from mandatory retention and processing of salmon is estimated at \$312,180. Potential benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 2 cannot be quantified. If the average number of salmon taken as bycatch in the 1992-93 trawl fisheries were all delivered to foodbank organizations and fit for human consumption, about 2 million meals could be provided to needy individuals. These meals likely would provide a healthy alternative to the diets of people who often only have access to meager and inadequate food.

Under Alternative 3, an unknown number of salmon could be voluntarily retained and processed by the groundfish trawl industry for donation to authorized distributors for nonprofit foodbank organizations. Potential costs to the groundfish industry are anticipated to be significantly lower relative to Alternative 2 given that vessel operators or processor managers would have no regulatory requirement to retain and process salmon if the costs of doing so are judged too high or have too great an impact on groundfish operations. The actual costs to vessel operators and shoreside processing operations would be relative to the amount of salmon retained and processed. These costs on a per salmon basis are estimated at \$1.46 and \$1.12 for shoreside and at-sea processing operations, respectively.

Although benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 3 cannot be quantified, the number of salmon donated would be less than that under Alternative 2 and the potential benefit to needy individuals would decrease accordingly. Voluntary donation of salmon to needy individuals under this alternative would meet the Council's objective to reduce protein waste in the groundfish fisheries. However, because the salmon donation program is voluntary, Alternative 3 would provide no incentive to vessel operators to take action to avoid salmon to reduce costs associated with the mandatory retention and processing program proposed under Alternative 2. Therefore, Council objectives for the retention and processing of salmon for human consumption only would be partially met under Alternative 3.

None of the alternatives considered is expected to result in a "significant regulatory action" as defined in E.O. 12866. NMFS does not anticipate that any vessel or processor that qualifies as a small entity for purposes of the Regulatory Flexibility Act would elect to participate in a voluntary salmon donation program if the costs of doing so reduce gross annual receipts by 5 percent or more. The impacts under Alternative 2, therefore, are not anticipated to result in a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF ADMINISTRATION BOARDS SUPPORT SECTION

WALTER J. HICKEL, GOVERNOR

AGENDA D-3

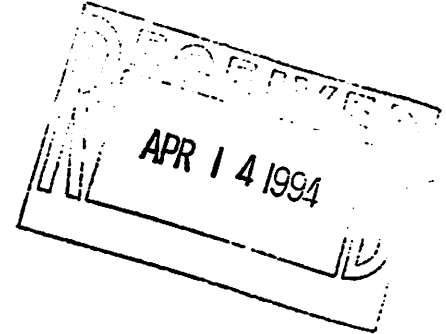
APRIL 1994

Supplemental

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 465-4110
FAX: (907) 465-6094

April 1, 1994

Mr. Richard Lauber, Chairman
North Pacific Fishery Management Council
PO Box 103136
Anchorage, Alaska 99510



Dear Mr. Lauber:

The Alaska Board of Fisheries has implemented a regulation requiring the mandatory retention of prohibited salmon species by trawl vessels for observation by groundfish observers in the Bering Sea/ Aleutian Islands. We have passed this regulation on the understanding that it is needed to compliment your regulation; and that these regulations are an initial step to limit salmon bycatch.

The Board is extremely concerned with the apparent inability to control salmon bycatch; which has, in fact, significantly increased under current regulations.

Because of this we plan to review the results of your program next fall, and will reauthorize the state's mandatory retention for observation regulation at that time if we become convinced that significant bycatch reduction has resulted.

The Board strongly suggests that the council broaden its program of bycatch controls. This should include a number of approaches:

1. Implementation of the vessel incentive program (VIP) which should be possible with actual enumeration under our respective mandatory retention regulations.
2. Request the NMFS regional director to use Hot Spot authority to close areas where observers report substantial salmon bycatch.
3. Require all vessels to carry real-time reporting electronics (MCI-compatible communication) for observer data to aide in Hot Spot authority.

Additionally, the council should request the Salmon Foundation to increase its assessment to \$25/chinook and \$10/chum salmon to fund research associated with stock identification and distribution analysis.

Serving the Alaska Board of Fisheries and Alaska Board of Game

We are concerned that this bycatch is having an undue impact on the resource, and the commercial, sport and subsistence fishermen of Alaska.

Furthermore, the board suggests that in 1995 our respective bodies include full assessment of the Gulf of Alaska salmon bycatch through appropriate mandatory retention and observation requirements.

Lastly, we suggest that the council take action in April to increase observer coverage in areas where salmon bycatch is prevalent.

Sincerely,

Kay Andrew/Laf

Kay Andrew, Chair
Alaska Board of Fisheries

DRAFT FOR COUNCIL REVIEW

ENVIRONMENTAL ASSESSMENT

and

REGULATORY IMPACT REVIEW

for a

**PROPOSAL TO AUTHORIZE THE RETENTION AND PROCESSING
OF SALMON TAKEN AS TRAWL BYCATCH
FOR DONATION TO FOODBANKS**

**AMENDMENT 26 TO THE FISHERY MANAGEMENT PLAN FOR GROUND FISH
OF THE BERING SEA AND ALEUTIAN ISLANDS AREA**

and

**AMENDMENT 29 TO THE FISHERY MANAGEMENT PLAN FOR THE
GROUND FISH FISHERY OF THE GULF OF ALASKA**

Prepared by

**National Marine Fisheries Service
Alaska Region**

April 12, 1994

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Executive Summary

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The proposed action would authorize the retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals. This action would be implemented under Amendment 26 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Amendment 29 to the FMP for Groundfish of the Gulf of Alaska. The following three alternatives are considered:

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Neither Alternatives 1 nor 3 would be expected to change fishing activities in a manner that would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska trawl fisheries. Notwithstanding the statutory limitations of Alternative 2, the potential exists that costs associated with mandatory retention and processing of salmon could provide an incentive to vessels operators to take action to attempt to reduce salmon bycatch rates and possibly reduce overall salmon bycatch amounts. None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

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Although benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 3 cannot be quantified, the number of salmon donated would be less than that under Alternative 2 and the potential benefit to needy individuals would decrease accordingly. Voluntary donation of salmon to needy individuals under this alternative would meet the Council's objective to reduce protein waste in the groundfish fisheries. However, because the salmon donation program is voluntary, Alternative 3 would provide no incentive to vessel operators to take action to avoid salmon to reduce costs associated with the mandatory retention and processing program proposed under Alternative 2. Therefore, Council objectives for the retention and processing of salmon for human consumption only would be partially met under Alternative 3.

None of the alternatives considered is expected to result in a "significant regulatory action" as defined in E.O. 12866. NMFS does not anticipate that any vessel or processor that qualifies as a small entity for purposes of the Regulatory Flexibility Act would elect to participate in a voluntary salmon donation program if the costs of doing so reduce gross annual receipts by 5 percent or more. The impacts under Alternative 2, therefore, are not anticipated to result in a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

1.0 INTRODUCTION

The groundfish fisheries in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska are managed under the Fishery Management Plan (FMP) for the Groundfish Fishery of the Gulf of Alaska (GOA) and the FMP for Groundfish of the Bering Sea and Aleutian Islands Area. Both FMPs were developed by the North Pacific Fishery Management Council (Council) under the Magnuson Fishery Conservation and Management Act (Magnuson Act). The GOA FMP was approved by the Secretary of Commerce and become effective in 1978 and the BSAI FMP become effective in 1982.

Actions taken to amend FMPs or implement other regulations governing the groundfish fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Section 1 of this document. Section 2 contains information on the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals also are addressed in this section. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. Section 4 contains the Initial Regulatory Flexibility Analysis (IRFA) required by the RFA which specifically addresses the impacts of the proposed action on small businesses.

This Environmental Assessment/Regulatory Impact Review (EA/RIR) addresses proposed amendments to the FMPs which would allow the retention of salmon taken as bycatch in the Alaska groundfish fisheries for the purpose of donation, through charitable organizations, to needy individuals. Salmon taken as bycatch in the Alaska groundfish trawl fisheries experience 100 percent mortality. The intended effect of the proposed measure is to provide an opportunity to the groundfish industry to reduce the protein waste of bycaught salmon that would otherwise be brought onboard a vessel and subsequently returned dead to Federal waters as prohibited species.

1.1 Purpose of and Need for the Action

Salmon are taken incidental to the Alaska groundfish trawl fisheries. These fish are dead when brought on board a vessel and must be returned to Federal waters as prohibited species once a NMFS-certified observer has determined the number of salmon and completed the collection of any biological or scientific data. The proposed action would authorized the retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals. The intent of this action is to reduce protein waste and potentially provide the opportunity to collect additional data that would support a more long-term solution to the salmon bycatch problem.

1.2 Alternatives Considered

1.2.1 Alternative 1: Status quo. Under the status quo alternative, all bycaught salmon would be retained until a NMFS-certified observer has determined the number of salmon and collected any biological or scientific data. Salmon could not be retained for reasons other than the collection of biological or scientific data and ultimately must be discarded in Federal waters as a prohibited species.

1.2.2 Alternative 2: Mandatory retention and processing of salmon and delivery to a foodbank organization.

Under Alternative 2, FMP amendments would be implemented that require every salmon taken in the Alaska groundfish trawl fisheries to be retained, processed for human consumption, and donated to a nonprofit foodbank organization. NMFS's authority under the Magnuson Act to directly regulate harvesting and processing fishery resources is limited to the EEZ. NOAA General Counsel has determined that NMFS lacks the statutory authority under the Magnuson Act to implement all three parts of Alternative 2, i.e., retention, processing and delivery of salmon to a nonprofit foodbank organization. Given the lack of statutory authority to implement Alternative 2, this alternative is not developed further in this analysis except to provide a qualitative comparison with Alternatives 1 and 3.

1.2.3 Alternative 3: Voluntary retention and processing of salmon and delivery to a foodbank organization.

Under Alternative 3, FMP amendments would be implemented that authorize the voluntary retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals.

- Any salmon retained for other than the collection of biological or scientific data by a NMFS-certified observer must be delivered to a person authorized by the Director, Alaska Region, NMFS (Regional Director) to take possession of salmon for distribution to nonprofit foodbank organizations (authorized distributor). Salmon retained under the voluntary program may not be sold or bartered.
- Only vessels and shoreside processing operations that are issued a Federal permit to deliver salmon to an authorized distributor may retain salmon for this purpose.
- Vessels permitted to retain salmon under this program for delivery to an authorized distributor must offload retained salmon at one of the following designated ports: Dutch Harbor, Kodiak, or Seattle.

1.3 Background

The Alaska groundfish fisheries result in incidental fishing mortality of Pacific salmon. Vessel operators participating in these fisheries typically use trawl, hook-and-line, or pot gear. Trawl gear operations account for most of the groundfish catch, harvesting 92 percent and 94 percent of the groundfish catch during 1992 and 1993, respectively. Trawl gear fisheries for Alaska groundfish also account for more than 99 percent of the salmon bycatch experienced by the Alaska groundfish fisheries. Tables 1 and 2 summarize bycatch amounts of chinook salmon and other salmon species combined associated with the 1992 and 1993. Chum salmon comprise most of the number of other salmon species taken as bycatch.

Table 1. Number of chinook salmon and other salmon taken as bycatch in the 1992, 1993, and 1994 Alaska groundfish fisheries. Metric tons of groundfish harvested¹ also are listed. The 1994 salmon bycatch and groundfish harvest amounts are estimated through March 19, 1994.

<u>Fishery</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
BSAI trawl			
Groundfish harvested	1,836,668	1,771,776	745,282
Chinook salmon	41,903	46,484	30,285
Other salmon	41,345	245,096	4,317
BSAI nontrawl			
Groundfish harvested	126,855	82,785	35,170
Chinook salmon	52	50	0
Other salmon	104	6	0
GOA trawl			
Groundfish harvested	218,784	202,379	71,834
Chinook salmon	16,778	24,465	1,736
Other salmon	11,093	56,388	0
GOA nontrawl			
Groundfish harvested	51,013	45,403	15,234
Chinook salmon	16	67	0
Other salmon	123	253	0

¹ Estimates of groundfish catch are based on blended data from the NMFS observer program and industry reported catch. Estimates of salmon bycatch amounts are based on estimated groundfish catch and observer data on salmon bycatch rates from sampled catch.

The salmon discard mortality rate experienced in the groundfish fisheries is assumed to be 100 percent. The incidental salmon fishing mortality experienced in the groundfish fisheries is one of several competing uses of the fully utilized salmon resource. Salmon also are used as catch and bycatch in directed commercial, subsistence, and sport salmon fisheries and as bycatch in other non-salmon and non-groundfish fisheries. Salmon used as bycatch in the groundfish fisheries and in other fisheries can exacerbate the management problem associated with the allocation of salmon among escapement goals set by Alaska State management policy and the terminal salmon fisheries. The groundfish fisheries may result in reduced escapement or harvest in the salmon fisheries, thereby imposing a cost on other salmon users.

In general, no information exists to indicate that the current level of salmon bycatch in the Alaska trawl fisheries presents critical conservation issues; however, low salmon returns for some Western Alaska stocks indicate that the potential exists for conservation concerns. Although a mixed stock bycatch of salmon in the trawl fisheries could disproportionately affect jeopardized stocks, insufficient information exists on the ocean distribution of individual stocks to specifically manage for a desired escapement goal through the establishment of a salmon bycatch limit for the BSAI trawl fleet.

Conservation and management concerns arising from salmon bycatch in the Alaska trawl fisheries have escalated during recent years. These concerns are due not only to the declining status of some Western Alaska salmon runs, but also to the alarmingly high bycatch of chum salmon during the 1993 BSAI pollock 'B' season. During the 1993 pollock 'B' season, bycatch amounts of chum salmon reflected a 5-fold increase over the 1993 bycatch level. At this time, however, no information exists to determine what percentage of the 1993 chum salmon bycatch in the 'B' season pollock fishery was comprised of Western Alaska fish.

The Council has considered several approaches to address the salmon bycatch problem in the BSAI groundfish trawl fisheries. Interest also exists to develop a salmon bycatch management program for the GOA trawl fisheries. Management measures considered by the Council include a chinook salmon bycatch limit for the BSAI trawl fisheries (North Pacific Fishery Management Council 1993), vessel incentive programs to reduce the bycatch rates of chinook salmon and other salmon species (NMFS 1993a and 1993b), and several independent initiatives developed by the trawl industry and Western Alaska interest groups to address the salmon bycatch problem.

The Council recognized that lack of information on salmon bycatch inhibited the development and implementation of effective management measures to address the salmon bycatch problem. At its September 1993 meeting, therefore, the Council requested NMFS to implement measures that would allow for the collection of additional data on salmon bycatch and facilitate the use of this information by the industry to reduce salmon bycatch amounts. NMFS subsequently approved rulemaking that (1) prohibits the discard of salmon in the BSAI trawl fisheries until a NMFS-certified observer has determined the number of salmon and completed the collection of any scientific data or biological samples, and (2) authorizes the public release of observer data on salmon and other prohibited species bycatch in the BSAI and GOA groundfish fisheries to support separate industry initiatives to address the salmon bycatch problem and provide vessel operators with information that could be used to take action to reduce salmon bycatch rates. The proposed rule to implement the Council's recommended actions was published in the Federal Register January 19, 1994 (59 F 2817). The public comment period on this action closed February 28, 1994. NMFS anticipates that a final rule will be effective by June 1994.

At its September 1993 meeting, the Council also adopted as a statement of intent a "Salmon Bycatch Control Policy." This policy endorsed the development of several different initiatives intended to address the salmon bycatch problem, including the development of regulations requiring retention of salmon for processing and delivery to nonprofit foodbank organizations. The Council's intent for these regulations was to reduce protein waste in the groundfish trawl fisheries, support separate industry initiatives to address the salmon bycatch problem by allowing for verification of the number of salmon taken as bycatch, provide additional opportunity to collect biological samples or scientific data, and potentially provide an incentive to vessel operators to take action to reduce salmon bycatch rates to avoid costs associated with retaining and processing salmon for human consumption.

The Council's request to NMFS to develop regulations requiring retention and processing of salmon for delivery to nonprofit foodbank organizations was based upon the results of an experiment conducted by Terra Marine Research and Education (Terra Marine) under a 1993 experimental fishing permit (EFP) issued by NMFS. Approximately 20 vessels and shoreside processing facilities participated under the Terra Marine EFP during the 1993 pollock 'B' season, the 1994 pollock 'A' season, and the 1994 BSAI Pacific cod fishery. Under the EFP, the participants were required to retain and process all salmon taken as bycatch and deliver processed salmon to Terra Marine for distribution to foodbank organizations. Although insufficient information exists to judge whether this program provided an incentive to reduce salmon bycatch rates, Terra Marine successfully showed that salmon retained and processed for human consumption could be distributed to needy individuals in

the manner intended. Under the EFP, nearly 50,000 pounds of headed and gutted salmon were donated to a foodbank network organization for distribution to needy individuals (Terra Marine Research and Education, 1993).

2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. The environmental analysis in the EA provides the basis for this determination and must analyze the intensity or severity of the impact of an action and the significance of an action with respect to society as a whole, the affected region and interests, and the locality. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact study (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 1.1 and 1.2, and the list of preparers is in Section 8. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

2.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from 1) harvest of fish stocks which may result in changes in food availability to predators, changes in the population structure of target fish stocks, and changes in community structure; 2) changes in the physical and biological structure of the benthic environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and 3) entanglement/entrapment of non-target organisms in active or inactive fishing gear. A summary of the effects of the 1994 groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the 1994 groundfish total allowable catch specifications (NMFS 1994a).

Neither Alternatives 1 nor 3 would be expected to change fishing activities in a manner that would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska trawl fisheries. Notwithstanding the statutory limitations of Alternative 2, the potential exists that costs associated with mandatory retention and processing of salmon could provide an incentive to vessels operators to take action to attempt to reduce salmon bycatch rates and possibly reduce overall salmon bycatch amounts. Relative to the status quo alternative, Alternatives 2 and 3 could reduce the number of salmon discarded in Federal waters to the extent that bycaught salmon are diverted to nonprofit foodbank organizations. Any affect on the biological or physical environment resulting from a reduction in salmon discard amounts would be insignificant relative to overall discard amounts of fish or fish parts associated with groundfish harvesting and processing operations.

2.2 Impacts on Endangered, Threatened or Candidate Species

Listed and candidate species that may be present in the GOA and BSAI are discussed in detail in the EA/RIR/IRFAs conducted on the annual total allowable catch specifications. Species that are listed, or proposed to be listed, under the Endangered Species Act that may occur in the GOA or BSAI

include: the endangered fin whale (Balaenoptera physalus), sei whale (Balaenoptera borealis), humpback whale (Megaptera novaeangliae), sperm whale (Physeter catodon) and short-tailed albatross (Diomedea albatrus); the threatened Steller sea lions (Eumetopias jubatus), and Snake River fall chinook salmon (Oncorhynchus tshawytscha); and the proposed as threatened spectacled eider (Somateria fischeri).

Listed species of salmon, including the Sacramento River winter-run chinook salmon and Snake River sockeye salmon, fall chinook and spring/summer chinook salmon may be present in the GOA and BSAI. Consultation conducted under section 7 of the ESA on effects of the GOA and BSAI groundfish fisheries concluded that the continued operation of these fisheries would not adversely affect listed species of salmon (NMFS, 1994b)

Endangered, threatened, proposed and candidate species of seabirds that may be found within the regions of the GOA and BSAI where the groundfish fisheries operate, and potential impacts of the groundfish fisheries on these species are discussed in the Environmental Assessment prepared for the TAC specifications. The U.S. Fish and Wildlife Service (USFWS), in the informal consultation on the 1994 specifications (February 14, 1994), concluded that groundfish operations are likely to result in an unquantified level of mortality to short-tailed albatrosses, a listed species, but will not jeopardize the continued existence of the population. The take level was not expected to exceed that authorized in the USFWS consultation conducted on the implementation of the Marine Mammal Exemption Program (1988).

Neither Alternatives 1 nor 3 would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska groundfish fisheries. These alternatives, therefore, would not be expected to affect any proposed, candidate or listed seabirds in a manner not already authorized in previous consultations.

2.3 Impacts on Marine Mammals

Marine mammals not listed under the Endangered Species Act that may be present in the GOA and BSAI include cetaceans, [minke whale (Balaenoptera acutorostrata), killer whale (Orcinus orca), Dall's porpoise (Phocoenoides dalli), harbor porpoise (Phocoena phocoena), Pacific white-sided dolphin (Lagenorhynchus obliquidens), and the beaked whales (e.g., Berardius bairdii and Mesoplodon spp.)] as well as pinnipeds [northern fur seals (Callorhinus ursinus), and Pacific harbor seals (Phoca vitulina)] and the sea otter (Enhydra lutris).

Neither Alternatives 1 nor 2 would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska groundfish fisheries. These alternatives, therefore, would not be expected to affect any proposed, candidate or listed seabirds in a manner not already authorized in previous consultations.

2.4 Coastal Zone Management Act

Implementation of each of the alternatives considered would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.5 Conclusions or Finding of No Significant Impact

None of the alternatives is likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

Executive Order 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant". A "significant regulatory action" is one that is likely to:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

3.1 Alternative 1: Status Quo

Under Alternative 1, no salmon would be retained and processed for donation to needy individuals. Although the groundfish industry would not be burdened with costs associated with retaining and processing salmon for delivery to an authorized distributor, needy individual also would not be provided access to a protein source that otherwise will be discarded. A quantitative assessment of the foregone benefit to needy individuals is not possible. Assuming that amounts of salmon similar to that donated under the 1993 EFP issued to Terra Marine would not be retained and processed for human consumption, approximately 100,000 high protein meals to needy individuals would be foregone.

3.2 Alternative 2: Mandatory retention and processing of salmon and delivery to a foodbank organization.

At this time, no statutory authority exists to implement this alternative. However, a brief discussion of potential costs and benefits of this program is provided for purposes of assessing other alternatives considered. Under the terms and conditions of the 1993 EFP issued to Terra Marine Research and Education, Terra Marine prepared an annual report assessing feasibility of retaining bycaught salmon for distribution to needy individuals (Terra Marine and Research and Education, 1993). In the report, the following cost estimates are provided for shoreside and at-sea processing, storage, and delivery of salmon under the EFP:

Total direct production, support, and delivery costs

	Shoreside Processors	Processor Vessels
Total costs per salmon	\$ 1.46	\$ 1.12
Total costs per metric ton	\$ 814	\$ 625

Given these costs and the average number of salmon taken in the 1992 and 1993 Alaska groundfish fisheries, the total burden to the Alaska trawl industry resulting from mandatory retention and processing of salmon is estimated at \$ 312,180.

Potential benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 2 cannot be quantified. If the average number of salmon taken as bycatch in the 1992-93 trawl fisheries were all delivered to foodbank organizations and fit for human consumption, about 2 million meals could be provided to needy individuals. These meals likely would provide a healthy alternative to the diets of people who often only have access to meager and inadequate food.

3.3 Alternative 3: Voluntary retention and processing of salmon and delivery to a foodbank organization

Under Alternative 3, an unknown number of salmon voluntarily could be retained and processed by the groundfish trawl industry for donation to authorized distributors for nonprofit foodbank organizations. Potential costs to the groundfish industry are anticipated to be significantly lower relative to Alternative 2 given that vessel operators or processor managers would have no regulatory requirement to retain and process salmon if the costs of doing so are judged too high or have too great an impact on groundfish operations. The actual costs to vessel operators and shoreside processing operations would be relative to the amount of salmon retained and processed. These costs

on a per salmon basis likely would be similar to those experienced by participants in the Terra Marine EFP and are presented under Alternative 2.

Although benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 3 cannot be quantified, the number of salmon donated likely will be less than that under Alternative 2 and the potential benefit to needy individuals would decrease accordingly.

Voluntary donation of salmon to needy individuals under this alternative would meet the Council's objective to reduce protein waste in the groundfish fisheries. However, because the salmon donation program is voluntary, Alternative 3 would provide no incentive to vessel operators to take action to avoid salmon to reduce costs associated with the mandatory retention and processing program proposed under Alternative 2. Therefore, Council objectives for the retention and processing salmon for human consumption only are partially met.

3.4 Reporting Costs

Alternative 3 would require that permits authorizing the retention of salmon for donation to nonprofit organizations be issued to authorized distributors and to vessels and processors identified as participants under each authorized distributorship. Permits would be issued free of charge and would not involve a significant reporting burden to other than applicants for an authorized distributorship. An application for an authorized distributorship would be required annually and would include the following information:

1. The applicant's name, mailing address, telephone and FAX numbers;
2. Identification of all coordinating parties engaged in the applicants retention and distribution of salmon, including the identification of each vessel, processor, and charitable organization receiving salmon from the applicant for distribution to nonprofit foodbanks; and
3. Information about the transfer of salmon from port of landing to a charitable organization.

Upon receiving salmon under the voluntary donation program, an authorized distributor would be required to provide a receipt that shows the number and weight of salmon received from each vessel and shoreside processing operation, the permit numbers of the vessels and processors that delivered salmon to the authorized distributor, the permit number of the authorized distributor, and the date of receipt. A copy of the receipt must be provided to the Regional director.

Reporting costs to authorized distributors would include the time required to comply with reporting requirements and the cost of submitting required reports to the Regional Director. Costs associated with completing and submitting the permit application for an authorized distributorship would be incurred annually. A person issued a Federal permit for an authorized distributorship must submit an amended permit application if any information on the permit application changes, including the identification of the vessels, processors, or other coordinating parties engaged under the authorized distributor's permit to possess and distribute salmon.

Copies of receipts of delivery of salmon from vessels and processors would be submitted by the authorized distributor to the Regional Director on a weekly basis. Costs associated with this reporting requirement would be proportional to the amount of salmon received from different vessels and processors.

Vessels and processors approved by the Regional Director as participants under a permit application for an authorized distributorship will be issued a permit by the Regional Director to possess salmon for delivery to the authorized distributor. No reporting costs or burden would be associated with these permits except those insignificant costs associated with a requirement to have the permit onboard the vessel or at the shoreside processing operations at all times.

3.5 Administrative, Enforcement and Information Costs

NMFS would require additional staff resources to administer, monitor, and enforce the voluntary salmon donation program proposed under Alternative 2. The amount of administrative support would depend on how many permits are issued for authorized distributorships and for vessel or processor participation under these authorized distributorships. At this time, NMFS estimates that one part-time position would be required to administer this program and an additional part-time position would be required to monitor and enforce it. NMFS does not anticipate that funding will be available to hire additional personnel and staff necessary to administer, monitor, and enforce the voluntary salmon donation program under Alternative 2. This program, therefore, only can be implemented with existing staff resources at the expense of other ongoing programs NMFS is required to administer, monitor, and enforce.

4.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The objective of the Regulatory Flexibility Act is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. If an action will have a significant impact on a substantial number of small entities an Initial Regulatory Flexibility Analysis (IRFA) must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

NMFS has defined all fish-harvesting or hatchery businesses that are independently owned and operated, not dominant in their field of operation, with annual receipts not in excess of \$2,000,000 as small businesses. In addition, seafood processors with 500 employees or fewer, wholesale industry members with 100 employees or fewer, not-for-profit enterprises, and government jurisdictions with a population of 50,000 or less are considered small entities. A "substantial number" of small entities would generally be 20% of the total universe of small entities affected by the regulation. A regulation would have a "significant impact" on these small entities if it reduced annual gross revenues by more than 5 percent, increased total costs of production by more than 5 percent, or resulted in compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities.

If an action is determined to affect a substantial number of small entities, the analysis must include:

- (1) a description and estimate of the number of small entities and total number of entities in a particular affected sector, and total number of small entities affected; and
- (2) analysis of economic impact on small entities, including direct and indirect compliance costs, burden of completing paperwork or recordkeeping requirements, effect on the competitive position of small entities, effect on the small entity's cashflow and liquidity, and ability of small entities to remain in the market.

4.1 Economic Impact on Small Entities

Any vessel or processor may participate in a voluntary salmon donation program authorized under Alternative 2 if the vessel is permitted by the Regional Director to do so. NMFS does not anticipate that any vessel or processor that qualifies as a small entity would elect to participate in the voluntary program if the costs of doing so reduces gross annual receipts by 5 percent or more. The impacts under Alternative 2, therefore, are not anticipated to result in a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

The number of persons that would submit an application for an authorized distributorship is unknown. NMFS anticipates the number would range between one and five and would depend on the expressed interest of vessel operators to participate in a voluntary donation program, the number of salmon retained and processed for human consumption, the cost of delivering salmon to foodbank organizations. Authorized distributors would be non-profit companies and not subject to consideration as small business entities for purposes of the Regulatory Flexibility Act.

5.0 SUMMARY AND CONCLUSIONS

Salmon are taken incidental to the Alaska groundfish trawl fisheries. These fish are dead when brought on board a vessel and must be returned to Federal waters as prohibited species once a NMFS-certified observer has determined the number of salmon and completed the collection of any biological or scientific data. At its September 1993 meeting, the Council adopted as a statement of intent a "Salmon Bycatch Control Policy." This policy endorsed the development of several different initiatives intended to address the salmon bycatch problem, including the development of regulations requiring retention of salmon for processing and delivery to nonprofit foodbank organizations. The Council's intent for these regulations was to reduce protein waste in the groundfish trawl fisheries, support separate industry initiatives to address the salmon bycatch problem by allowing for verification of the number of salmon taken as bycatch, provide additional opportunity to collect biological samples or scientific data, and potentially provide an incentive to vessel operators to take action to reduce salmon bycatch rates to avoid costs associated with retaining and processing salmon for human consumption.

The proposed action would authorize the retention and processing of salmon taken as bycatch in the Alaska trawl fisheries for donation to needy individuals. This action would be implemented under Amendment 26 to the Fishery Management Plan (FMP) for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Amendment 29 to the FMP for Groundfish of the Gulf of Alaska. The following three alternatives are considered: the status quo alternative (Alternative 1), mandatory retention and processing of salmon and delivery to a foodbank organization (Alternative 2), and voluntary retention and processing of salmon for delivery to a foodbank organization (Alternative 3).

Neither Alternatives 1 nor 3 would be expected to change fishing activities in a manner that would affect the amount of groundfish harvested or the amount of salmon taken as bycatch in the Alaska trawl fisheries. Notwithstanding the statutory limitations of Alternative 2, the potential exists that costs associated with mandatory retention and processing of salmon could provide an incentive to vessels operators to take action to attempt to reduce salmon bycatch rates and possibly reduce overall salmon bycatch amounts. None of the alternatives is likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

Based on the average number of salmon taken during the 1992 - 1993 trawl fisheries (242,000 fish) and assuming that all salmon are retained and processed for distribution to needy individuals under Alternative 2, the total burden to the Alaska trawl industry resulting from mandatory retention and processing of salmon is estimated at \$312,180. Potential benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 2 cannot be quantified. If the average number of salmon taken as bycatch in the 1992-93 trawl fisheries were all delivered to foodbank organizations and fit for human consumption, about 2 million meals could be provided to needy individuals. These meals likely would provide a healthy alternative to the diets of people who often only have access to meager and inadequate food.

Under Alternative 3, an unknown number of salmon could be voluntarily retained and processed by the groundfish trawl industry for donation to authorized distributors for nonprofit foodbank organizations. Potential costs to the groundfish industry are anticipated to be significantly lower relative to Alternative 2 given that vessel operators or processor managers would have no regulatory requirement to retain and process salmon if the costs of doing so are judged too high or have too great an impact on groundfish operations. The actual costs to vessel operators and shoreside processing operations would be relative to the amount of salmon retained and processed. These costs on a per salmon basis are estimated to range between \$1.46 and \$1.12 for shoreside and at-sea processing operations, respectively.

Although benefits to needy individuals resulting from salmon donated to foodbank organizations under Alternative 3 cannot be quantified, the number of salmon donated would be less than that under Alternative 2 and the potential benefit to needy individuals would decrease accordingly. Voluntary donation of salmon to needy individuals under this alternative would meet the Council's objective to reduce protein waste in the groundfish fisheries. However, because the salmon donation program is voluntary, Alternative 3 would provide no incentive to vessel operators to take action to avoid salmon to reduce costs associated with the mandatory retention and processing program proposed under Alternative 2. Therefore, Council objectives for the retention and processing salmon for human consumption only would be partially met under Alternative 3.

None of the alternatives considered is expected to result in a "significant regulatory action" as defined in E.O. 12866. NMFS does not anticipate that any vessel or processor that qualifies as a small entity for purposes of the Regulatory Flexibility Act would elect to participate in a voluntary salmon donation program if the costs of doing so reduce gross annual receipts by 5 percent or more. The impacts under Alternative 2, therefore, are not anticipated to result in a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

6.0 REFERENCES

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DRAFT DISCUSSION PAPER

**SALMON BYCATCH IN THE BERING SEA TRAWL FISHERIES AND
ALTERNATIVES FOR HOT-SPOT CLOSURE.**

Prepared for the North Pacific Fisheries Management Council

by staff from
Alaska Department of Fish and Game
National Marine Fisheries Service

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INTRODUCTION

This discussion paper contains an analysis of alternatives for salmon bycatch management through hot-spot authority. The alternatives for chinook salmon bycatch management have previously been reported in Amendment 21b. An update of chinook salmon bycatch as presented in Amendment 21b is provided in this document. Alternatives for chum salmon bycatch management are provided in this document as well. The alternatives define areas for closure based upon existing management areas coincidental with high chum salmon bycatch, as well as discrete areas within larger management areas. Predefinition of areas for implementation of hot-spot authority allows non-discretionary closure ability by the Regional Director of the National Marine Fisheries Service (NMFS). Hot-spot authority without predefined areas for closure severely impacts the ability of NMFS to implement closures in a manner timely enough to be effective in bycatch management.

CHUM SALMON BYCATCH MANAGEMENT

Purpose of and need for proposed action

The request for an analysis of hot-spot authority grew out of the perception that bycatch actually occurs in small, discrete areas, and that the areas could be identified and closed quickly at a high savings in bycatch species with minimal impacts to the groundfish fishery. Unfortunately, based on the analyses presented below, salmon bycatch does not occur in small discrete areas at specific times. Additionally, closure of an area which has not been predefined for potential closure requires that specific guidelines be followed, including a public notification period. The process of implementing such a closure takes such a significant amount of time that the effectiveness of the closure is severely limited. Therefore, this document identifies several alternative areas with high chum salmon bycatch to provide a framework for preselection of areas for potential closure.

In 1993, the chum salmon bycatch in the Bering Sea of approximately 245,000 salmon more than tripled the previous high bycatch level, and was six times the bycatch level seen in the previous two years. Concerns about chum salmon bycatch were exacerbated by the poor returns to Western Alaskan systems in the same year. Commercial, sport and subsistence fisheries were closed in several of the Western Alaskan districts in 1993 because of poor returns, and projections for 1994 are for below average returns in many districts as well. The intercepted chum salmon were primarily in the size range of 3 year-old fish which would be expected to mature in the following year. The chum salmon were also captured after most of the Western Alaskan chum salmon would have returned to their native systems. Little is known about the potential impacts bycatch may have had on the following year returns, especially since stock composition of the bycaught salmon is unknown.

The purpose of this analysis is to provide managers with information needed to take possible action to reduce chum salmon bycatch in 1994 and/or subsequent years. However, although providing much of the data necessary for an EA/RIR, this analysis does not include the complex economic analysis an EA/RIR might require. This analysis examines domestic fisheries in 1990 - 1993 for patterns in chum salmon bycatch, however only the fisheries conducted in 1993 were in spatial and temporal patterns similar to those anticipated in the future. Regulations specific to 1993 and the future mandate the timing of the pollock "B" season (open August 15 as of 1993) and the position of the catcher-vessel operational area (CVOA) (effective June 1, 1992). In this discussion paper, areas for potential closure were defined based on the patterns in other salmon bycatch, especially in 1993. It is possible that more refined or alternative areas may become apparent as additional information becomes available. The smallest unit examined for potential closure in this document was the 1/2° latitude by 1° longitude block. The distribution of chum salmon noted in historical fisheries covers a fairly large area, and is not necessarily confined to discrete areas smaller than blocks. Given the annual and inter-annual spatial distribution of high bycatch observations, a trade-off between potential groundfish catch and potential salmon bycatch becomes apparent. Either larger areas must be chosen in order to maximize potential bycatch savings, or smaller areas must be chosen in order to minimize closure impacts on existing groundfish fisheries.

Alternatives considered

In order to be effective for management, hot-spot authority requires the establishment of predefined areas for non-discretionary closure. A suite of alternative areas has been examined in this document. The areas described below were based largely on existing management areas or on 30 mi by 30 mi (1/2° latitude by 1° longitude) blocks corresponding to high other salmon bycatch. With the exception of a 15 mile buffer extending to either side of the 200 m depth contour, square blocks or areas previously defined (such as NMFS management area 517) were chosen for ease of enforcement. In several alternative areas, blocks were selected which would maintain access to the lucrative "horseshoe" area which, although containing other salmon bycatch, did not account for inordinantly high other salmon bycatch. The seven alternative areas and two sub-alternatives examined in this report are as follows:

1) "Contour". A 15 mile buffer extending to either side of the 200 m depth contour which extends to the north and west from the "horseshoe" and Unimak Island (Figure 1). This contour buffer was found to correspond to high chinook salmon bycatch as presented in Amendment 21b to the Bering Sea Groundfish FMP.

1b) "Contour within CVOA". The portion of Alternative 1 falling within the CVOA as described in Alternative 3.

2) "Contour plus Unimak". The area defined under (1) above in addition to two blocks to the north of Unimak Island and the "horseshoe" (Figure 1). The combination of these blocks with the contour buffer accounted for a high percentage of chinook bycatch in Amendment 21b.

- 2b) "Contour within CVOA plus Unimak". The portion of Alternative 2 falling within the CVOA as described in Alternative 3.
- 3) "CVOA". The catcher-vessel operational area (CVOA) as currently described for management of nearshore and offshore fisheries during the pollock "B" season (Figure 2).
- 4) "Area 517". NMFS management area 517 (Figure 3).
- 5) "9 blocks". The nine blocks which form the top portion of the CVOA extending to the west from Unimak Island, and including a block above the northwest corner of the CVOA (Figure 4).
- 6) "5 blocks". The five blocks approximating the north-central portion of the CVOA (Figure 5).
- 7) "7 blocks". The seven blocks identical to those described in Alternative (5) with the two above Unimak Island removed (Figure 6).

Background

Data:

The data used in this document are observer data collected, compiled and provided by the NMFS observer program. The observer data is for individual hauls, and the bycatch numbers from each haul have been expanded as necessary from the sample to the whole haul if applicable. Bycatch species composition is determined for selected hauls during the year. The composition of hauls for which the species composition was not determined is estimated as described in Amendment 21b. Assignment of target species is also as in Amendment 21b. The current analysis includes only those vessels which were defined as pelagic trawl for pollock, bottom trawl for pollock and bottom trawl for Pacific cod since these fisheries have been previously identified as having high salmon bycatch. Except as noted, only the data from observed hauls were analyzed in this document. The data has not been expanded to include unobserved hauls for the entire fleet. Data from 1993 are estimated to contain 90% of observer data as available at the time.

The primary data used in determining areas of high chum bycatch are from the 1990 - 1993 domestic fisheries. Since 1993 is the only year representing the current management regime, bycatch from 1993 was the primary source for spatial and temporal analysis.

Species composition of bycaught salmon:

Although the term "other" salmon is used consistently throughout this report for non-chinook bycaught salmon, the majority of the other salmon are likely to be chum salmon. Annual NMFS observer reports of the foreign and Joint Venture (JV) fisheries estimated the number of each

species of salmon bycaught in the historic trawl fisheries (1980-1989, as in Berger et al. 1984 and Guttormsen et al. 1990). Domestic reporting (since roughly 1989) available on the NMFS Bulletin Board has been generally divided into two categories: chinook salmon and "other" salmon. Examining the foreign and JV trawl fisheries for which species composition had been reported, an annual average of approximately 95% of the "other" (non-chinook) species bycaught in the Bering Sea were chum salmon. This average is actually conservatively low because the two lowest values in computing the average (71% and 84%) were taken from early JV fisheries which captured less than 2,500 salmon in total.

Figure 7 shows the historic percentages of "other" salmon which were chum salmon in the Bering Sea foreign and JV fisheries as reported by the NMFS observer program (as in Berger et al. 1984 and Guttormsen et al. 1990). These percentages are also plotted against the percentage of all salmon which were chinook in any given year. The plots indicate that in the Bering Sea, the percentage of "other" salmon which were chum salmon was fairly consistent regardless of the ratio of chinook salmon to all other species. In this report, "other" salmon refers to all non-chinook salmon, and consists almost entirely of chum salmon.

History:

Directed catch

The directed commercial catch of chum salmon for the entire state of Alaska has varied between 8 and 15 million fish since 1980 (Figure 8). The commercial catch of chum salmon in the AYK Region (Norton Sound, Kotzebue, Yukon and Kuskokwim fisheries) has varied between 1.2 and 2.8 million fish between 1980 and 1992. However, as reported to the NPFMC in January 1994 (Agenda D-2(a)(3)), only approximately 360,000 chum salmon were taken in the 1993 commercial fisheries (RAVEN Commission Report, ADF&G, 1994). In spite of commercial, recreational and subsistence fishery closures, many systems did not meet minimum escapement goals. As indicated in the RAVEN report, chum salmon catches in the Westward (Chignik, Kodiak, and Aleutian Island/Alaska Peninsula fisheries) and Central (Prince William Sound, Cook Inlet, and Bristol Bay fisheries) districts were below average in 1993 as well.

Bycatch

The other salmon bycatch in the Bering Sea was approximately 245,000 fish in 1993. This level of bycatch exceeded the previous year's bycatch of approximately 39,000 other salmon by six times, and was triple the previous highest bycatch amount of approximately 72,000 other salmon estimated in the 1984 foreign trawl fishery (Figure 9). Other salmon bycatch was below 10,000 fish both prior to 1983, and between 1987 and 1989.

Other salmon bycatch is generally reduced during the winter months when, conversely, chinook salmon bycatch is high. Although few other salmon are normally encountered during the winter months, there are years when fairly significant numbers can be taken. For instance, roughly 8% (based on composition of observed hauls) of the other salmon bycatch was taken during the first

two months of 1992 (Figure 10, top) when approximately 39,000 other salmon were bycaught in total. Approximately 4,300 other salmon have been taken during the pollock "A" season of 1994 (NMFS Bulletin Board report dated 3/25/94), and it remains to be seen whether this amount will be anomalously high or a small proportion of the total bycatch as in many of the previous years. The bycatch of other salmon in 1993 was very small in all months prior to July and August of the year.

Historically, other salmon bycatch has been elevated during the months of July through October (Figure 10, top). Approximately 67% of all other salmon in observed hauls were bycaught during August of 1991, and approximately 62% of all other salmon were taken during the month of September in 1993. In spite of the June opening of the pollock "B" season in 1991 and 1992 (evident in Figure 11), few chum salmon were bycaught until July, August and September during those years. The delay of the "B" season opening until August 15 in 1993 corresponded to high chum salmon bycatch in August and September of that year.

During the last four years (1990-1993), groundfish catch has been highest during the months of January - March and June - September, with the exception of the 1993 implementation of the pollock "B" season delay which postponed fishing from June until mid-August (Figure 11, bottom). The mean chinook salmon bycatch rate (expressed as the mean per-vessel rate in number of salmon per metric ton of catch) is highest during the periods January - April and October - December (Figure 12, bottom). The highest proportion of chinook salmon were bycaught during the first four months of any of these four years (Figure 12, top). The mean bycatch rate for other salmon is highest between July and October which corresponds to the period of highest percentages of annual bycatch (Figure 10).

Spatially, other salmon bycatch tends to be highest south of 57° N latitude and east of 168° W longitude, whereas chinook salmon bycatch tends to be more widely distributed to include the area along the 200 m depth contour which extends to the north and west. The spatial distribution of salmon bycatch from observed hauls over the period 1990 - 1993 is presented graphically in Figures 13 - 20 for both other and chinook salmon. Other salmon bycatch tends to be highest in the portion of the Bering Sea near Unimak Island and the "horseshoe", and extending along the Bering Sea shelf to the north and east of the 200 m contour (roughly in the vicinity of the CVOA and NMFS management area 517). The general location of fishing effort during the period 1990 - 1993, and the locations of hauls with high bycatch of other salmon (e.g. > 50 other salmon in a haul) are presented in Figures 21 - 28. The hauls containing 50 or more other salmon represented 43%, 54%, 63% and 82% of the total other salmon observed in 1990, 1991, 1992 and 1993, respectively.

Spatial analysis of the other salmon bycatch data does not appear to indicate precisely defined small-areas which could be closed under a hot-spot authority. As a general observation, bycatch of other salmon can apparently occur patchily along the 200 m contour, especially during the second half of the year, however, by far the majority of other salmon bycatch is concentrated in the area of the horseshoe and above Unimak Island on the shelf south of 57° N latitude and east of 168° W longitude.

Analysis of the alternatives

The following analysis presents the proportion of catch and bycatch taken from each of the seven alternative areas during 1990 - 1993. Although statistics from 1990-1992 are important in indicating trends in other salmon bycatch and potential impacts to fishing fleets, 1993 is the only year in which fisheries management options and the distribution of fishing effort are likely to be similar to the 1994 and future fisheries. It should be noted that it is primarily the observations from a single year (1993) which have been used to select relevant areas for hot-spot closure authority.

Catch and bycatch numbers were expressed as proportions of annual totals in order to provide year-to-year comparison. It should be noted that several of the defined areas overlap and contain portions of the areas in other alternatives. As Figure 29 (top) indicates, the highest percentage of the total annual weight of observed groundfish catch (35% - 55%) was taken within 15 miles of the 200 m contour and in the two blocks to the north of Unimak Island and the "horseshoe" (Alternative 2). Catch within the CVOA (Alternative 3) has increased annually to account for more than 50% of the total observed groundfish catch in 1993, and catch in Area 517 (Alternative 4) approximately doubled from previous levels to account for roughly 50% of the total annual groundfish catch from the Bering Sea in 1993. Of the alternatives comprised of selected blocks with high other salmon bycatch, annual groundfish catch within these areas in 1993 approximately doubled from previously observed percentages to account for roughly 27%, 23% and 16% of the total annual groundfish catch from the 9 blocks, 5 blocks and 7 blocks (Alternatives 5 - 7), respectively. Graphs of the number of hauls by area were nearly identical to the patterns indicated for groundfish catch.

Other salmon bycatch is significant between the months of July - October, and closures of identified areas would only be made during this period. Therefore, the effort and catch from within this period was compared with the effort and catch from the entire year. The contour and Unimak Island blocks (Alternative 2) during this period accounted for nearly 30% of the annual groundfish catch in 1993, up more than 10% from previous levels during 1990 - 1992 (Figure 29, bottom). The percentage of CVOA (Alternative 3) catch during this period jumped from approximately 10% of the annual total groundfish catch to more than 25% of the catch, and the catch in Area 517 (Alternative 4) approximately tripled during this period in 1993 to account for nearly 30% of the total annual catch. The individual blocks selected for closure under Alternatives 5, 6 and 7, represented an insignificant percentage of the total annual groundfish catch during this period until 1993 when they accounted for between 7% and 10% of the total annual catch.

The area which most consistently accounted for other salmon bycatch from year to year was the CVOA (Alternative 3) which represented between 78% and 82% of the total annual other salmon intercepted in the Bering Sea since 1990 (Figure 30, top). The contour buffer and two Unimak Island blocks (Alternative 2), much of which lies within the CVOA, accounted for 82% and 86% of the total annual other salmon catch in 1991 and 1992, respectively, however in 1993 only 55%

of the total annual other salmon bycatch came from this area. Other chum salmon bycatch in Area 517 (Alternative 4) has ranged between 27% and 88% of the annual total. Of the three selected block configurations, the 9 blocks (Alternative 5) accounted for between 39% and 50% of the total annual other salmon bycatch prior to 1993 (in spite of small catch from these blocks), and 68% of the total annual other salmon bycatch came from this alternative in 1993. Because almost all of the other salmon bycatch occurs between the months of July and October, the figure comparing the bycatch during this period (Figure 30, bottom) to the entire year is nearly identical to the figure above for the annual catch within areas.

The bycatch of other salmon is a function of both the availability of other salmon as well as intensity of effort in the areas within which other salmon appear. The high bycatch of other salmon in 1993 was primarily due either to an increased number of other salmon available, or an increased effort at the time and areas in which other salmon occur. In 1990, effort was fairly constant throughout the year, and chum salmon bycatch was low. It is possible that the number of other salmon available in the Bering Sea was much lower than that available in 1993. However, fishing effort in 1990 was largely to the north (e.g. 25% of the groundfish catch came from the CVOA and 17% from Area 517, Figure 29, top) and almost no catch was taken from the 5 blocks, 7 blocks or 9 blocks (Alternatives 7, 6 and 5). Yet in spite of the very low catch from these block alternatives, 34%, 39%, and 14% of the other salmon bycatch came from the 5 blocks, 9 blocks, and 7 blocks in 1990, respectively (Figure 30). A similar pattern was observed in the 1991 and 1992 fisheries.

As discussed above, in 1993 there was a shift of effort to the south in the region of the CVOA and Area 517 (Figure 27). Of the alternatives considered, the contour buffer accounted for the smallest number and percentage of other salmon encountered in 1993 (roughly 30% of the other salmon bycaught between July and October). Only roughly 24% of the other salmon bycaught within the contour buffer (or roughly 9% of the other salmon bycaught in the Bering Sea between July and October) were in the portion of the contour outside of the CVOA. The majority of other salmon caught within the vicinity of the 200 m contour are taken south of 56° N latitude and east of 168° W longitude. Because the majority of other salmon are taken within the CVOA, the north-west extent of the CVOA was chosen as the north-west boundary of the contour buffer under Sub-alternatives 1b and 2b.

In order to more closely examine the portion of the contour buffer which lies within the CVOA, the catch, number of hauls, and bycatch of chinook and other salmon were summed separately for the following exclusive areas: 1) the portion of the contour buffer which lies within the CVOA; 2) the two Unimak Island blocks; 3) the remainder of the CVOA; 4) the contour buffer which lies outside of the CVOA; and 5) the remainder of the Bering Sea. Figures 31 - 33 provide the percentage catch or bycatch which occurred within each of the above areas during the years 1990 - 1993.

The increase in the percentage of hauls and groundfish catch in the Unimak Island blocks and the CVOA as a whole (e.g. the sum of the contour, the Unimak blocks and the remainder of the CVOA, but excluding the portion of the contour outside the CVOA and excluding the rest of the

Bering Sea) are apparent in Figure 31. During the months of July through October in 1990 - 1992, groundfish effort and catch had been concentrated within the remainder of the Bering Sea, and the portion of the contour buffer which lies outside of the CVOA (Figure 32). The shift of effort and increased catch in all portions of the CVOA was apparent in the 1993 groundfish fisheries.

As can be seen in Figure 33 (top), the area within the CVOA has consistently accounted for approximately 80% of the total other salmon bycatch. In 1993, other salmon bycatch was approximately six times that encountered in 1991 or 1992. However, the percentage of other salmon bycatch inside and outside the CVOA remained constant in spite of the increase in catch and effort inside the CVOA. This could either indicate an overall increase in the availability of other salmon, or an increased availability with the time of year, since the proportion of other salmon encountered in September was much higher than in previous years. The increase in effort in the portion of the CVOA outside of the contour buffer or the Unimak blocks lead to a disproportionate increase in the percentage of other salmon bycaught in that area when compared to the percentage of groundfish catch the area represented.

Oceanography

As can be seen in Figure 28 which shows the location of all hauls containing 50 or more other salmon in 1993, the distribution of other salmon appears to approximate a circle or oval which extends from Unimak Island northwest to the Pribilof Islands and remains on the shelf side of the 200 m contour. Although requiring further exploration, there is a possible physical explanation for this pattern in the distribution other salmon. Ocean currents entering the Bering Sea through Unimak pass tends to flow north both along the 200 m isobath (outer front) and the 100 m isobath (middle front) as discrete fronts first described by Coachman et al. 1980 and reproduced in McRoy et al. 1985 (Figure 34). The pattern of other salmon distribution roughly corresponds to the outer domain, or the area between the middle front and the outer front. The formation of the middle and outer fronts provides for an area of lateral mixing of Bering Sea basin water with shelf water in the outer domain (McRoy et al. 1985). As described in McRoy et al. 1985 (Figure 35), the outer domain is an area of primary production for the pelagic community which includes pollock. It appears that between July and October, the outer domain is also important to other salmon. A possible alternative area of protection for other salmon might be the area of the outer domain bounded to the south and west by the 200 m contour and to the north and east by the 100 m contour.

Summary of alternatives

In summary, seven alternative areas and two sub-alternatives were examined for potential closure due to other salmon bycatch. As discussed below, the economic and social impacts of such closures have not been determined because of the complexity of factors involved. The relative impacts on groundfish catch and other salmon bycatch due to such closures have been examined

by comparing the historic percentage of catch and bycatch from each of the areas.

Alternative 1:

The first alternative, closure of a 15 mi buffer on either side of the 200 m contour was suggested in Amendment 21b as a means of controlling chinook salmon bycatch. Such a closure does not appear to be an efficient means of controlling other salmon bycatch. Only a small proportion of the other salmon bycaught within the contour were captured north of 56° N latitude or west of 168° W longitude. Thus a closure of the northern portion of the contour buffer would come at a high cost to industry with minimal savings in other salmon. For example in the period of July - October, approximately 25% of the total 1993 groundfish catch came from the contour buffer, and roughly 33% of the total 1993 other salmon came from the contour buffer during this period - almost all from the southern portion of the contour. A preferred Alternative would be the sub-alternative below.

Sub-alternative 1b:

Closure of a 15 mi buffer on either side of the 200 m contour within the CVOA. The portion of the contour buffer which lies outside the CVOA has only accounted for between 3% and 13% of the total bycatch of other salmon during the months of July - October. The portion which lies within the CVOA, on the other hand, has consistently accounted for between 25% and 42% of the total other salmon bycatch during this period. However, the percentage of the groundfish catch in this area during July - October is similarly between 17% and 36% since this is an area of high fishing activity.

Alternative 2:

Inclusion of the two blocks north of Unimak Island with the contour buffer as in Alternative 1. This alternative increases the percentage of other salmon bycatch over Alternative 1. However, as with Alternative 1, the northern portion of the contour buffer, while providing savings for chinook salmon during winter months, does not appear to be an important area for other salmon during the summer/fall months. A preferred Alternative would be the sub-alternative below.

Sub-alternative 2b:

Inclusion of the two blocks north of Unimak Island with the contour buffer within the CVOA as in Sub-alternative 1b dramatically increases the number of other salmon bycaught within the area. Individually, the two Unimak blocks accounted for between 23% and 37% of the other salmon bycatch during July - October and only 1% - 7% of the total groundfish catch during the same period. The combined area of the contour buffer within the CVOA and the Unimak Island blocks accounted for between 47% and 77% of the other salmon bycaught between July and October, and between 18% and 43% of the total groundfish catch during the same period.

Alternative 3:

Closure of the CVOA. Although this area has consistently accounted for approximately 80% of the other salmon bycatch during the last four years, the CVOA has also become increasingly important to groundfish fishermen. The CVOA accounted for between 19% and 33% of the total groundfish catch for the Bering Sea during the months of July - October in 1990 - 1992, and

accounted for 53% of the groundfish catch in 1993. It is possible this increased effort in the CVOA has helped increase other salmon bycatch levels. It is noteworthy that the other salmon bycatch in the portion of the CVOA in 1993 which was not in the Unimak Island blocks or the contour buffer accounted for an unexpectedly high portion of the other salmon bycatch (33%), for an increase in groundfish catch of a disproportionately small amount (9%) (see Figures 32 and 33). With the regulations restricting access by processor type and designation, the CVOA has become more important to the near-shore fishermen. Closure of the entire area to reduce other salmon bycatch would, as current regulations stand, place a greater burden on near-shore fishermen.

Alternative 4:

Closure of Area 517. Area 517 comprises the northwest portion of the CVOA and extends to the north and west to near the Pribilof Islands. This area has accounted for between roughly 27% and 87% of the total annual other salmon bycatch taken during the months of July - October. Due to the high degree of overlap between Area 517 and the CVOA, the percentage of groundfish catch and other salmon bycatch which were taken from Area 517 within the CVOA was estimated. Examining the groundfish catch taken during the months of July - October, 98% 83% 96%, and 78% of the catch was taken within the CVOA in 1990 - 1993, respectively. Similarly 100%, 97%, 99%, and 81% of the other salmon bycatch from Area 517 was taken within the CVOA in 1990, 1991, 1992, and 1993, respectively. Thus the portion of Area 517 which lies outside of the CVOA is marginally important for groundfish catch, and, with the exception of 1993, insignificant for other salmon bycatch.

Alternative 5:

Closure of 9 blocks, eight making up the northern portion of the CVOA and one outside at the northwest end. These blocks do not include the horseshoe area which is important to groundfish as well as salmon. As discussed above, the increase in effort in the portion of the CVOA outside of the contour buffer or the Unimak blocks (9% of groundfish catch) lead to a disproportionate increase in the percentage of other salmon bycaught in that area (33%). Groundfish catch during July - October within the nine blocks accounted for between 1% and 2% of the total annual groundfish catch between 1990 and 1992 and accounted for 10% of the total annual groundfish catch in 1993. Of the groundfish catch taken only during July - October, the nine blocks comprised between 1 and 5% of the total groundfish catch between 1990 and 1992 and 21% of the total groundfish catch during that period in 1993. Between 39% and 44% of the total annual other salmon bycatch was taken from these nine blocks between July and October of 1990 - 1992, and 67% of the total annual other salmon bycatch was taken from these blocks in 1993. It should be noted that some of the nine blocks, particularly to the north and west have historically had very little effort. Because these blocks abutted squares with high salmon bycatch, they were included in the nine blocks under the assumption that given increased effort, these blocks would also have high bycatch.

Alternative 6:

Closure of 5 blocks approximating the northern center of the CVOA which includes the two Unimak Island blocks. These blocks were chosen as a minimum closure area which would still

allow access to the lucrative horseshoe area. Although reduced in area from Alternative 5, this alternative accounted for between 1/3 and 1/2 of annual other salmon bycatch. During the period of July - October, this alternative accounted for .4% 1% .8% and 7% of the total annual groundfish catch in 1990, 1991, 1992 and 1993, respectively. During the same period the alternative also accounted for 33%, 38%, 40%, and 54% of the total annual other salmon bycatch for the years 1990 - 1993, respectively.

Alternative 7:

Closure of 7 blocks contained under Alternative 5, but allowing access to the two eastern-most blocks. This alternative accounted for similar groundfish catch levels as reported under Alternatives 6 and 7 above. Bycatch levels were also similar to the two alternatives above during 1993 (59% of total annual other salmon bycatch taken between July and October). However, other salmon bycatch occurred more in the eastern portion of the CVOA in 1990 - 1992, and blocks under this alternative only accounted for 14%, 16% and 24% of the total annual other salmon bycatch during this period in 1990, 1991 and 1992, respectively. It appears that the eastern block of the Unimak blocks, and the block above it more consistently account for other salmon bycatch than do the blocks more to the west included under Alternative 7 and an area of high salmon bycatch in 1993.

Of the seven alternatives and two sub-alternatives, Alternative 5 which covers a broad area but has not been heavily fished until 1993 would provide the most consistent protection to other salmon during the months of July - October while allowing access to the area of the horseshoe. Alternative 6 would provide reduced protection given the inter-annual variability in the distribution of other salmon within the vicinity of the CVOA. In order to provide another means of assessing the alternatives, the number of other salmon encountered for each metric ton of groundfish catch is provided in Figure 36. Bycatch per metric ton of groundfish was higher in 1993 than in previous years under all alternatives, but has been higher in all years under Alternatives 5 (9 blocks) and 6 (5 blocks). The alternative with the highest bycatch of other salmon for each metric ton of groundfish catch was Alternative 6.

Trigger for closure of selected alternative

If one of the above alternatives is chosen as a means of reducing the bycatch of other salmon in the Bering Sea, it is probable that a bycatch level or cap would need to be identified to trigger the closure. As indicated in Figure 9, other salmon bycatch in the domestic fisheries prior to 1993 was approximately 16,000, 36,000, and 39,000 fish in 1990, 1991 and 1992, respectively. The average of these three years is 30,300 fish, which might be considered as a cap level. The average of the 1991 and 1992 other salmon bycatch levels is 37,500 fish, which also might be considered. The highest level in the domestic fishery was the 1992 level of 39,000 fish, another possible cap.

Because the 1993 bycatch levels were so much higher than anything seen previously, it is difficult to determine what the effects of various cap levels might be. Any of the cap levels

mentioned above would have had negligible effects on the groundfish fisheries as they occurred in 1990 - 1992, and there would have been little impact on chum salmon bycatch because bycatch at the end of the season was similar to the cap. Given any of the above mentioned caps during the 1993 fishery, however, the fisheries would have been closed out of the selected area after the first or second weeks of fishing (Figure 37). The approximate bycatch by week in 1993 was as follows:

<u>Week Ending</u>	<u>Other salmon bycatch</u>
8/21	37,000
8/28	26,000
9/04	46,000
9/11	35,000
9/18	23,000
9/25	42,000

Economic Analysis

As described above, the area of high chum salmon bycatch is generally in the catcher-vessel operational area (CVOA) and NMFS management area 517 (the two areas overlap). Chum salmon bycatch also tends to be highest in the months of July through October, in the middle of which the pollock "B" season opening on August 15 occurs. Because of the time and area related management measures currently in place, and because of the interactions of current fishery components, an economic analysis is confounded by several factors and is not simply a matter of assuming that foregone catch from one area would be displaced to another area. Any chum salmon bycatch management measures can be expected to disproportionately affect processors or near-shore fishermen who fish in the CVOA; changes in the opening of the "B" season can affect product quality; and given the inability of several Western Alaskan systems to meet escapement requirements, the valuation of the bycaught chum salmon is no longer simply a matter of assuming potential losses to commercial fishermen. The complexities of the issues preclude a detailed economic analysis in the present document.

CHINOOK SALMON BYCATCH MANAGEMENT - updated analysis for Amendment 21b

Background

Amendment 21b provided an analysis of chinook salmon bycatch by trawl vessels operating in the Bering Sea groundfish fisheries. The analysis was based upon haul by haul observer data from the foreign and JV fisheries 1980-1989 and for the domestic fisheries 1989-1991. This update includes observer information from 1992 and the majority of the observer information from 1993 (90%).

The 1992 bycatch of chinook salmon by domestic trawl fisheries of 37,372 fish was surpassed in 1993 with an estimated bycatch of 46,483 fish (Figure 38) as reported by the NMFS Bulletin Board. The preliminary 1994 chinook salmon bycatch is estimated to be 34,868 chinook salmon through the week ending 4/2/94. The bycatch of chinook salmon in 1994 had higher per week increases than in any of the previous four years (Figure 39). (Note in the figure that catch by week data for the end of 1993, an additional 5-6,000 chinook, was not available at the time this chart was prepared.) Since chinook salmon bycatch tends to increase in the months of September - December, the total for 1994 is likely to exceed that seen in 1993.

Among the geographic-based alternative areas for management of chinook salmon bycatch analyzed in Amendment 21b were the following: 1) a buffer strip extending for 15 miles on each side of the 200 m contour; 2) three blocks at the horseshoe; 3) a single block at the horseshoe; and 4) the two Unimak Island blocks. Locations of chinook salmon bycatch indicated that the 200 m contour and the Unimak Island blocks accounted for a large portion of chinook salmon bycatch. The Bering Sea Bycatch Model predicted that closure of only the blocks, for instance at the horseshoe, would still allow high bycatch to occur as effort moved to other areas of high salmon bycatch (e.g. along the contour). The contour and Unimak Island blocks are also of high importance to groundfish fishermen because they are apparently highly productive for pollock.

Additional alternatives

Hauls with a chinook salmon bycatch of more than twenty fish between 1990 and 1993 have been plotted in Figure 40. As was found in Amendment 21b, the primary location of chinook salmon bycatch lies within the contour buffer and in the vicinity of Unimak Island during most years. In 1992, increased chinook bycatch occurred in the vicinity of the Pribilof Islands outside of the contour buffer and in the block north of the western Unimak Island block. The CVOA has been outlined in Figure 40, and blocks which appear to have higher concentrations of chinook salmon appear with cross-hatching.

In order to update Amendment 21b and investigate potential areas for closure smaller than the entire contour, the groundfish catch and chinook salmon bycatch from the following four alternatives were examined: 1) a 15 mile buffer strip along the 200 m contour; 2) the contour

buffer and the two blocks above Unimak Island (Figure 1); 3) 8 blocks as indicated in Figure 41; and 4) 9 blocks as indicated in Figure 42.

Figures 43 - 46 provide the percentage of chinook salmon bycatch (the top of each graph) and total groundfish catch (bottom of each graph) by month for January - April and September - December in 1990 - 1993. The percentages are cumulative with the cumulative percentage of the entire Bering Sea catch or bycatch ending at 100% in December of each year.

In 1990 and 1991, more of the groundfish catch was taken in the contour alternative and the contour and Unimak blocks alternative than in the 8 block or 9 block alternatives. The combination of the Unimak blocks and the contour buffer accounted for the highest percentage of the total groundfish catch in all four years (38%, 60%, 39% and 53% in 1990, 1991, 1992 and 1993, respectively). The highest percentage of groundfish catch taken in the contour was in 1991 when 51% of the total groundfish catch for the months of January - April and September - December was taken. The Unimak blocks accounted for an additional 9% of the groundfish catch in 1991, and an additional 3% in 1990. In 1992, on the other hand, only 27% of the total groundfish catch was taken in the contour and an additional 11% (for a total of 39%) of the total groundfish catch was taken in the Unimak blocks. This was approximately the same percentage (39%) taken in both the 8 block and 9 block alternatives in 1992. In 1993 there was a smaller percentage of groundfish catch taken in the contour buffer (34%) than in the other alternatives as well. An additional 19% of the total groundfish catch was taken in the two Unimak blocks in 1993. The percentage of groundfish taken from the 9 blocks has increased each year from 1990 - 1993 (20%, 36%, 38%, and 49%, respectively).

The contour buffer and two Unimak Island blocks accounted for the highest percentage of chinook salmon in 1990 (80%), 1991 (83%) and 1993 (70%). In 1992, however, the contour buffer and Unimak blocks accounted for 54% of the total chinook bycatch which was less than that found in the 8 block (61%) or the 9 block (64%) alternatives. This reduction of bycatch in the contour buffer during 1992 is coincidental with the reduction of groundfish catch from the contour in 1992. As mentioned above, the Unimak blocks accounted for 11% of the groundfish catch in 1992 and this area accounted for 19% of the total chinook bycatch. The 9 block alternative accounted for 52%, 66%, 64% and 60% of the total chinook bycatch over the years 1990 - 1993, respectively, which does not necessarily mirror the increased amount of groundfish from that area in each year.

There is a high degree of overlap between several of the areas as outlined above. In order to examine the patterns in chinook salmon bycatch with regard to the selected areas, the catch and bycatch from non-overlapping segments were determined for the months of January through April and September through December. The following mutually exclusive areas were examined: 1) The portion of any of the 9 blocks which fell within the 15 mi contour buffer; 2) the remainder of the contour buffer which did not overlap any of the 9 blocks; 3) the two Unimak Island blocks; 4) the remainder of the 9 blocks which did not overlap the contour and were not either of the Unimak blocks; and 5) the remainder of the Bering Sea.

The highest proportion of total groundfish catch taken in these discrete areas was the remainder of the Bering Sea in 1990 (58%), 1992 (49%) and 1993 (40%), and in the section of the contour buffer which did not overlap the 9 blocks in 1991 (40%)(Figure 47). There was an increase in the percentage of catch taken from the portion of the 9 blocks which overlap the contour and from the Unimak blocks in 1993 (23% and 19%, respectively). Generally, as mentioned above, there has been an increase in the percentage of groundfish taken in the Unimak Island blocks and in the 9 blocks over time.

The area defined by the overlap of the contour buffer with the 9 blocks accounted for the highest percentage of chinook salmon bycatch in 1990 (42%), 1991 (52%), and 1993 (32%). In 1992 this area accounted for 24% of the chinook salmon bycatch and the remainder of the Bering Sea also accounted for 24% of the total chinook bycatch in 1992. In 1990, 1991, and 1993 the portion of the 9 blocks which does not overlap the 200 m contour buffer accounted for only a small percentage of the chinook bycatch. This portion of the 9 blocks outside of the contour accounted for a high percentage of chinook only in 1992 when the percentage of chinook encountered within the contour was reduced (although groundfish catch was fairly constant in this area). The section of the contour outside of the 9 blocks has accounted for the second largest percentage of chinook bycatch in all years except 1992.

Summary

In summary, the area defined by a 15 mi buffer on either side of the 200 m contour and the two Unimak Island blocks have consistently accounted for the highest percentage and numbers of chinook salmon bycaught in the Bering Sea. Bycatch can, however, also occur outside of this area as was the case in 1992. The contour buffer and Unimak blocks are also important to the fishing fleet, and closure of this area could lead to high costs to industry if groundfish were not as available outside the closed area. A smaller area closure such as the alternative with 9 blocks could potentially reduce chinook salmon bycatch while allowing groundfish catch along large portions of the contour. However, chinook salmon bycatch occurs all along the contour and increased effort in any portion of the contour would be expected to be accompanied by chinook salmon bycatch. Although representing key areas of high salmon bycatch, it is difficult to estimate the bycatch levels which would occur if these blocks were closed and fishing continued along the 200 m contour.

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Figure 1.

Bering Sea with 200 m depth contour portrayed as a dashed line. A buffer extends 15 mi on each side of the contour. The two $1/2^\circ$ latitude by 1° longitude "Unimak blocks" are blackened.

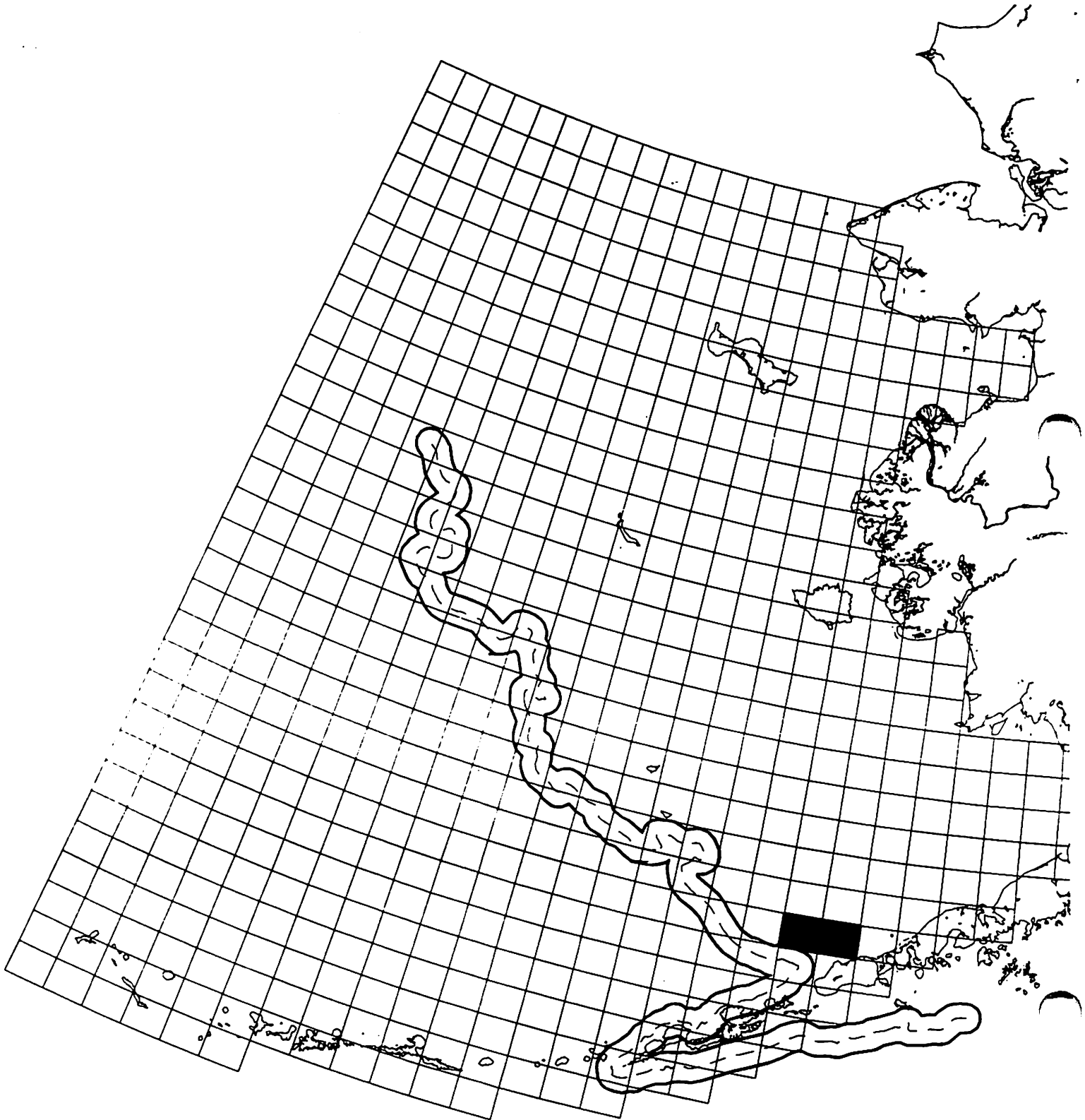


Figure 2.

The location of the catcher-boat operational area (CVOA) in the Bering Sea. Northern boundary is 56° N latitude, western boundary is 168° W longitude, and eastern boundary is 163° W longitude.

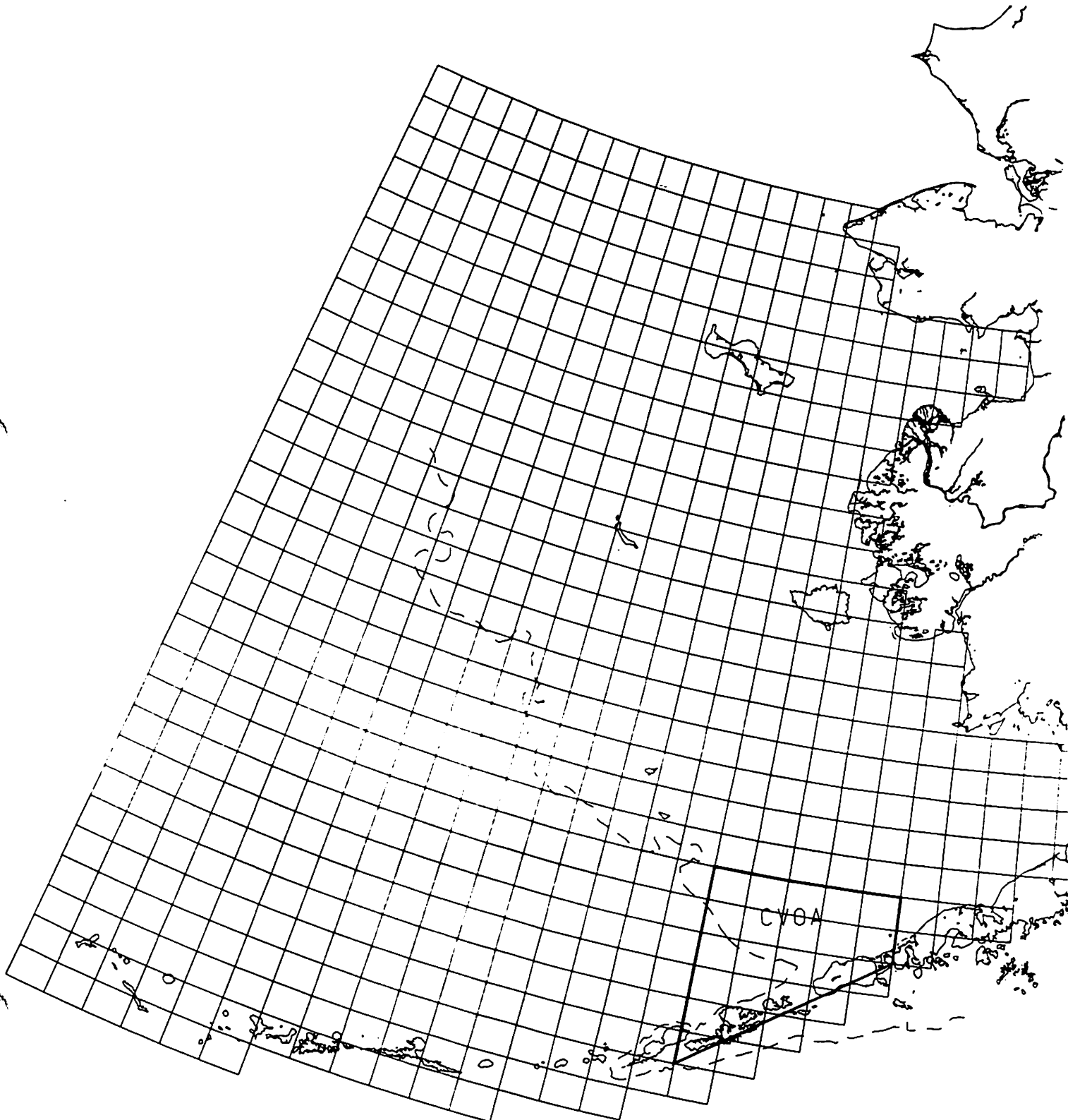


Figure 3. NMFS management areas with Area 517 highlighted.

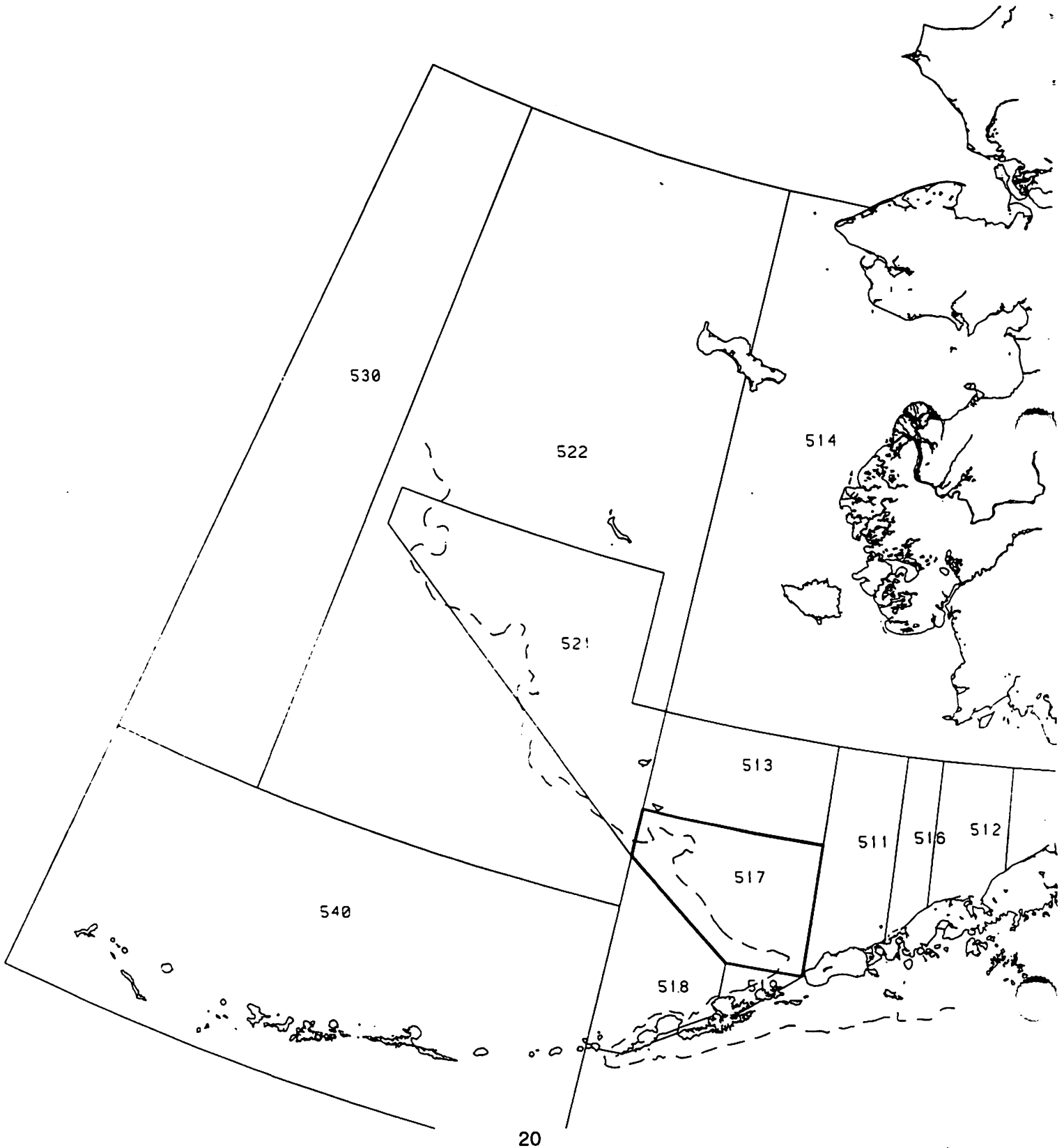


Figure 4. 9 Block Alternative shaded, CVOA highlighted.

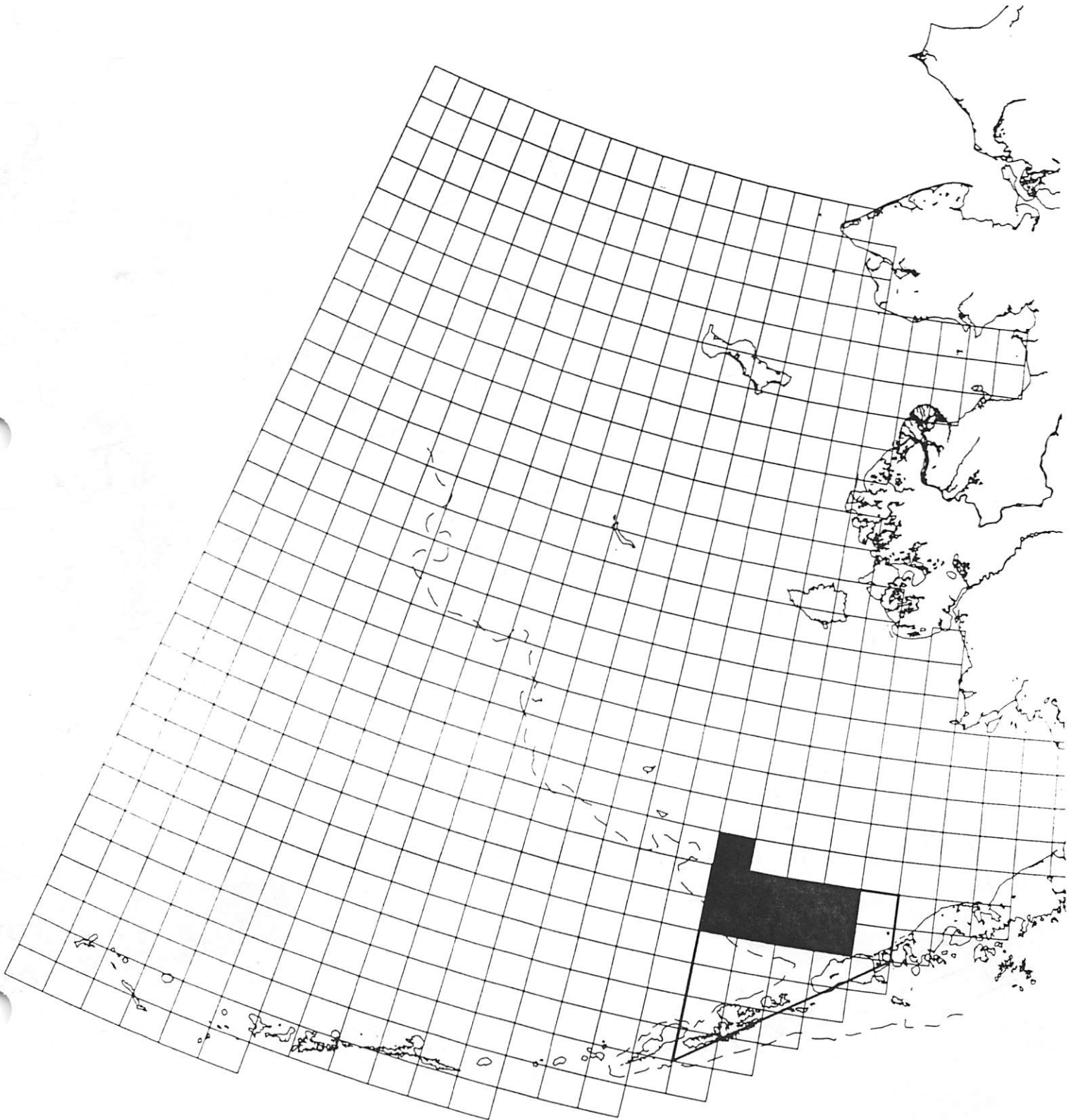


Figure 5. 5 Block Alternative shaded, CVOA highlighted.

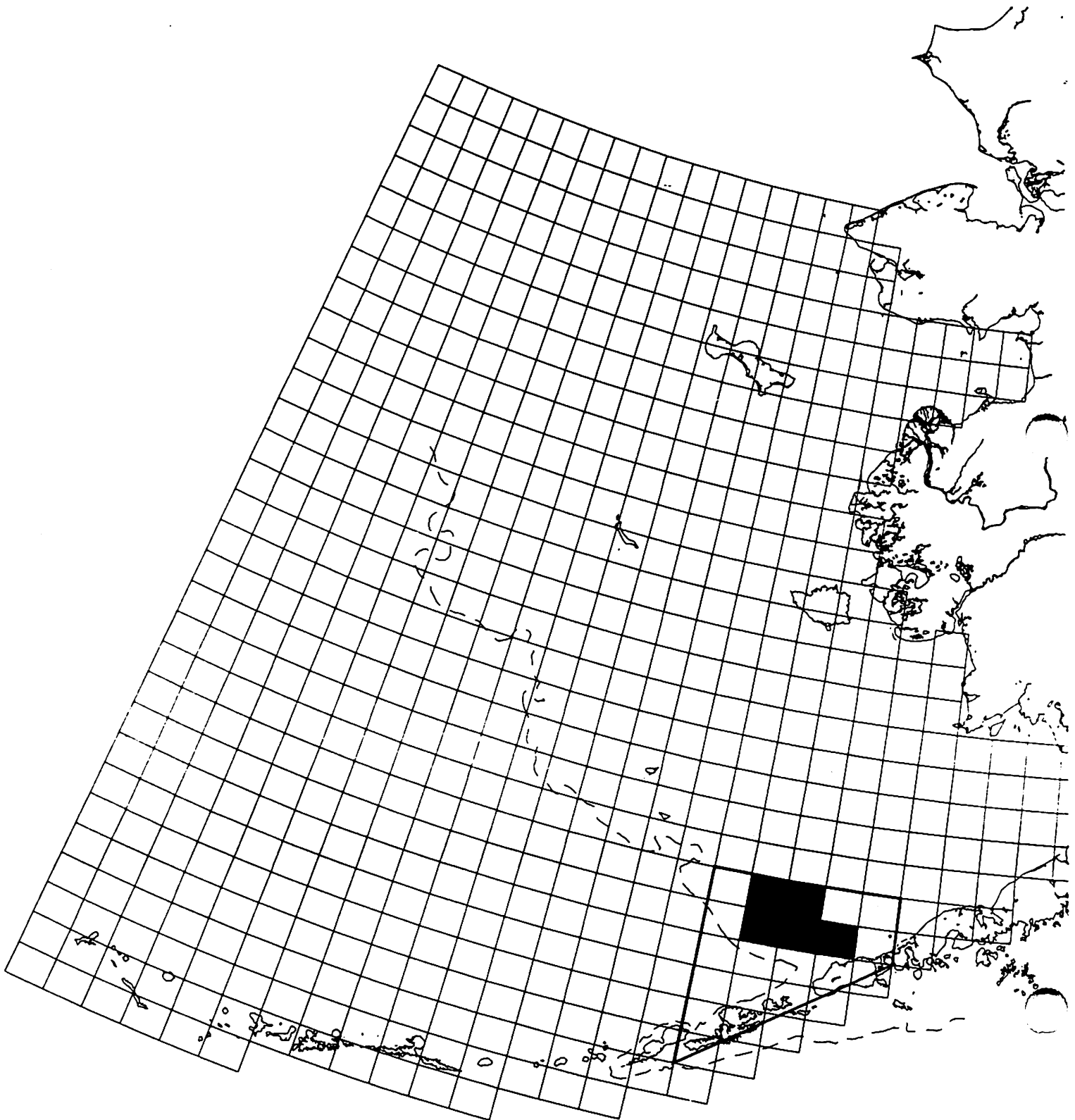


Figure 6. 7 Block Alternative shaded, CVOA highlighted.

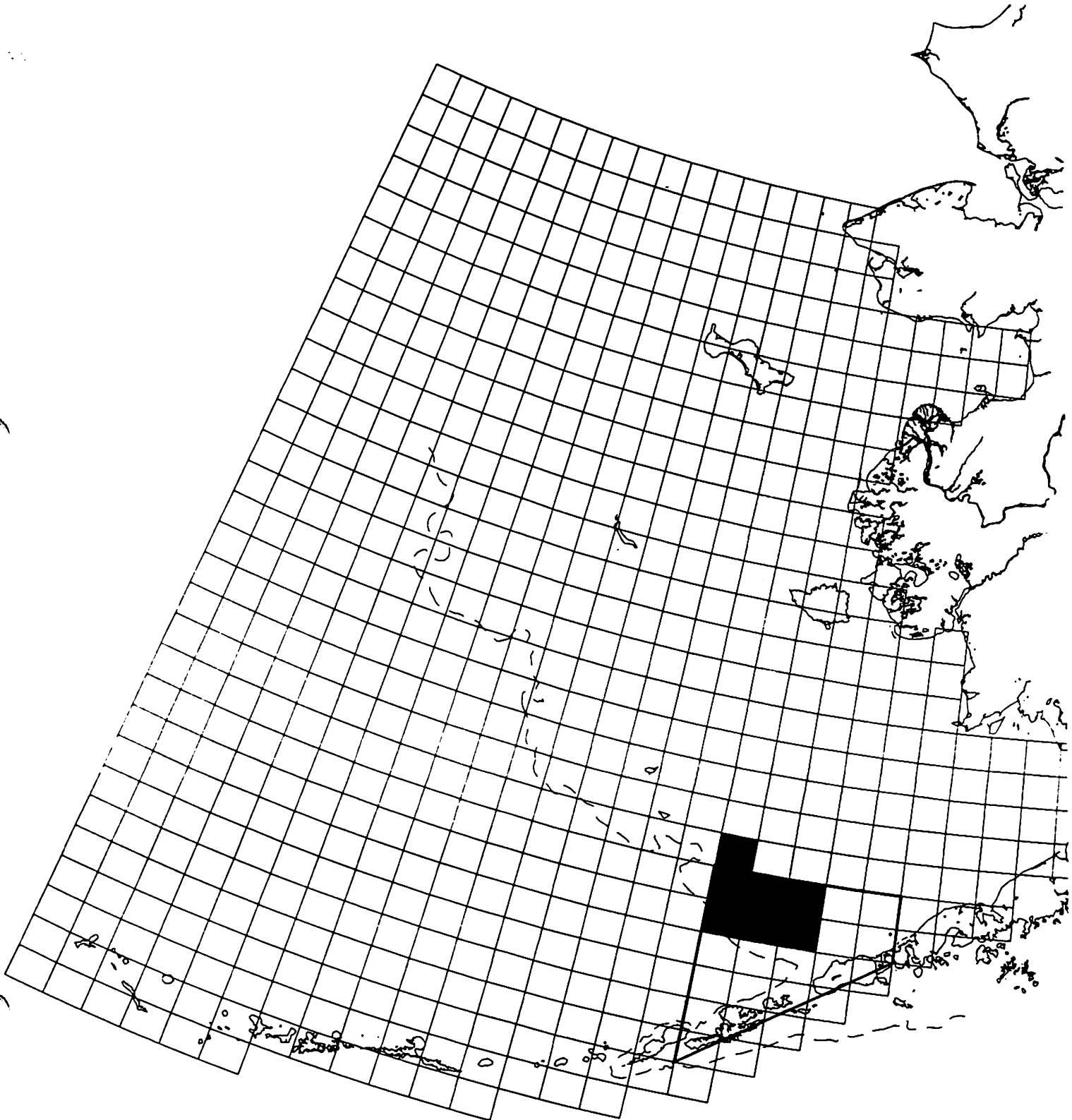


Figure 7.

Annual species composition of foreign and Joint Venture trawl fisheries bycatch as published by NMFS. Horizontal axis is the percentage of all salmon which are chinook, and the vertical axis is the percentage of the remaining other salmon which are chum salmon.

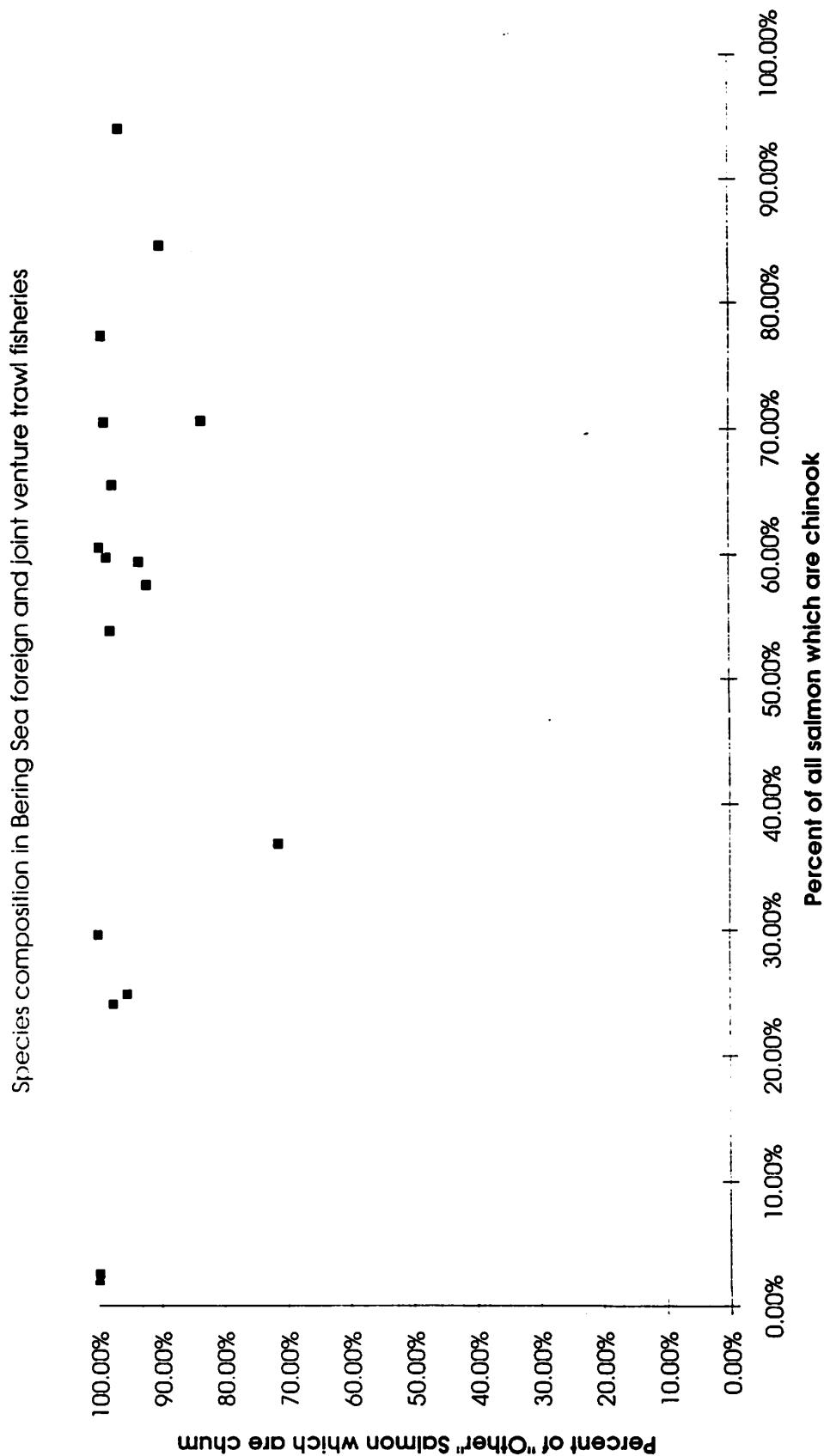


Figure 8.

Annual commercial chum salmon catch in directed fisheries, 1980-1993. AYK= Kotzebue, Norton Sound, Yukon and Kuskokwim. Westward = Chignik, Kodiak, and Alaska Peninsula/Aleutians. Central= Prince William Sound, Cook Inlet, and Bristol Bay. Southeast= southeast AK.

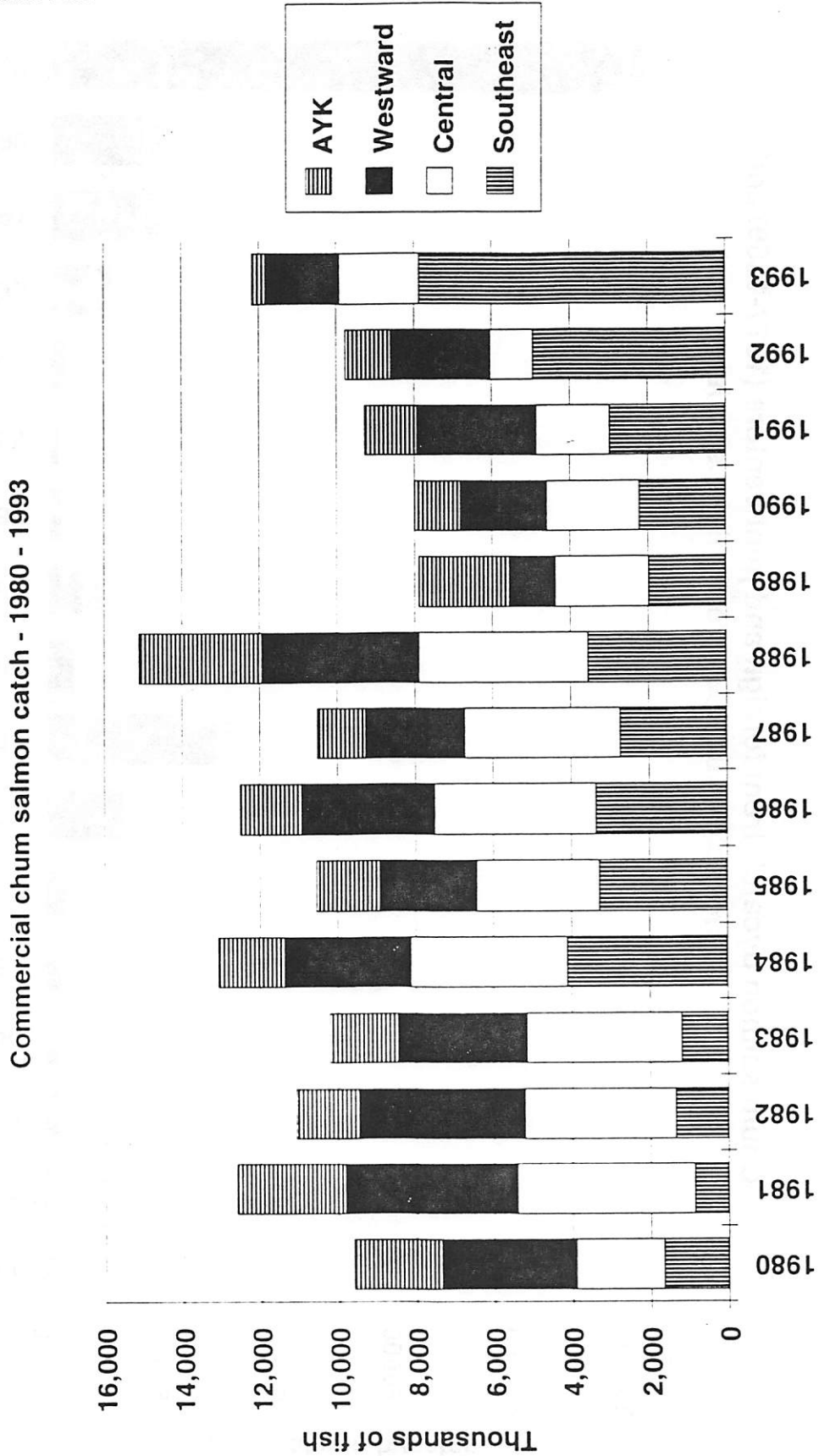


Figure 9.

Total estimated bycatch of chum/other salmon from NMFS observer reports. Foreign and JV fisheries predominate in 1980-1989, and domestic fisheries are represented in 1990-1993.

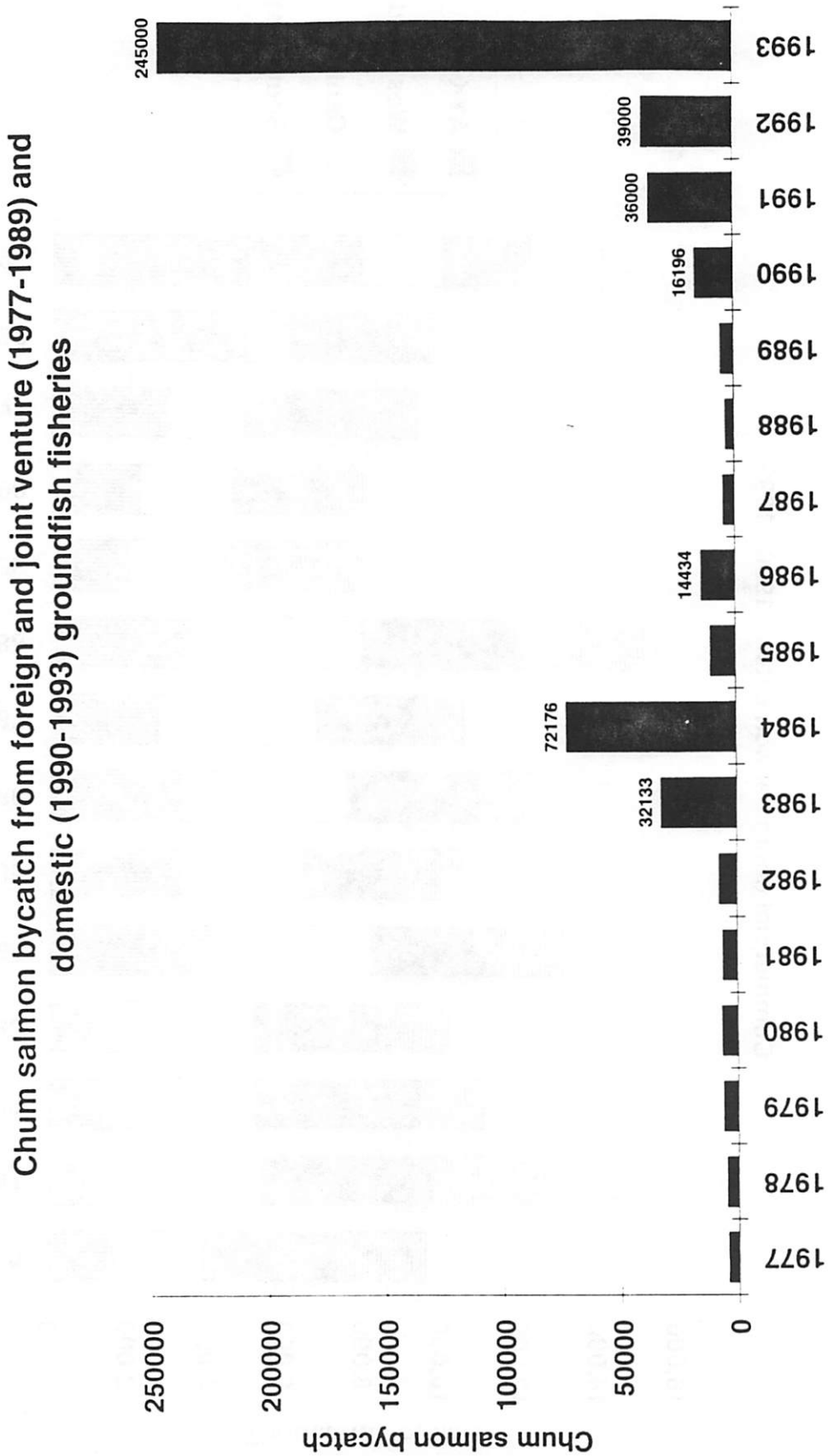
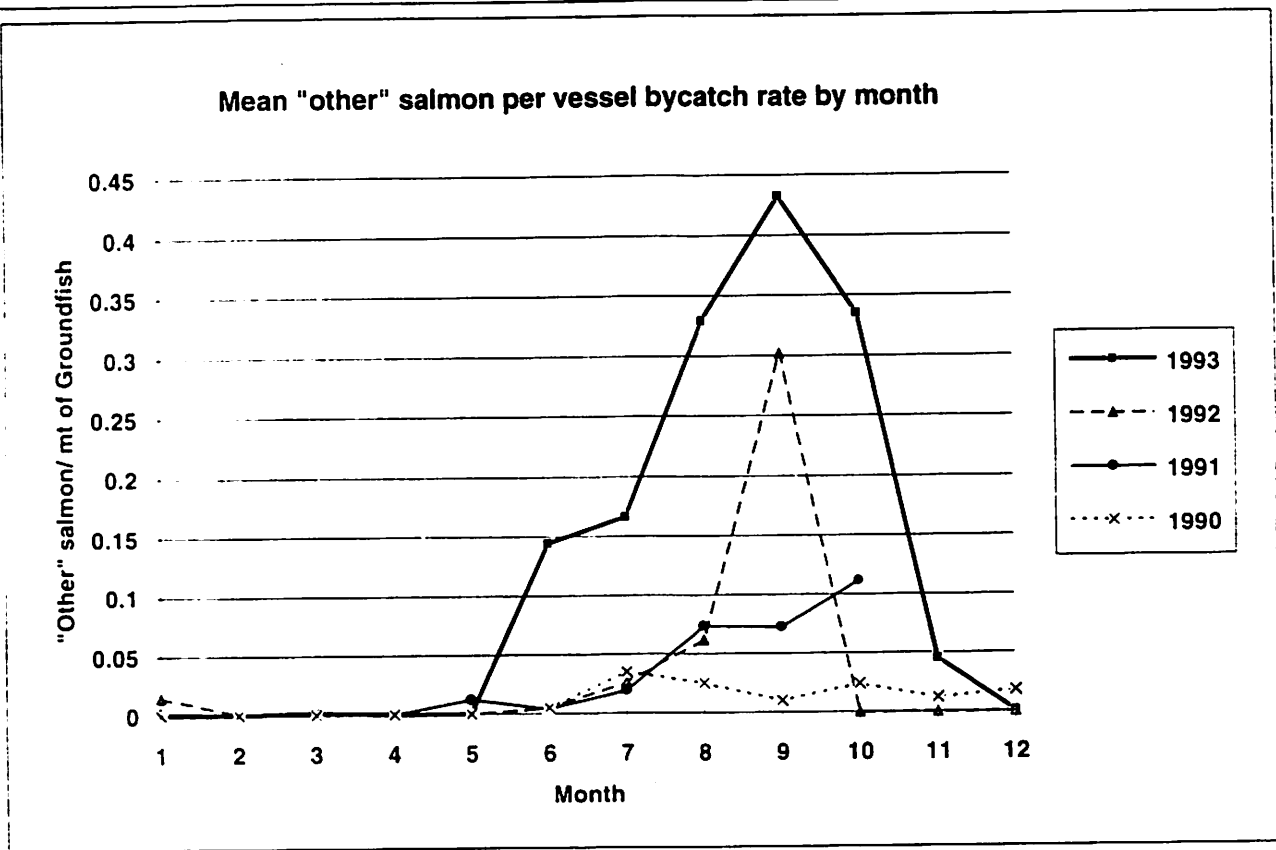
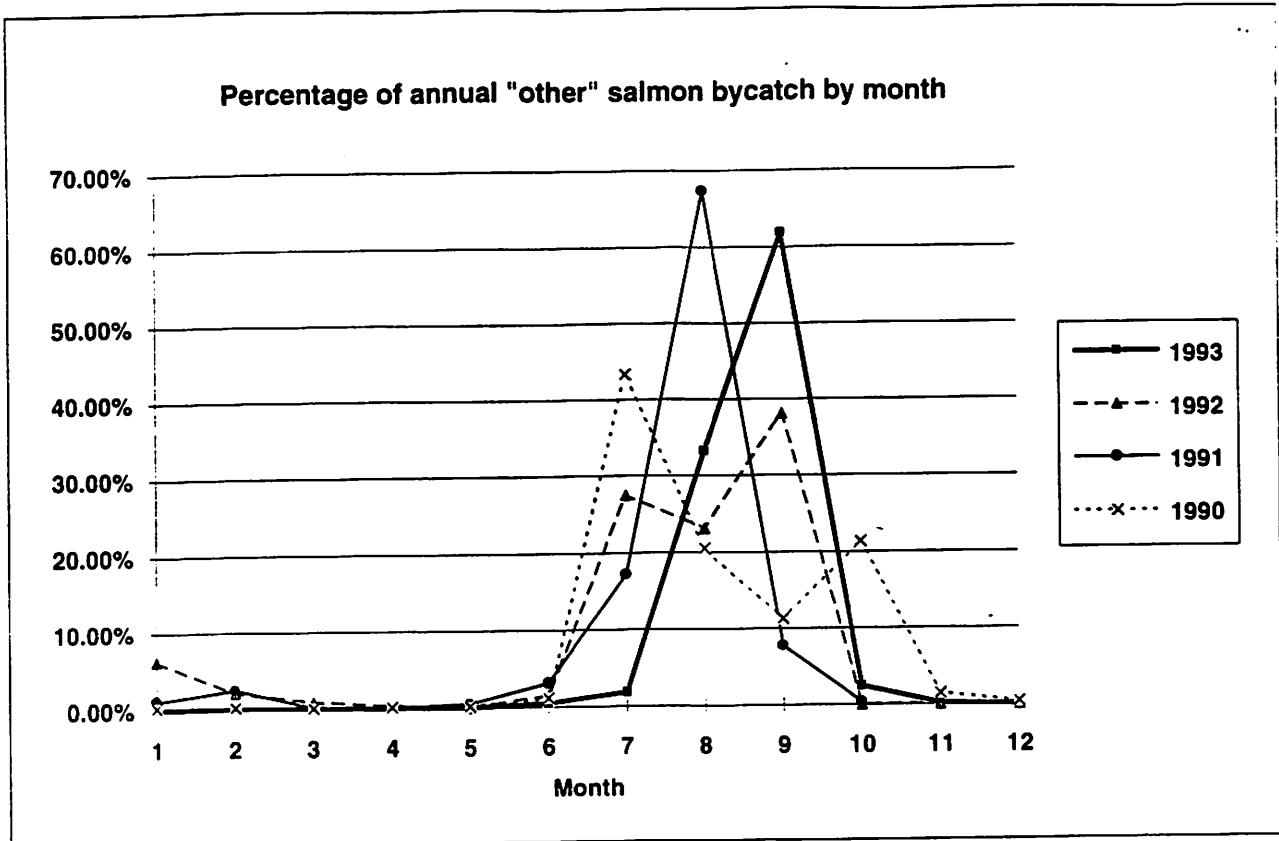


Figure 10. Top: Percentage of annual other salmon bycatch by month from observed hauls only 1990-1993. Bottom: Mean other salmon bycatch rate as per vessel bycatch per metric ton of groundfish catch.



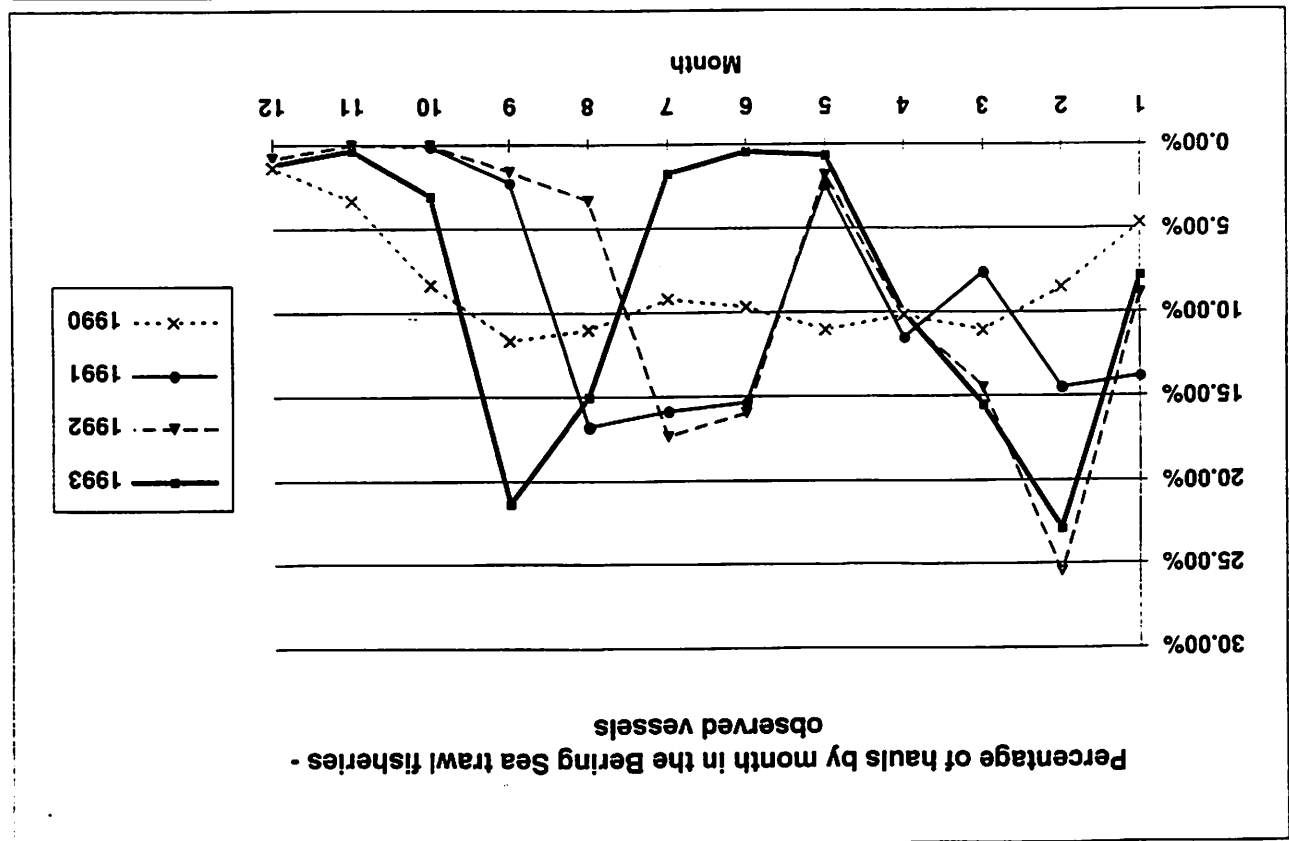
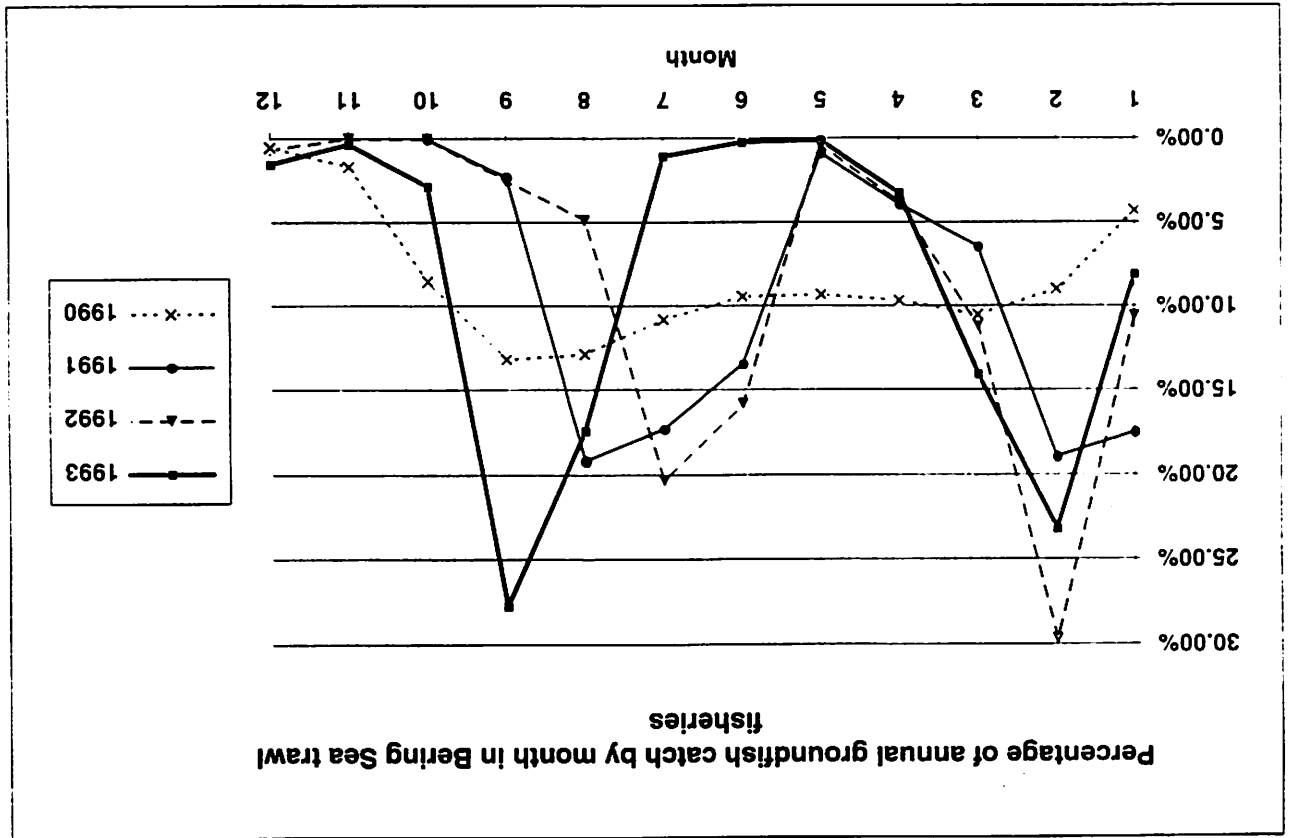


Figure 11. Top: Percentage of annual number of hauls by month from observed vessels only 1990-1993. Bottom: Percentage of total annual groundfish catch by month from observed vessels only, 1990-1993.

Figure 12. Top: Percentage of total annual chinook bycatch by month from observed vessels only 1990-1993. Bottom: Mean chinook salmon bycatch rate as per vessel bycatch per metric ton of groundfish catch.

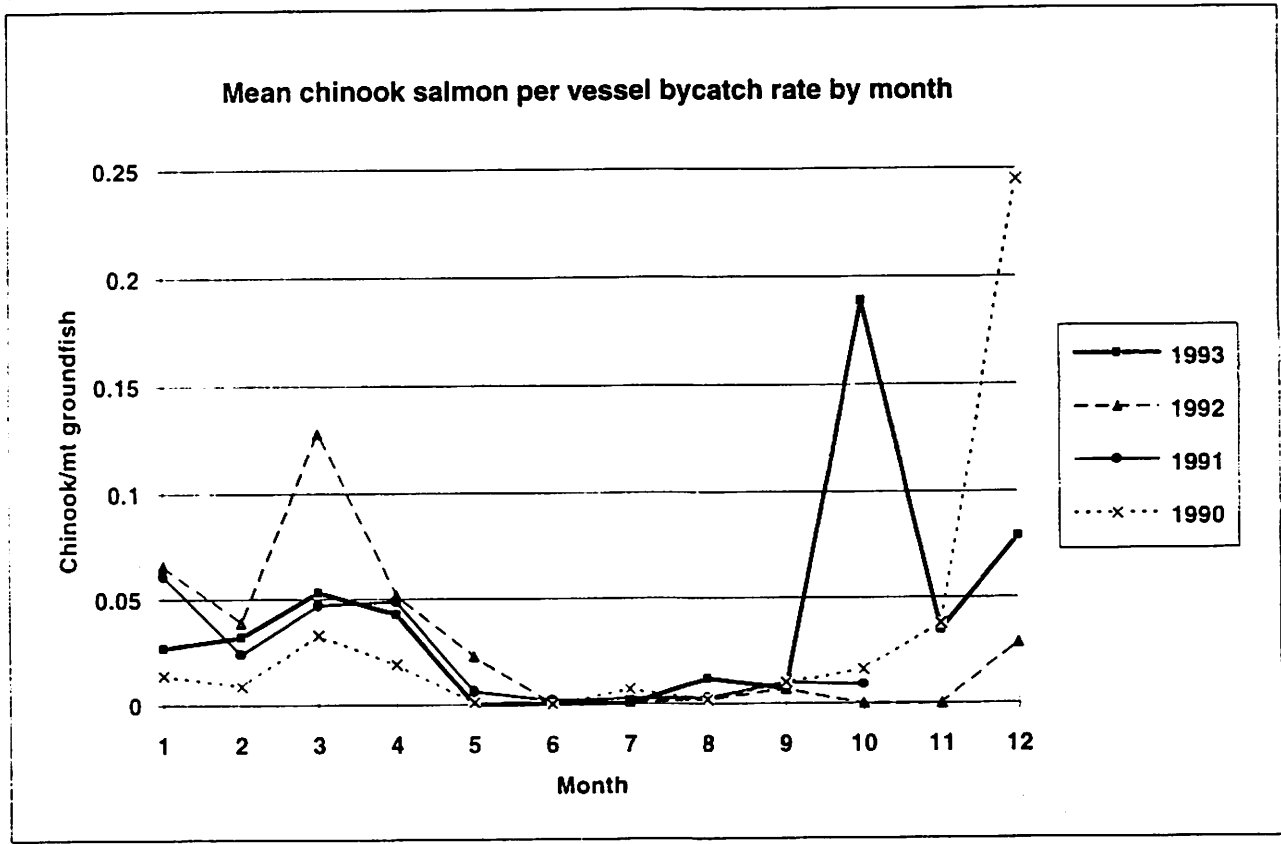
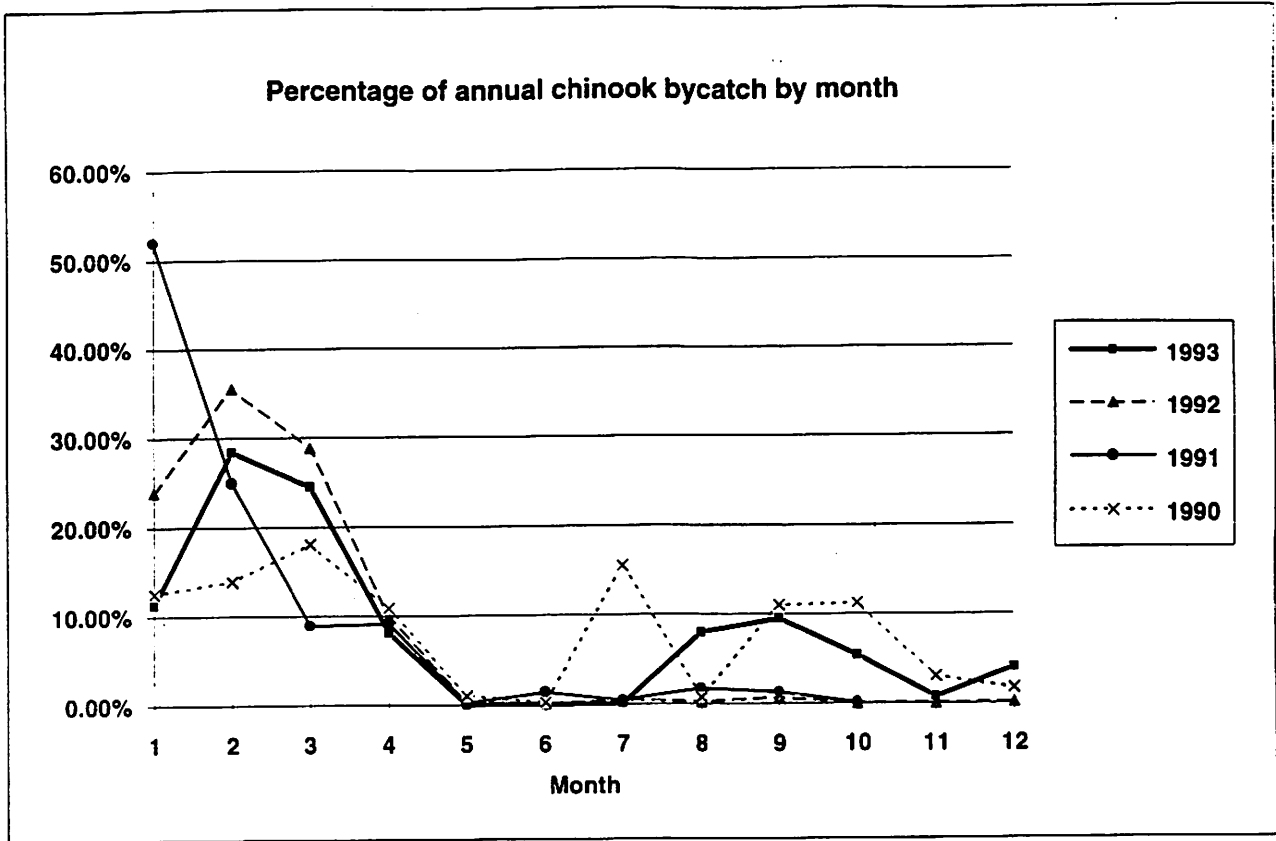


Figure 13. Bycatch of other salmon from observed hauls in 1990. Horizontal axes are the longitude and latitude locations of the observed hauls.

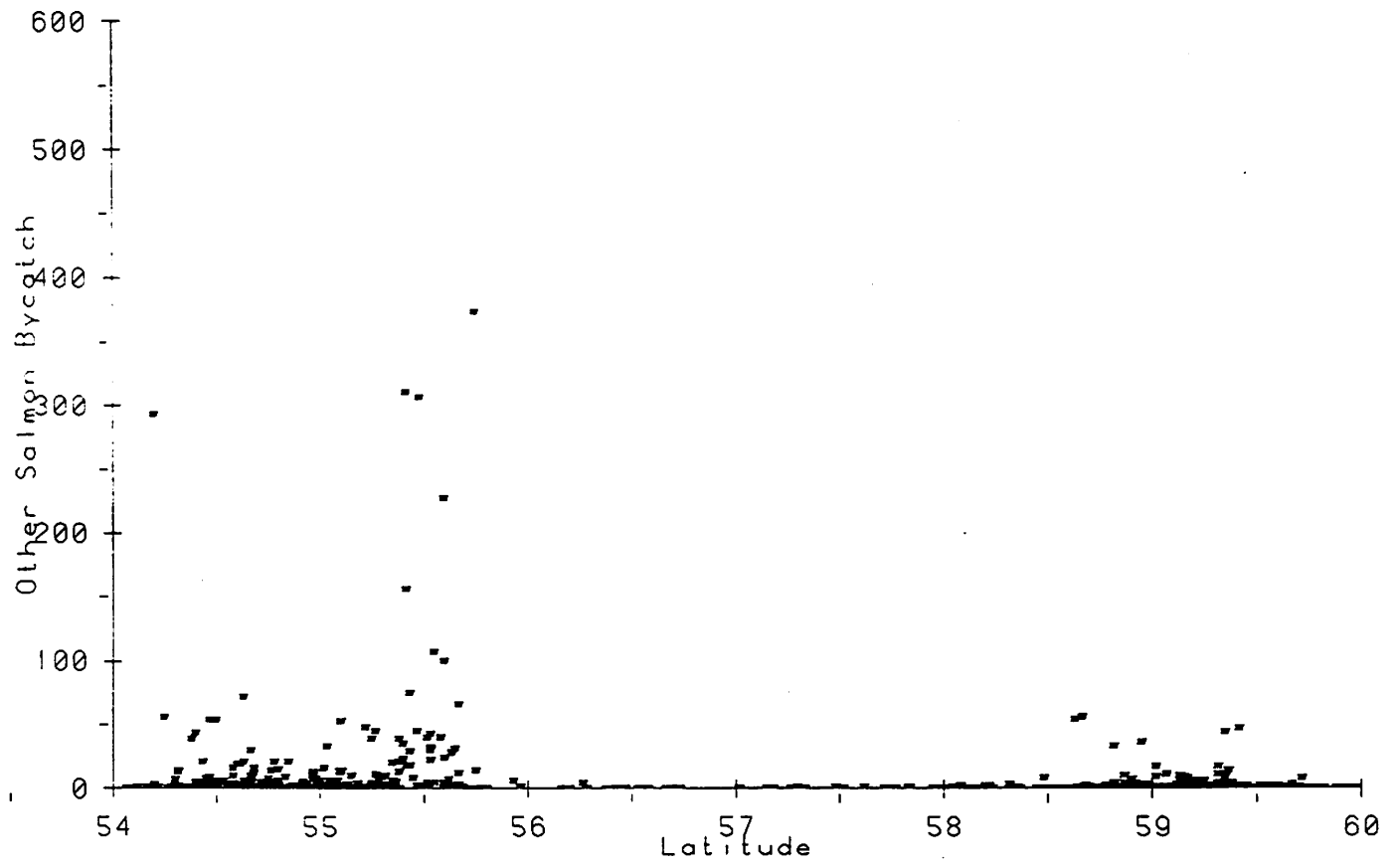
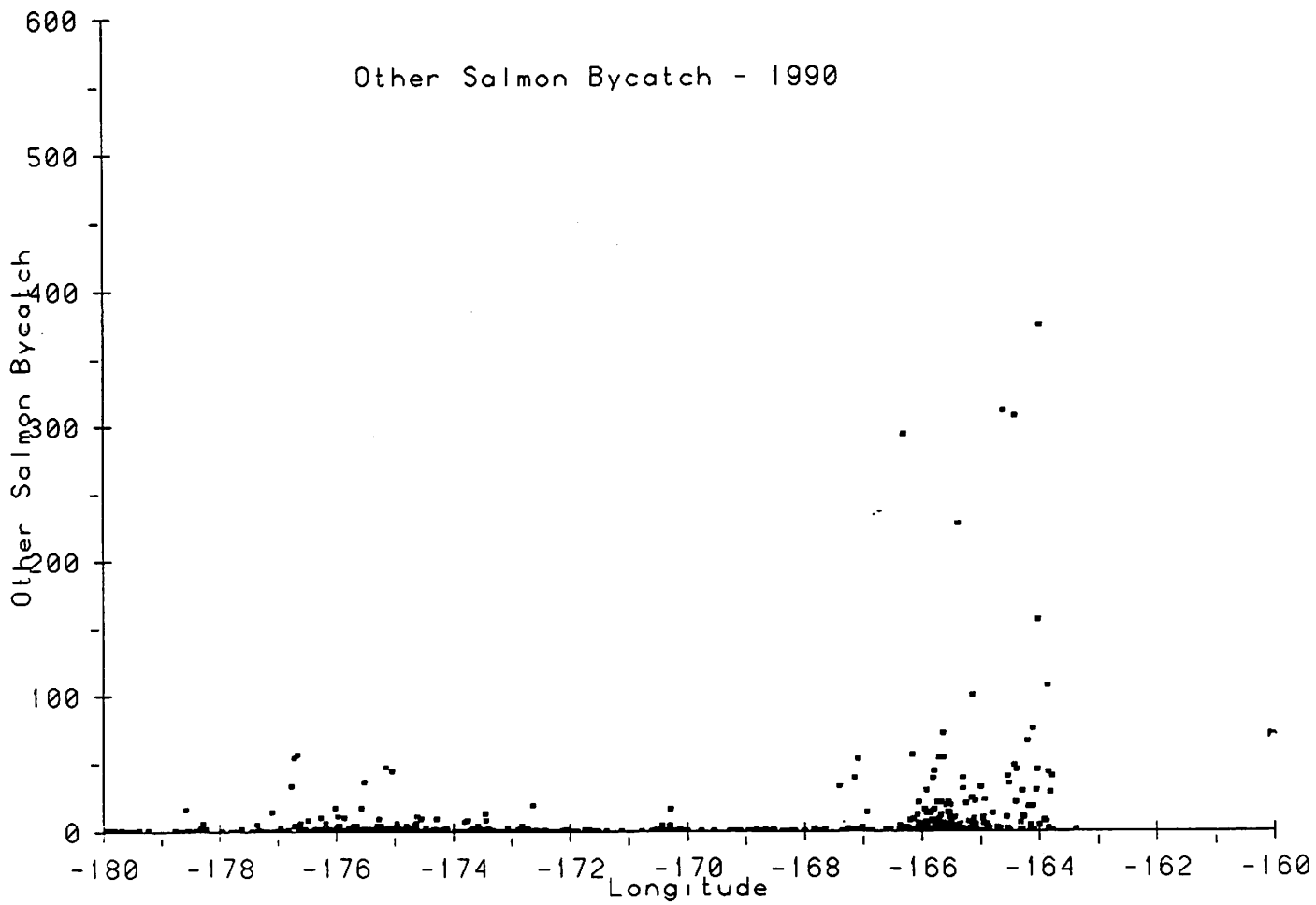


Figure 14. Bycatch of other salmon from observed hauls in 1991. Horizontal axes are the longitude and latitude locations of the observed hauls.

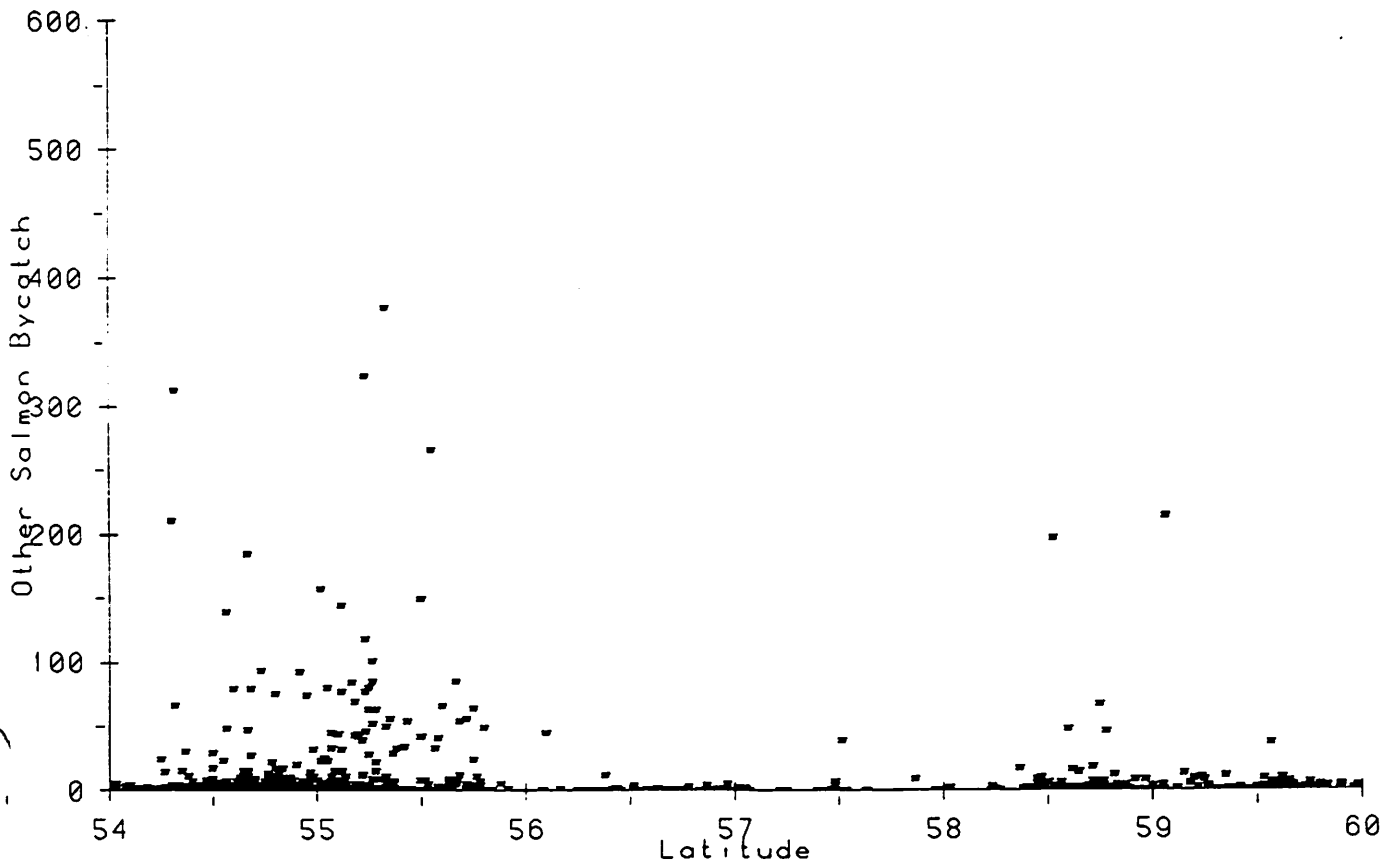
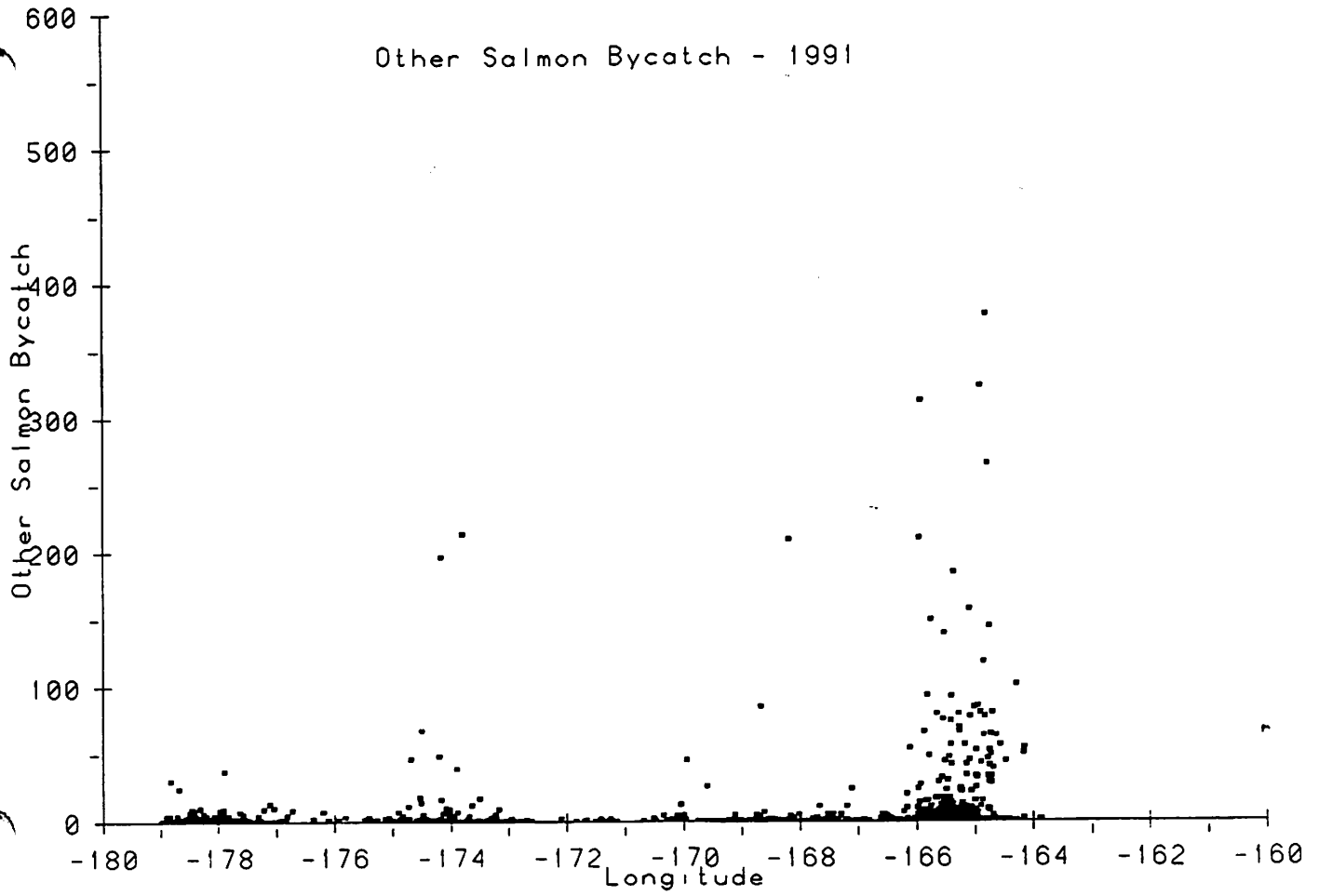


Figure 15. Bycatch of other salmon from observed hauls in 1992. Horizontal axes are the longitude and latitude locations of the observed hauls.

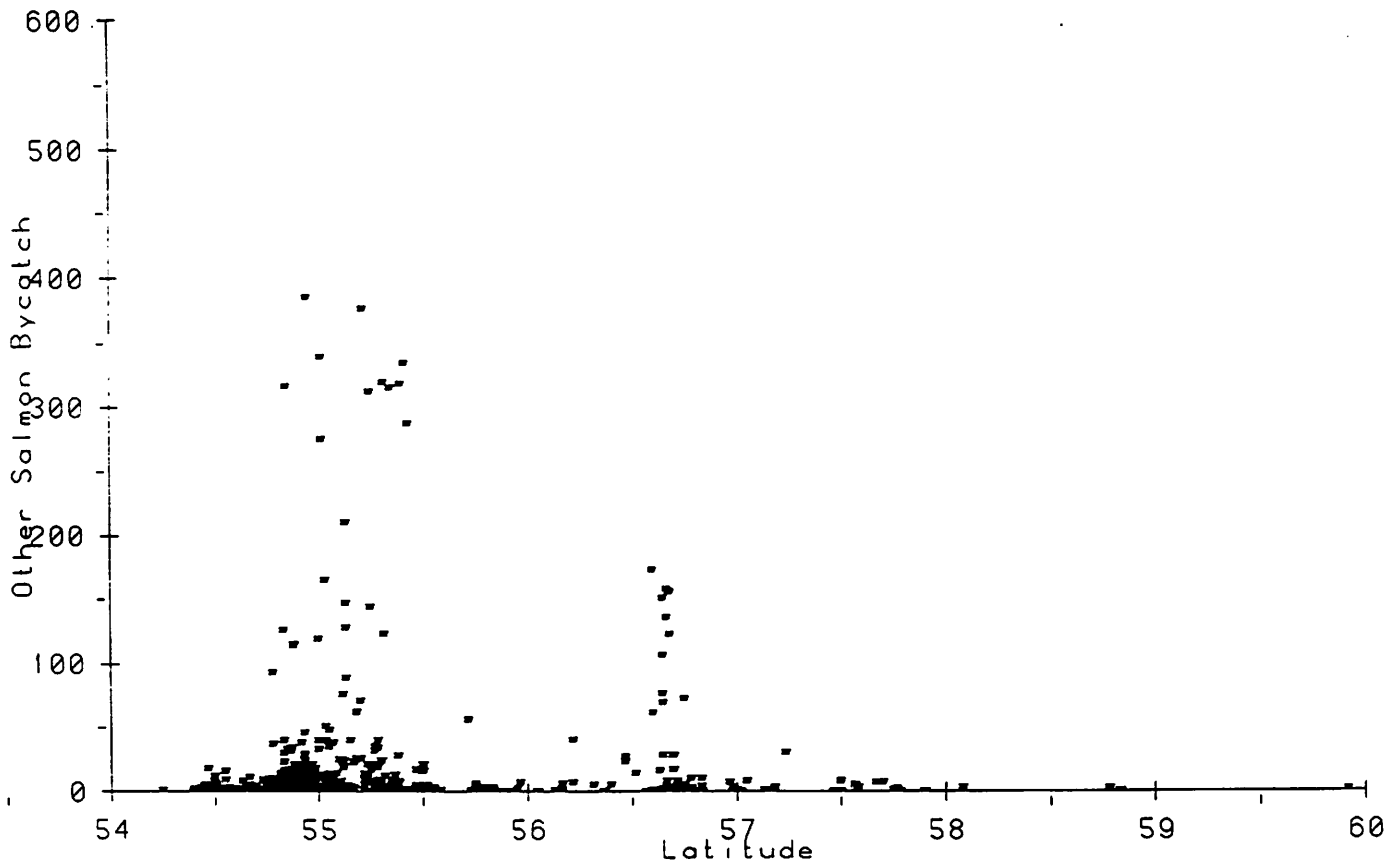
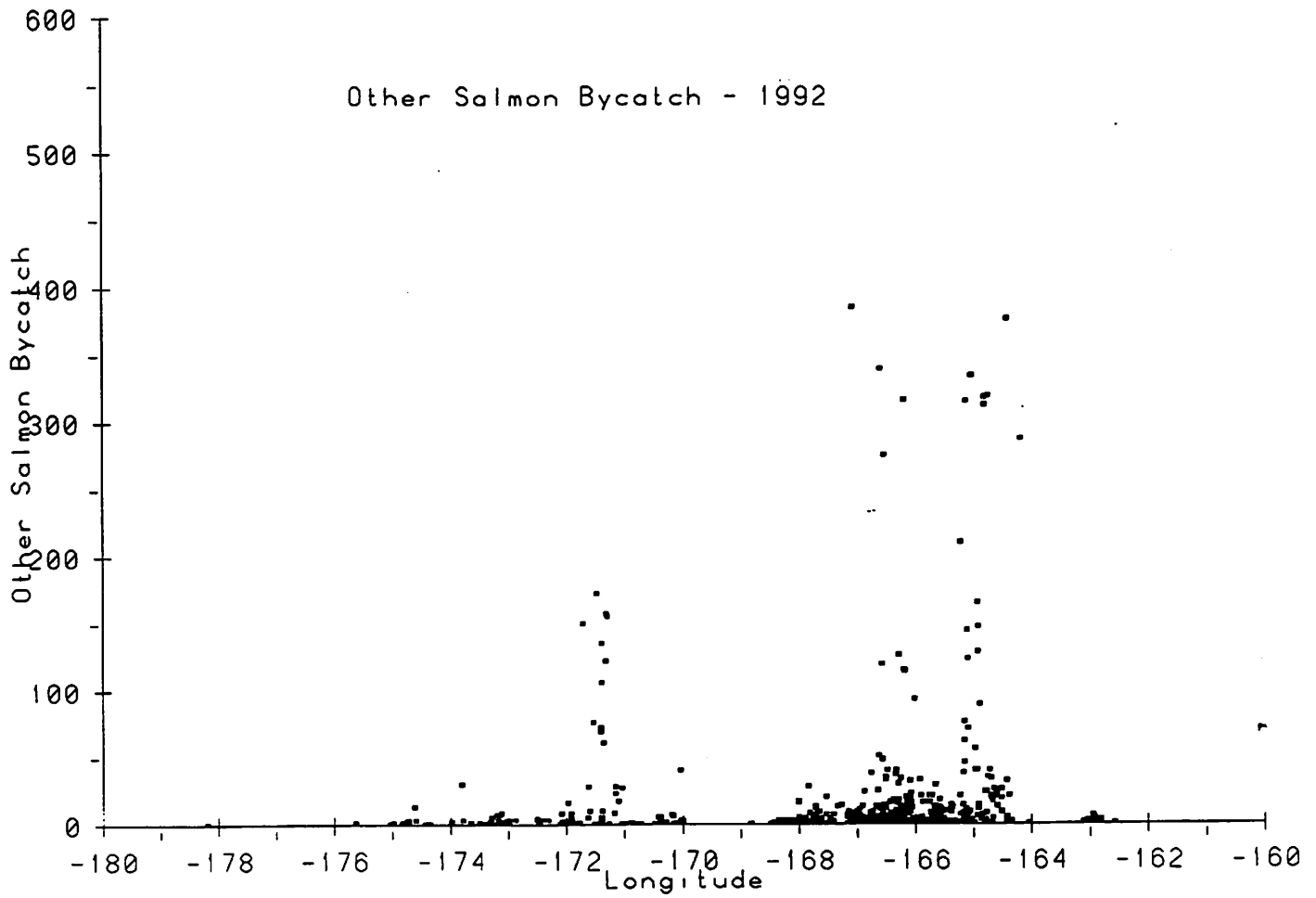


Figure 16. Bycatch of other salmon from observed hauls in 1993. Horizontal axes are the longitude and latitude locations of the observed hauls.

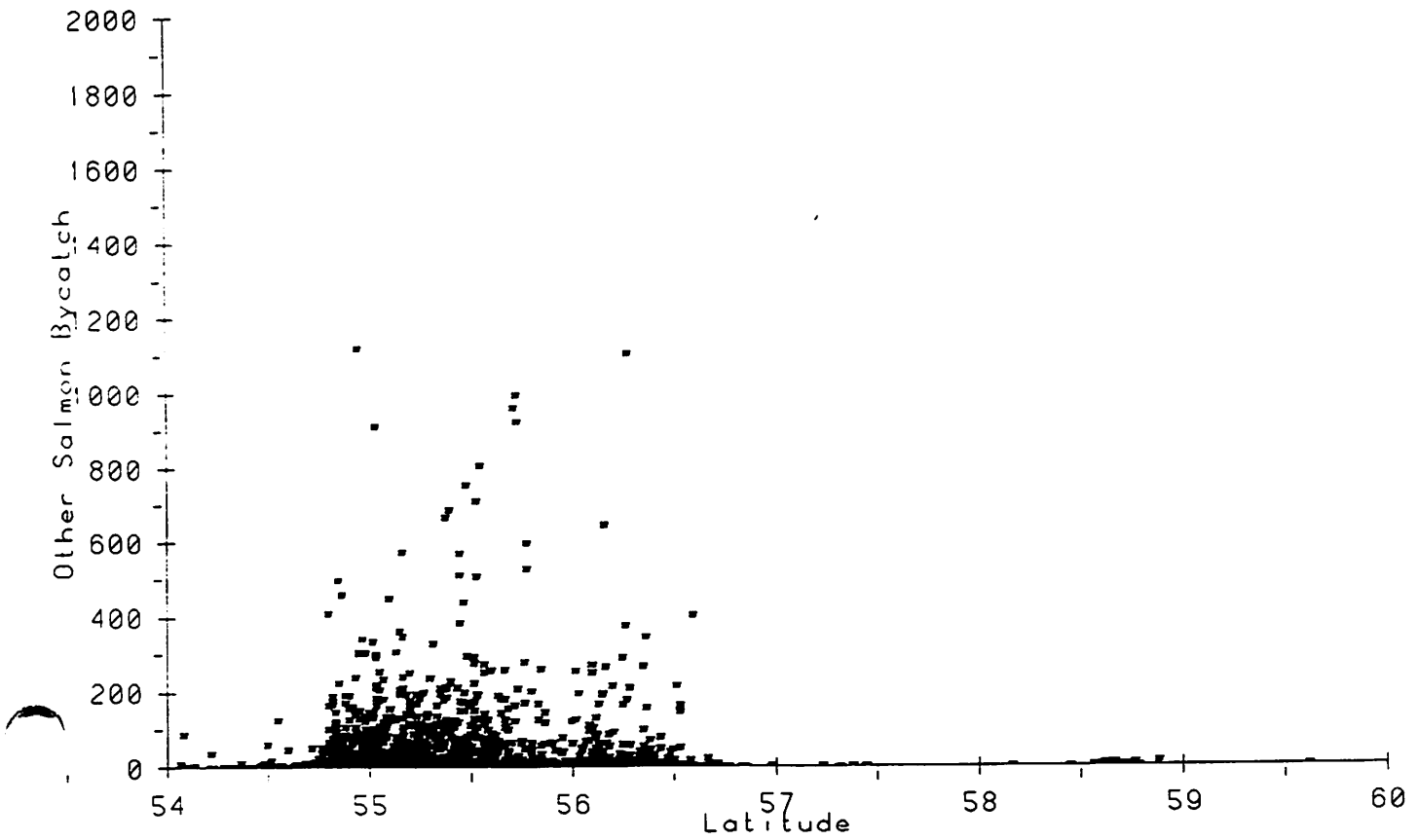
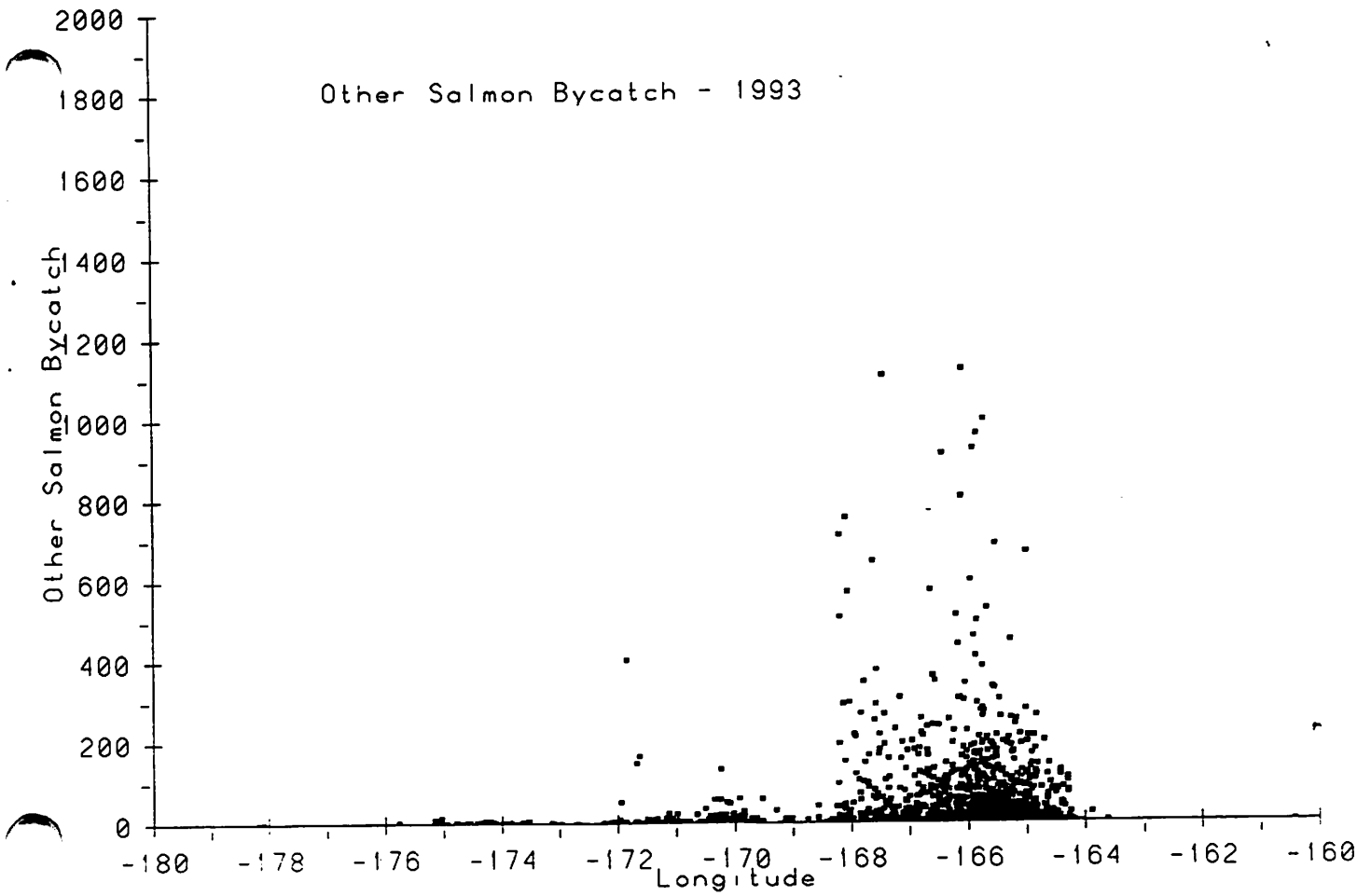


Figure 17. Bycatch of chinook salmon from observed hauls in 1990. Horizontal axes are the longitude and latitude locations of the observed hauls.

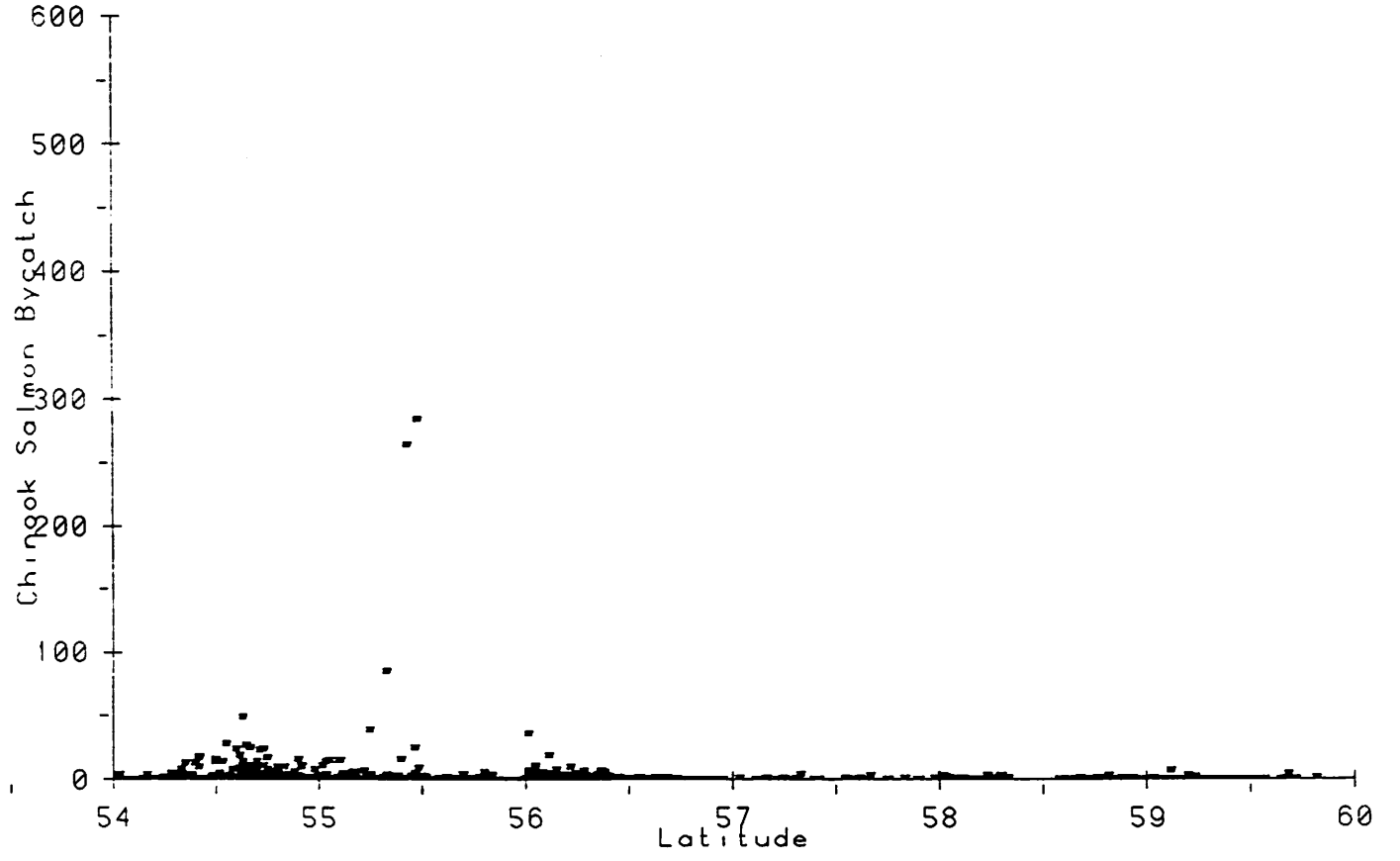
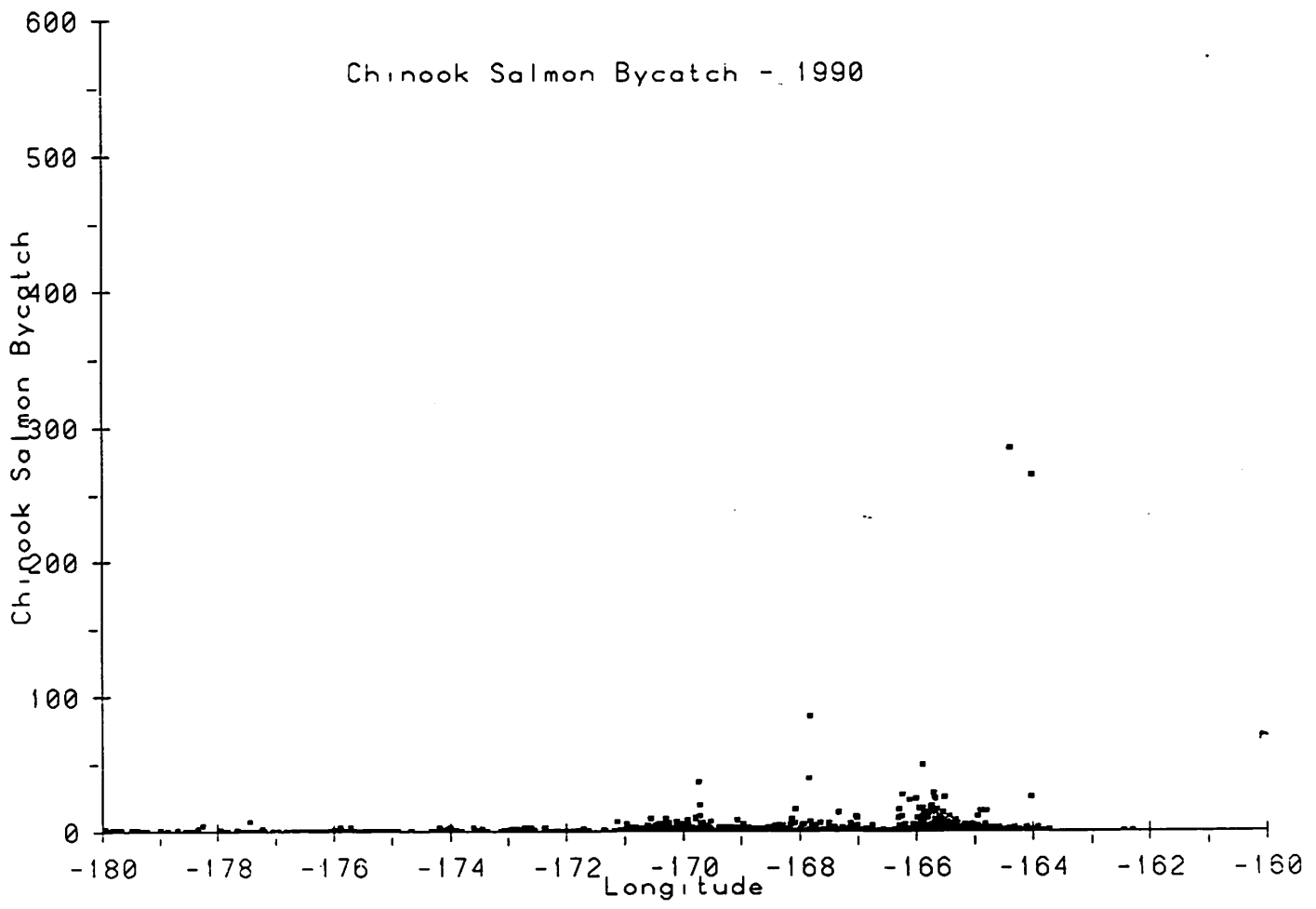


Figure 18.

Bycatch of chinook salmon from observed hauls in 1991. Horizontal axes are the longitude and latitude locations of the observed hauls.

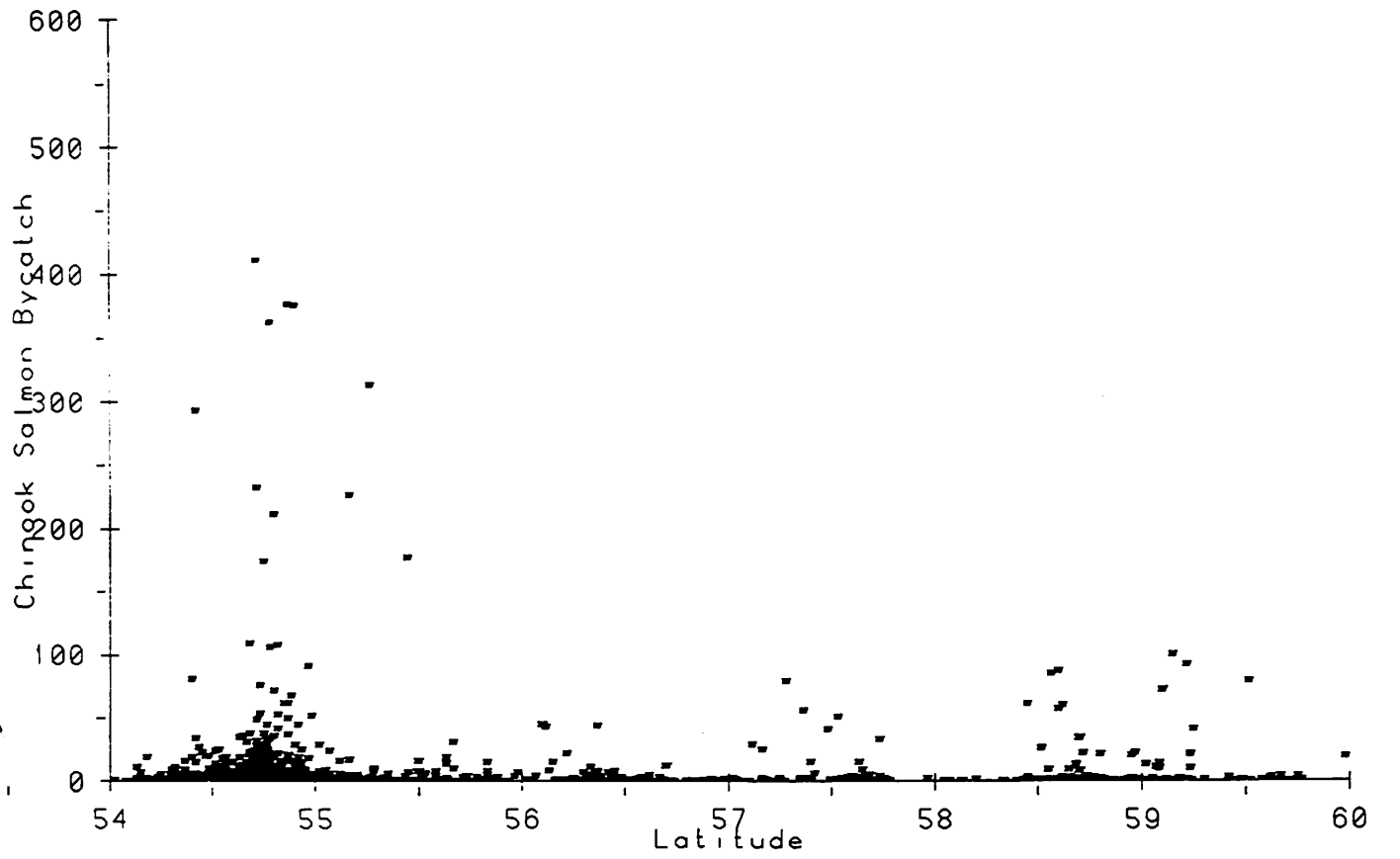
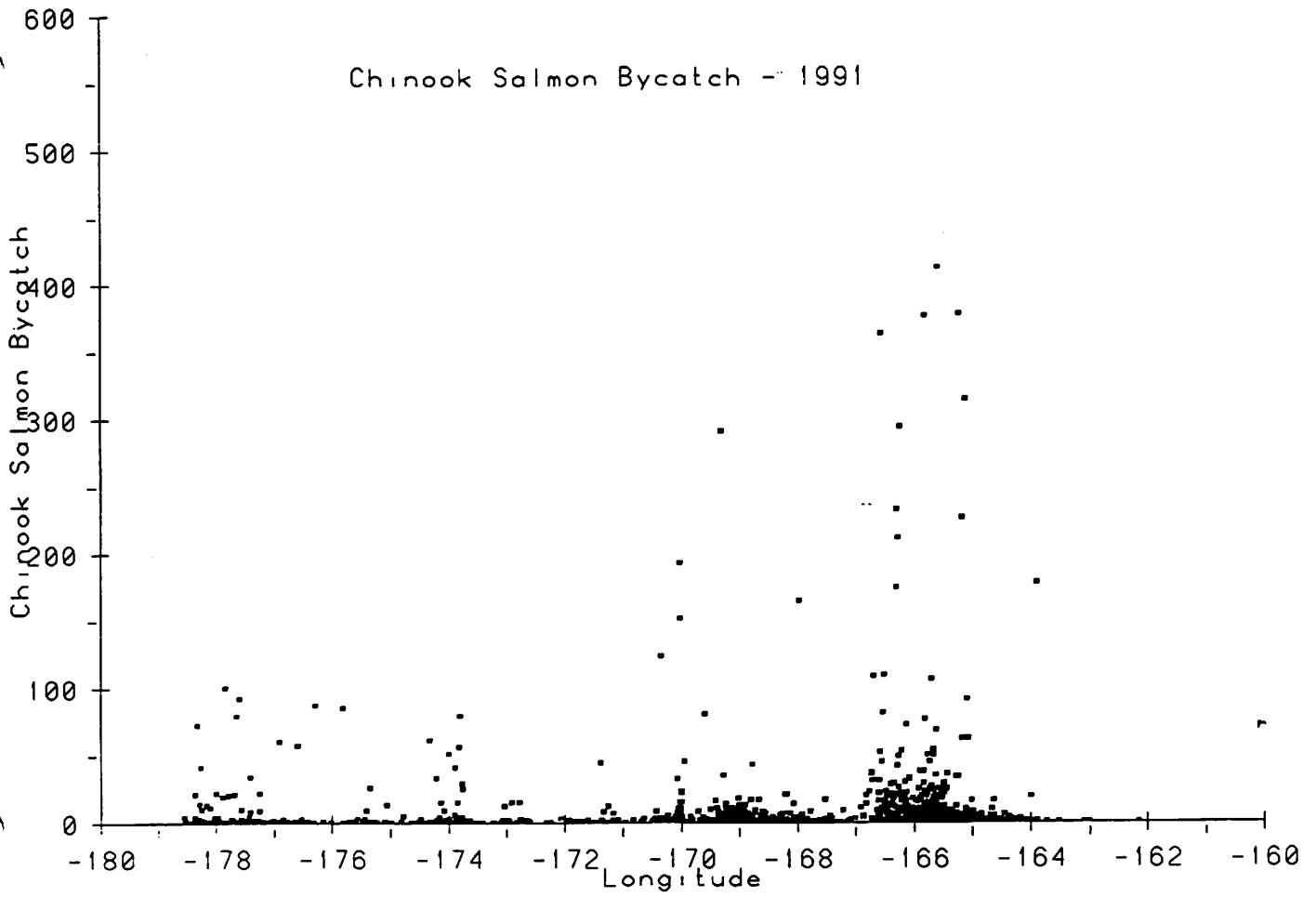


Figure 19. Bycatch of chinook salmon from observed hauls in 1992. Horizontal axes are the longitude and latitude locations of the observed hauls.

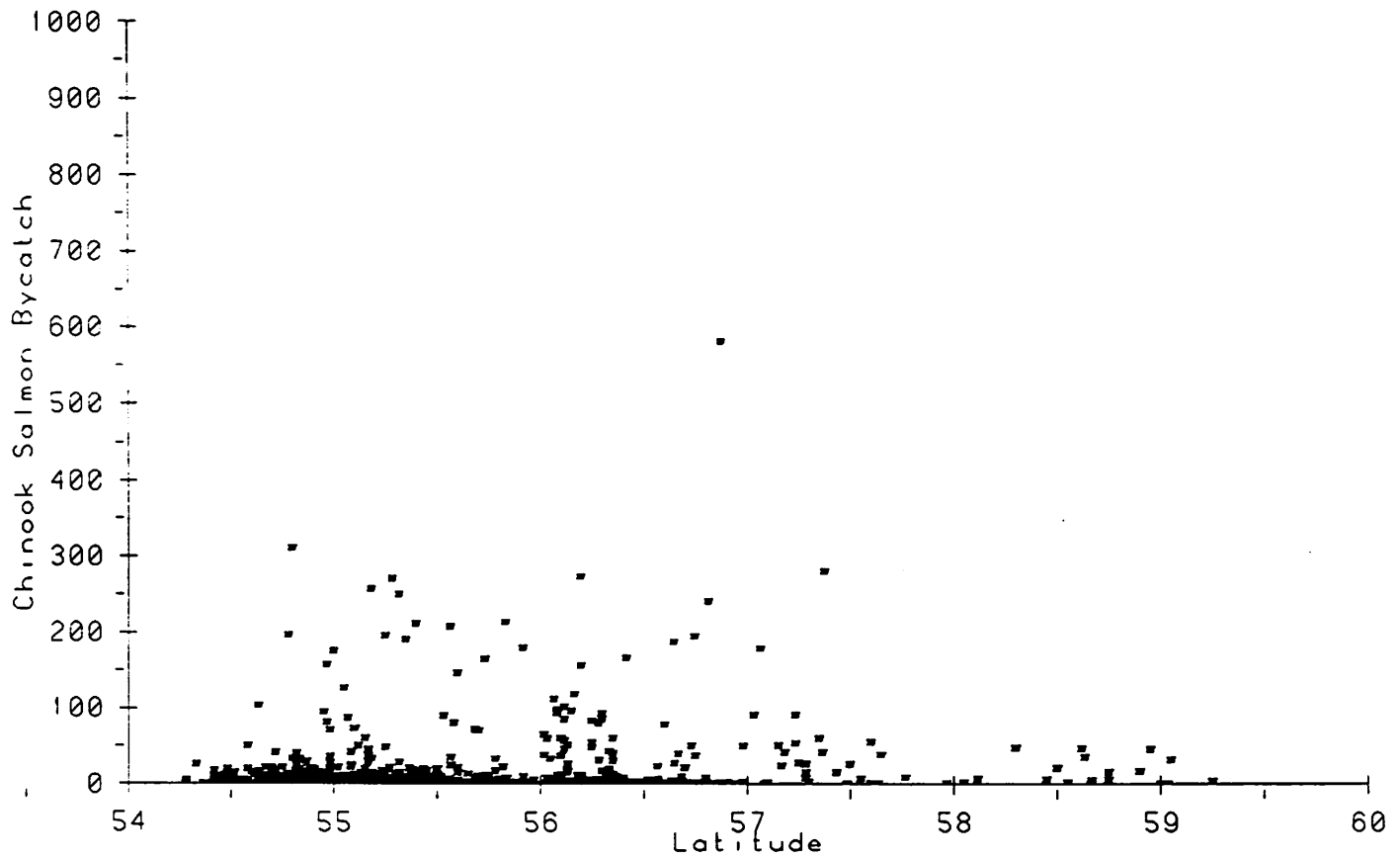
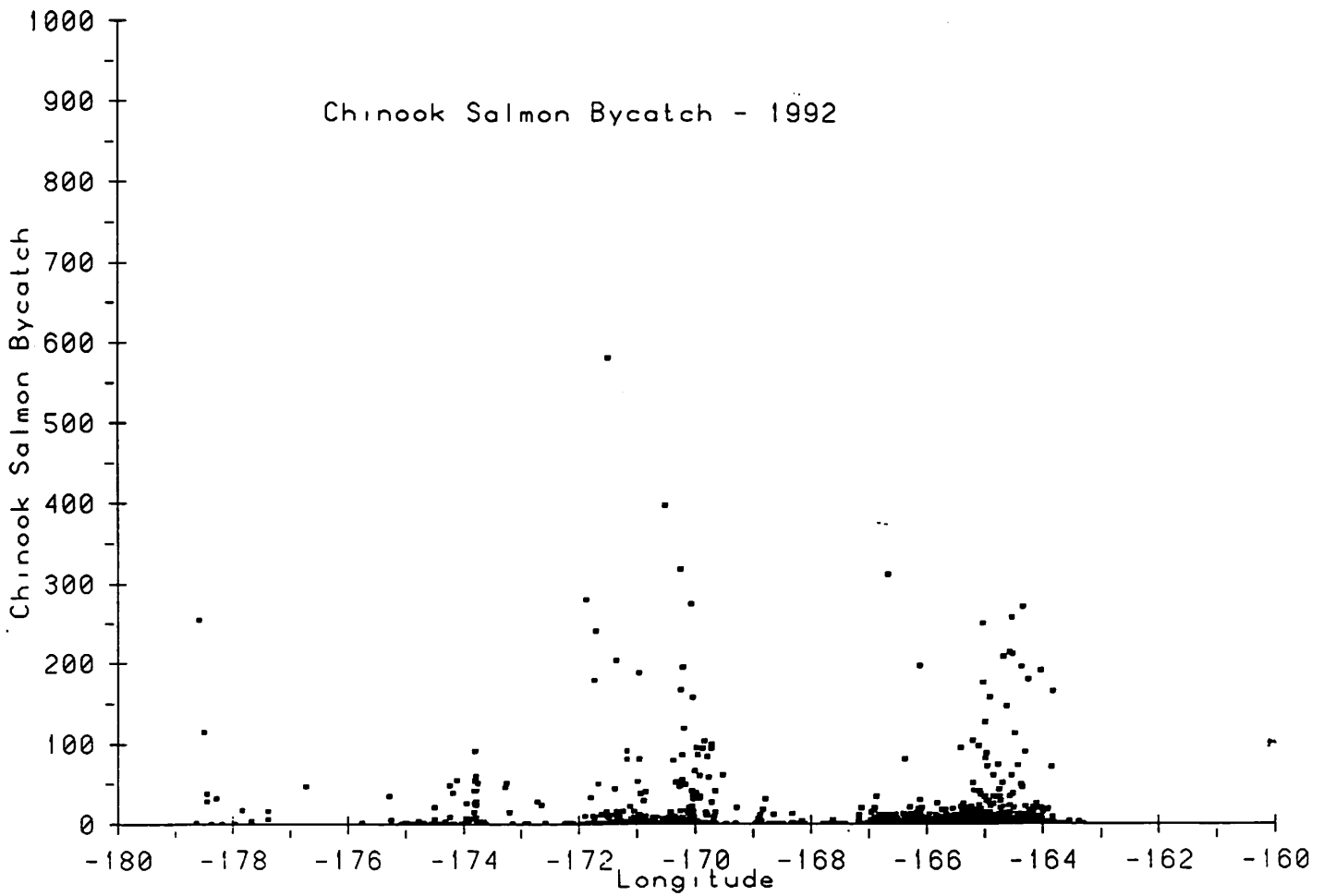


Figure 20. Bycatch of chinook salmon from observed hauls in 1993. Horizontal axes are the longitude and latitude locations of the observed hauls.

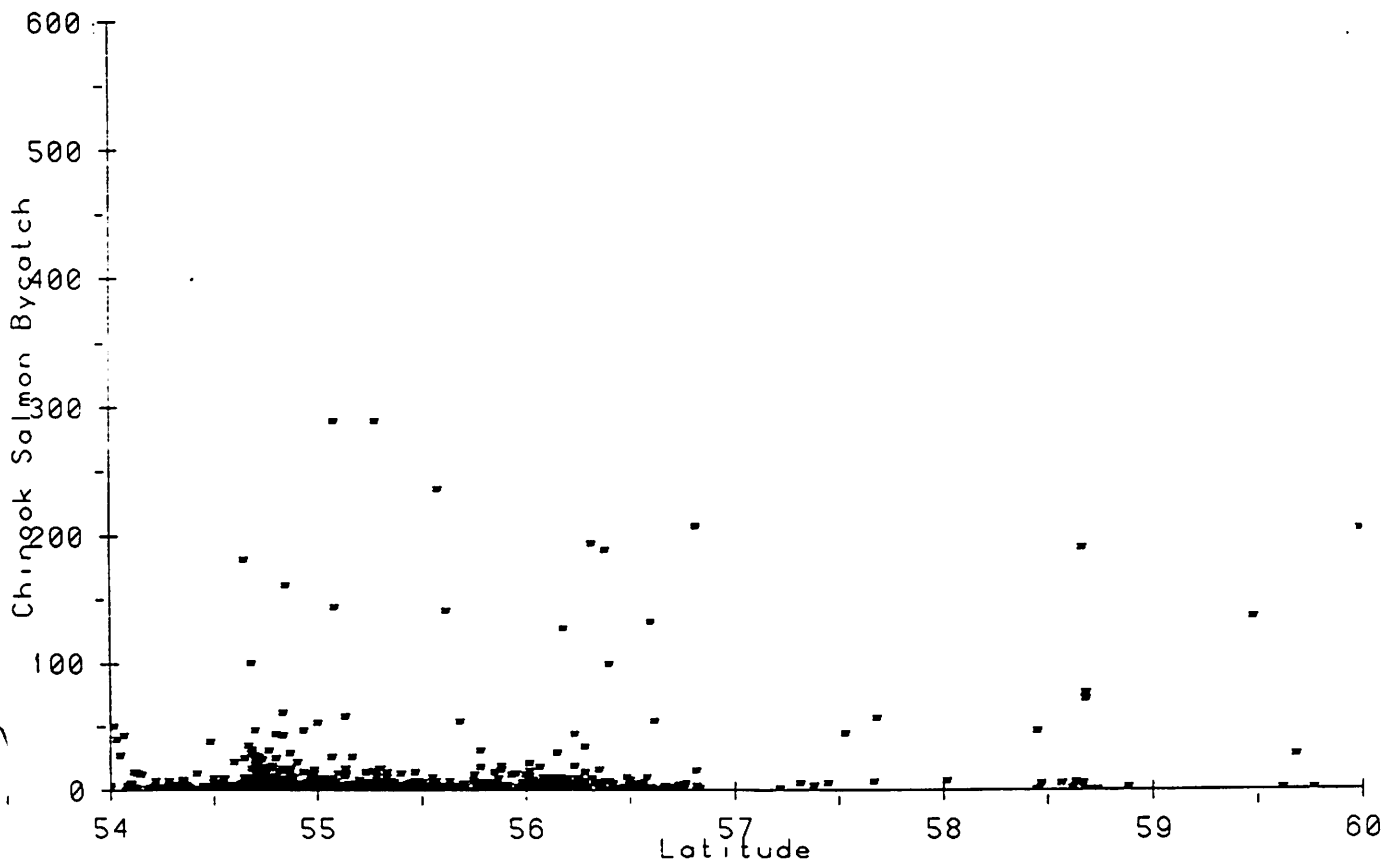
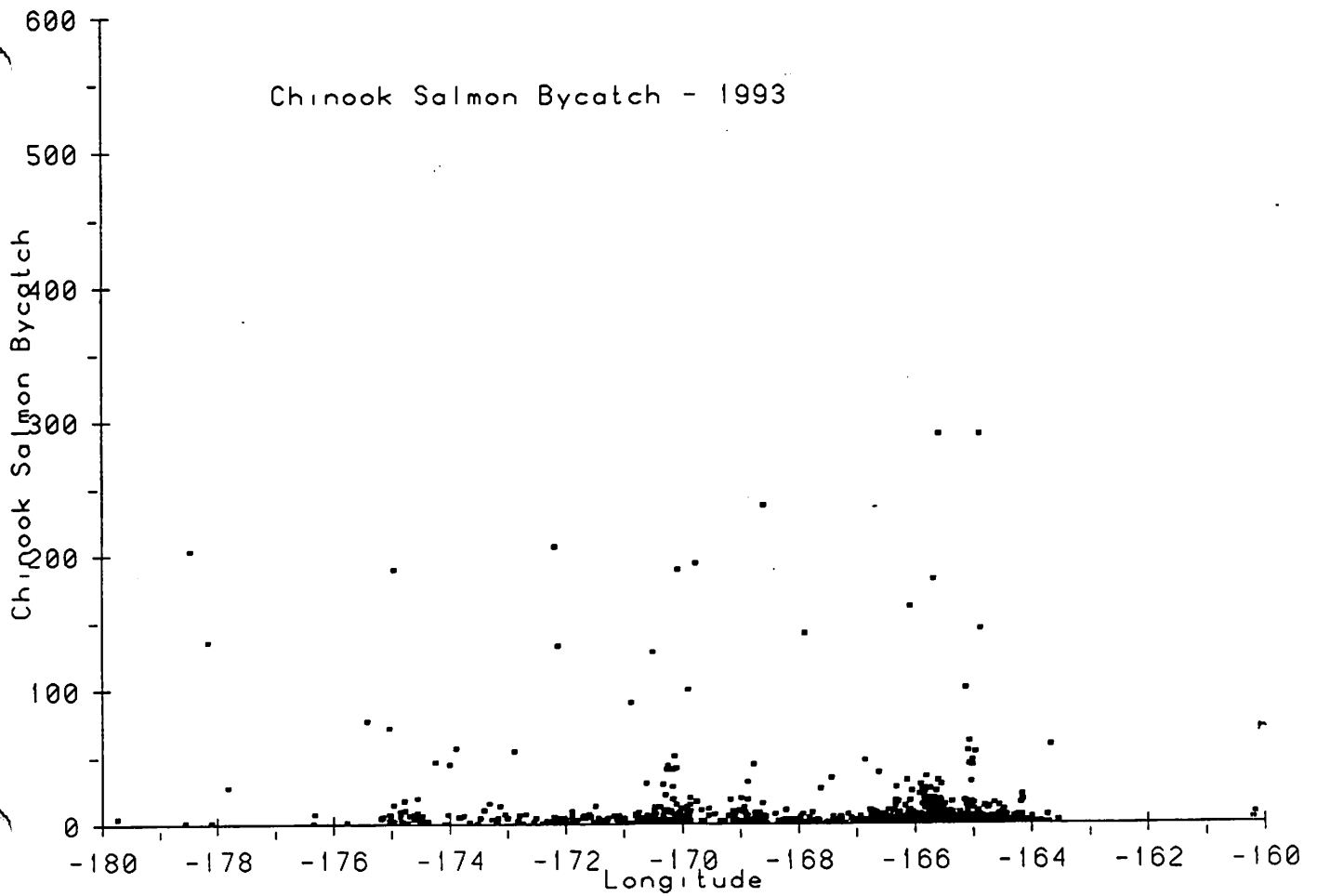


Figure 21. Outline of main concentration of observed trawls operating in the Bering Sea in 1990 during the months of July through October. Some individual hauls can occur outside of the highlighted areas. 200 m contour a dashed line.

General locations of hauls made in 1990

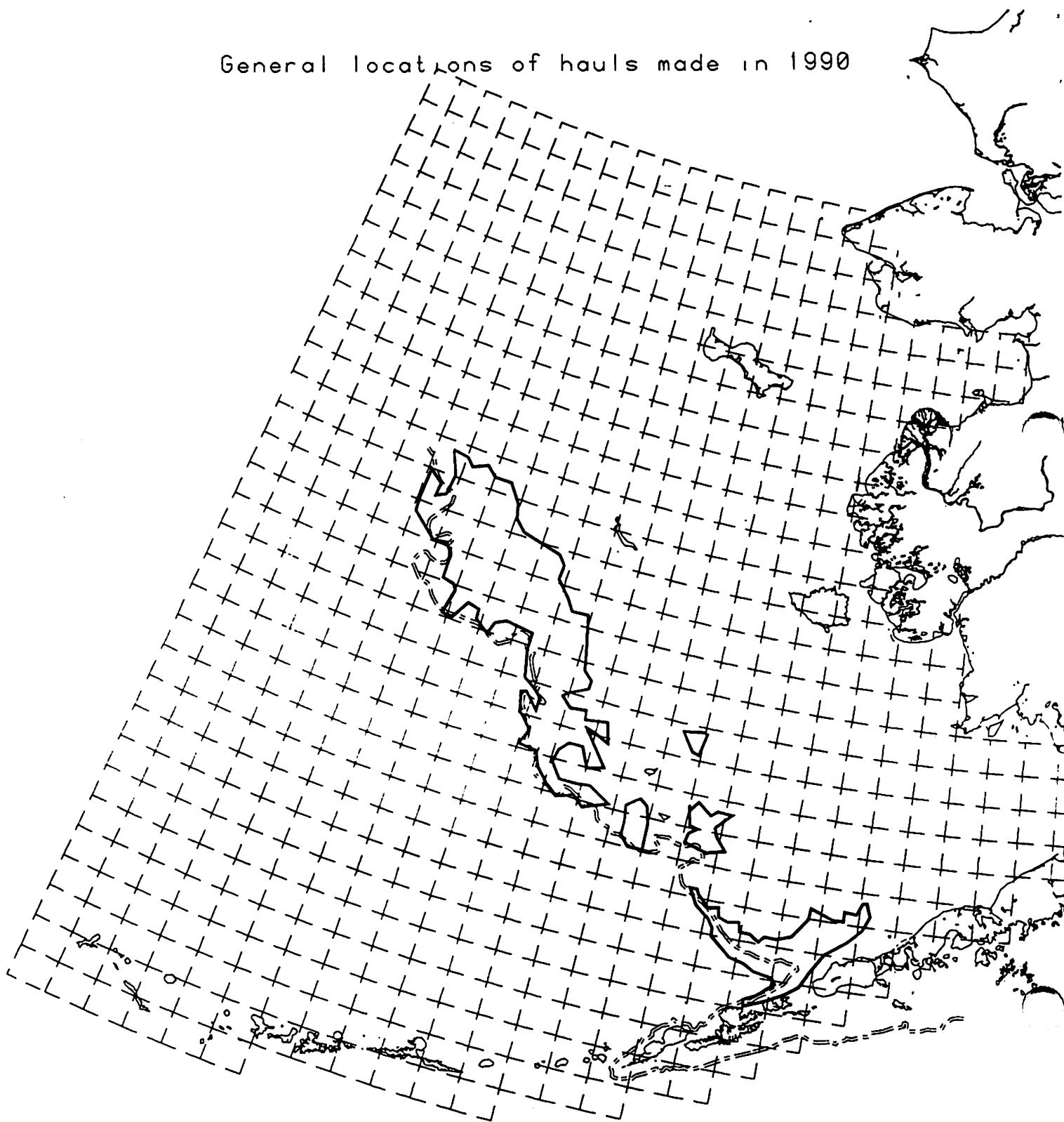


Figure 22. Location of observed trawls in the Bering Sea during the months of July through October in 1990 with an other salmon bycatch of more than 50 fish. The CVOA is highlighted and the 200 m contour is a dashed line.

July - October 1990, hauls with >50 other salmon

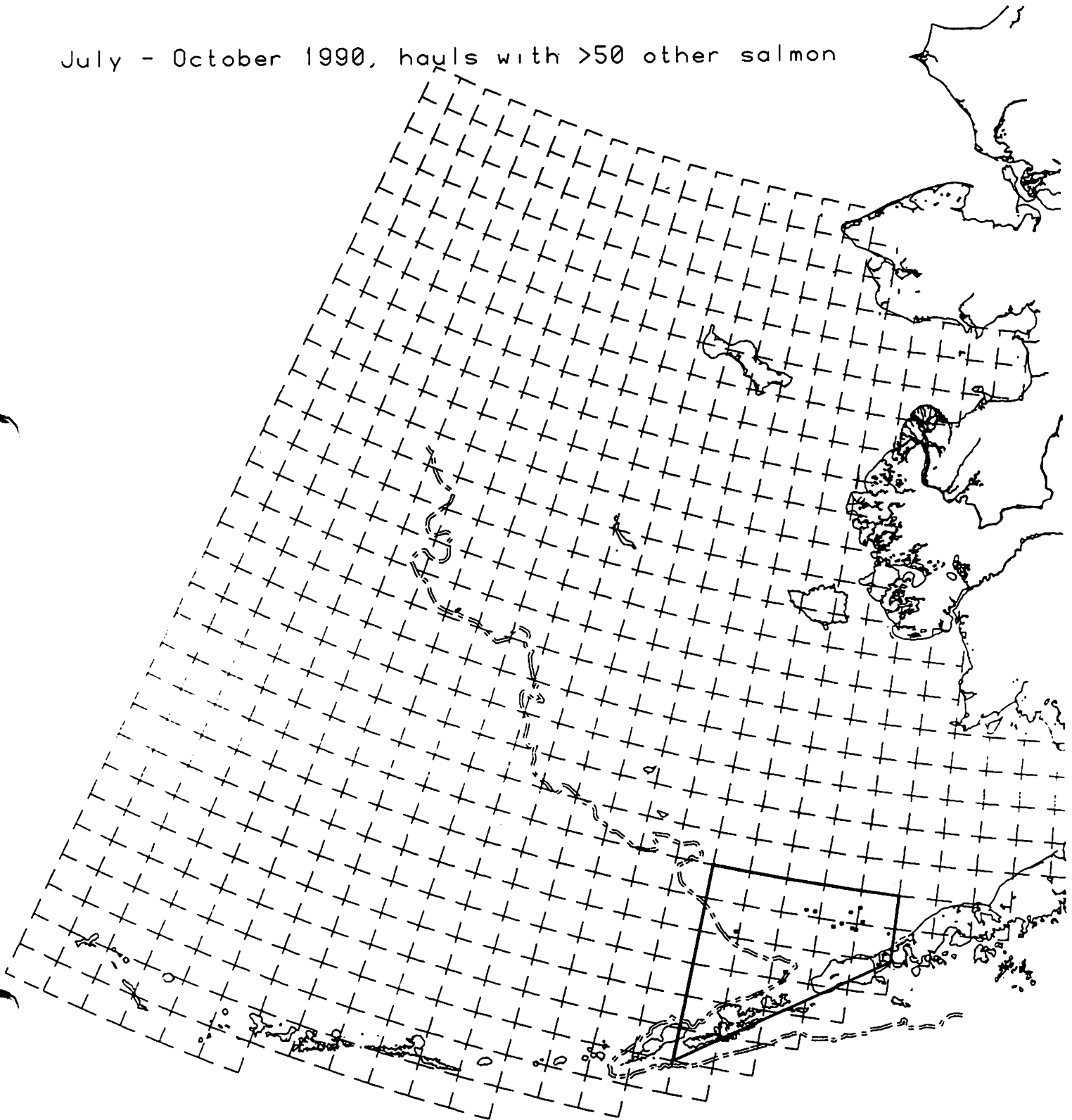


Figure 23. Outline of main concentration of observed trawls operating in the Bering Sea in 1991 during the months of July through October. Some individual hauls can occur outside of the highlighted areas. 200 m contour a dashed line.

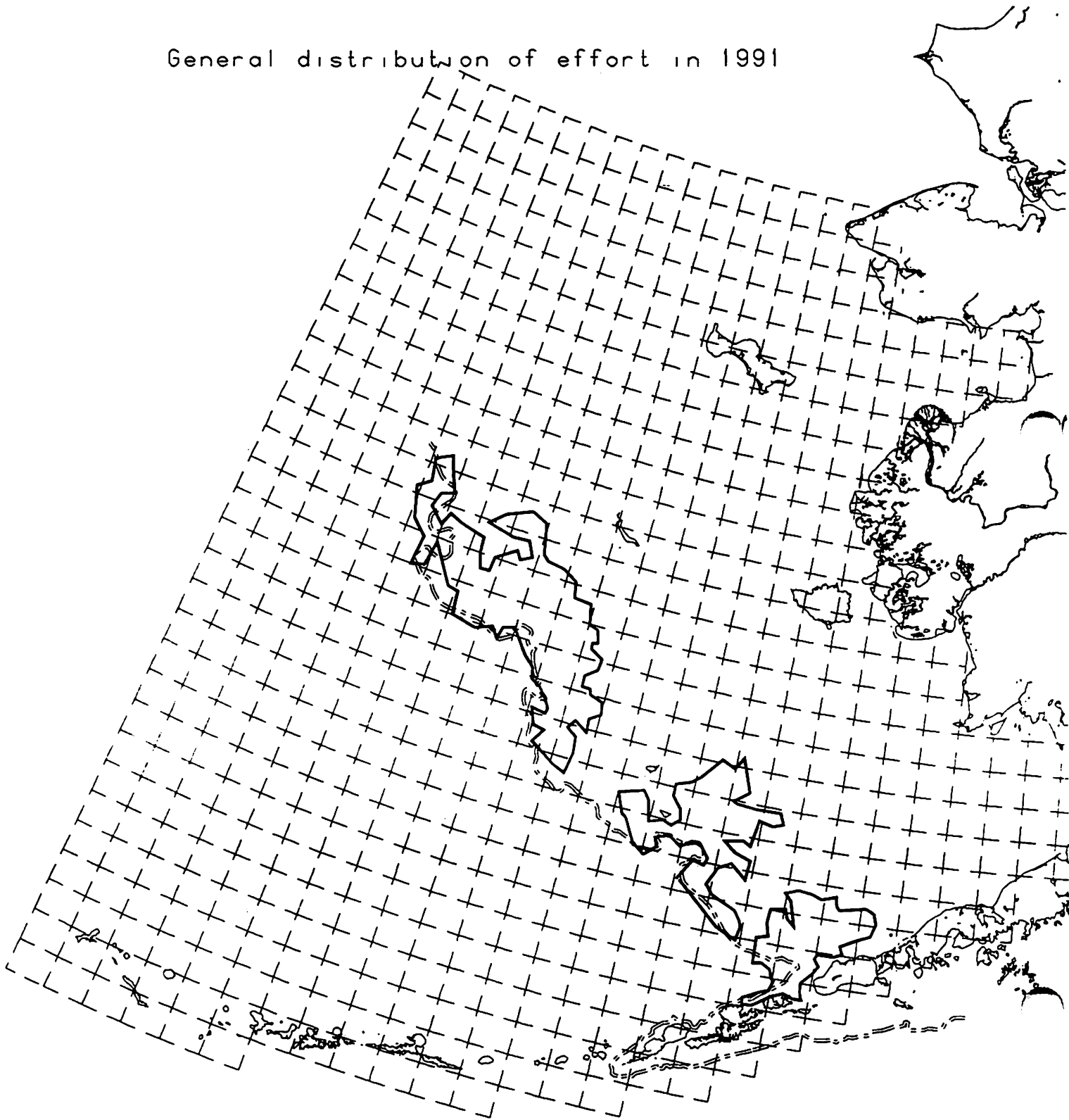


Figure 24. Location of observed trawls in the Bering Sea during the months of July through October in 1991 with an other salmon bycatch of more than 50 fish. The CVOA is highlighted and the 200 m contour is a dashed line.

July - October 1991, hauls with >50 other salmon

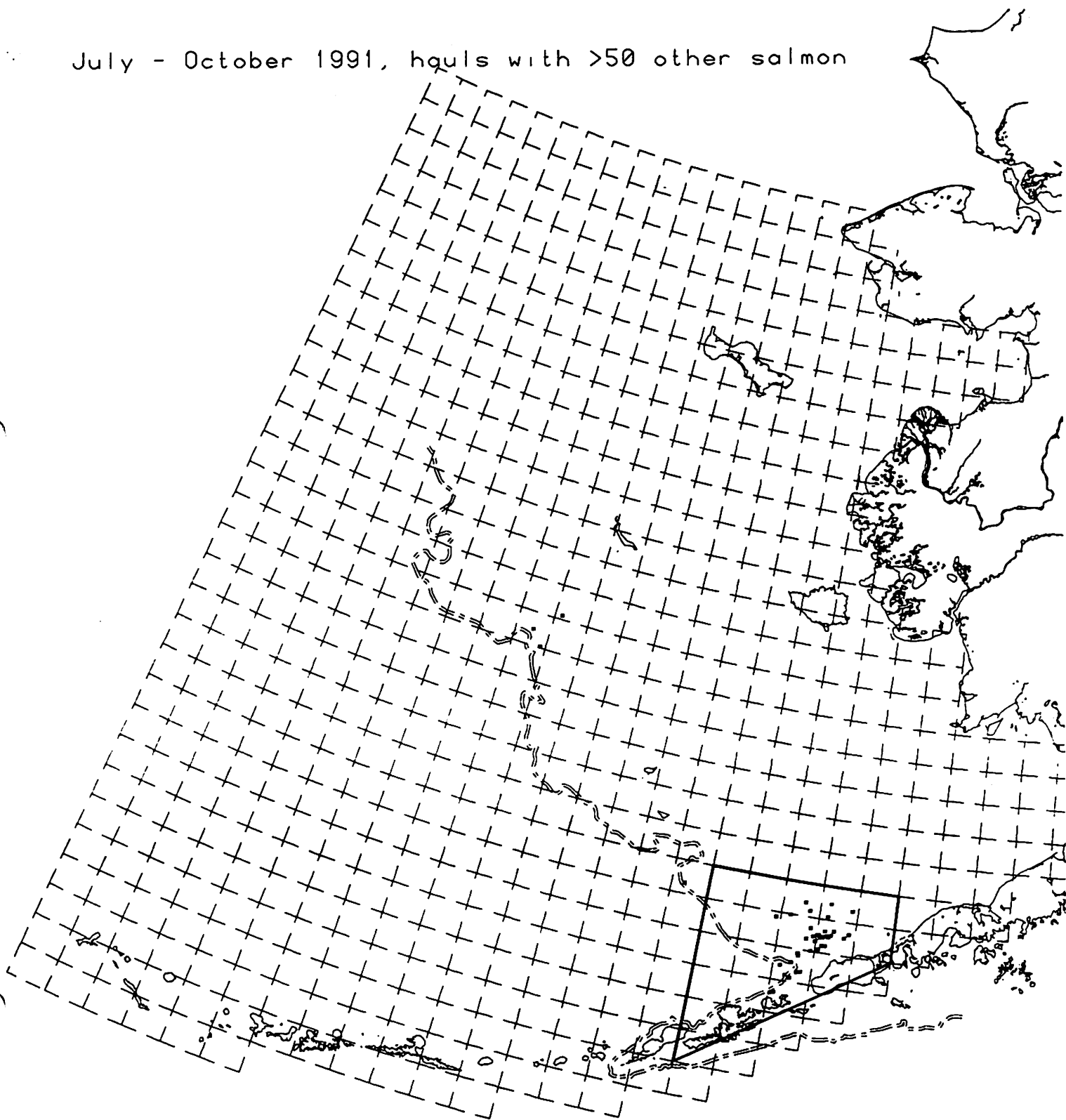


Figure 25. Outline of main concentration of observed trawls operating in the Bering Sea in 1992 during the months of July through October. Some individual hauls can occur outside of the highlighted areas. 200 m contour a dashed line.

General distribution of effort in 1992

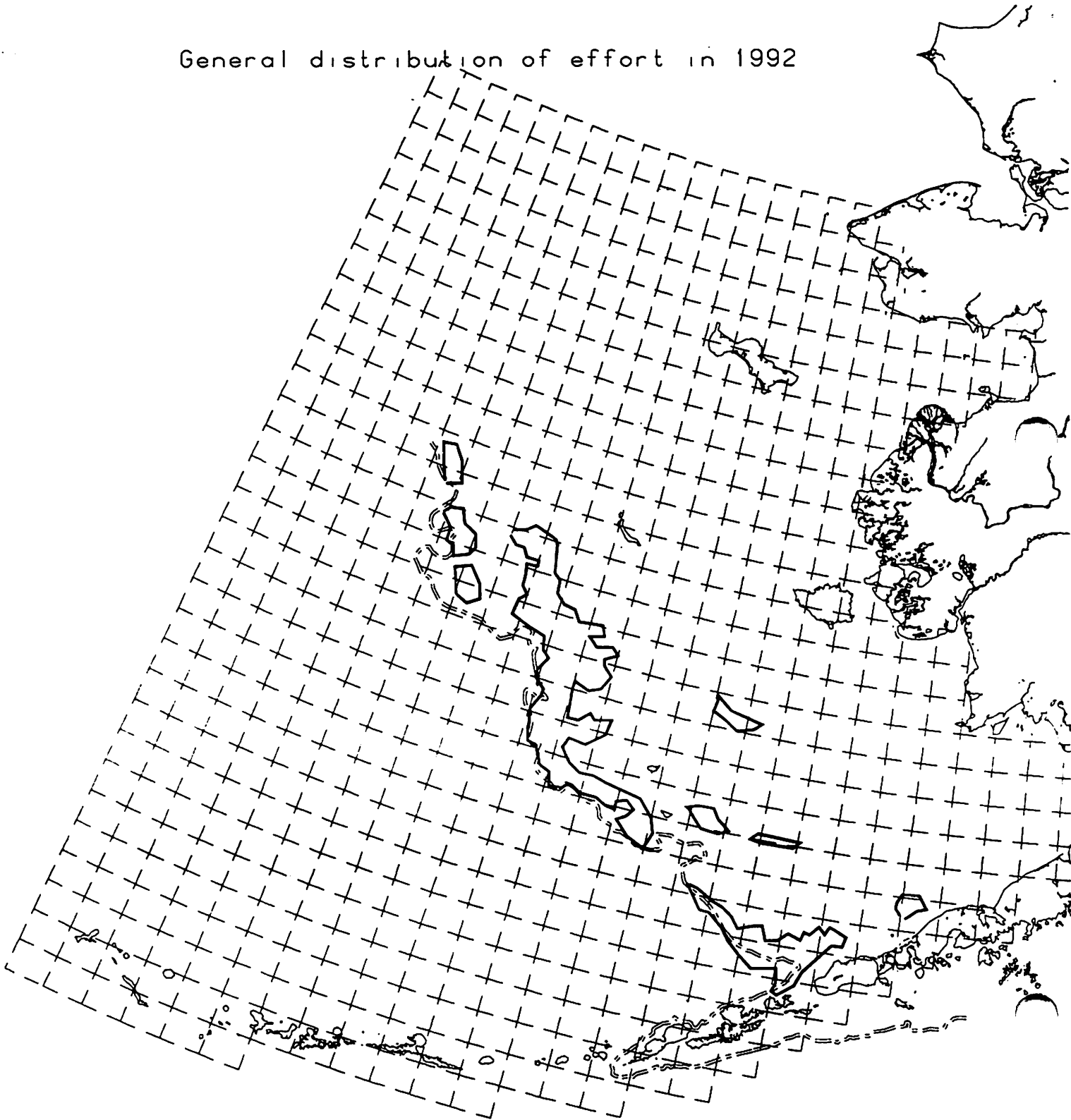


Figure 26. Location of observed trawls in the Bering Sea during the months of July through October in 1992 with an other salmon bycatch of more than 50 fish. The CVOA is highlighted and the 200 m contour is a dashed line.

July - October 1992, hauls with >50 other salmon

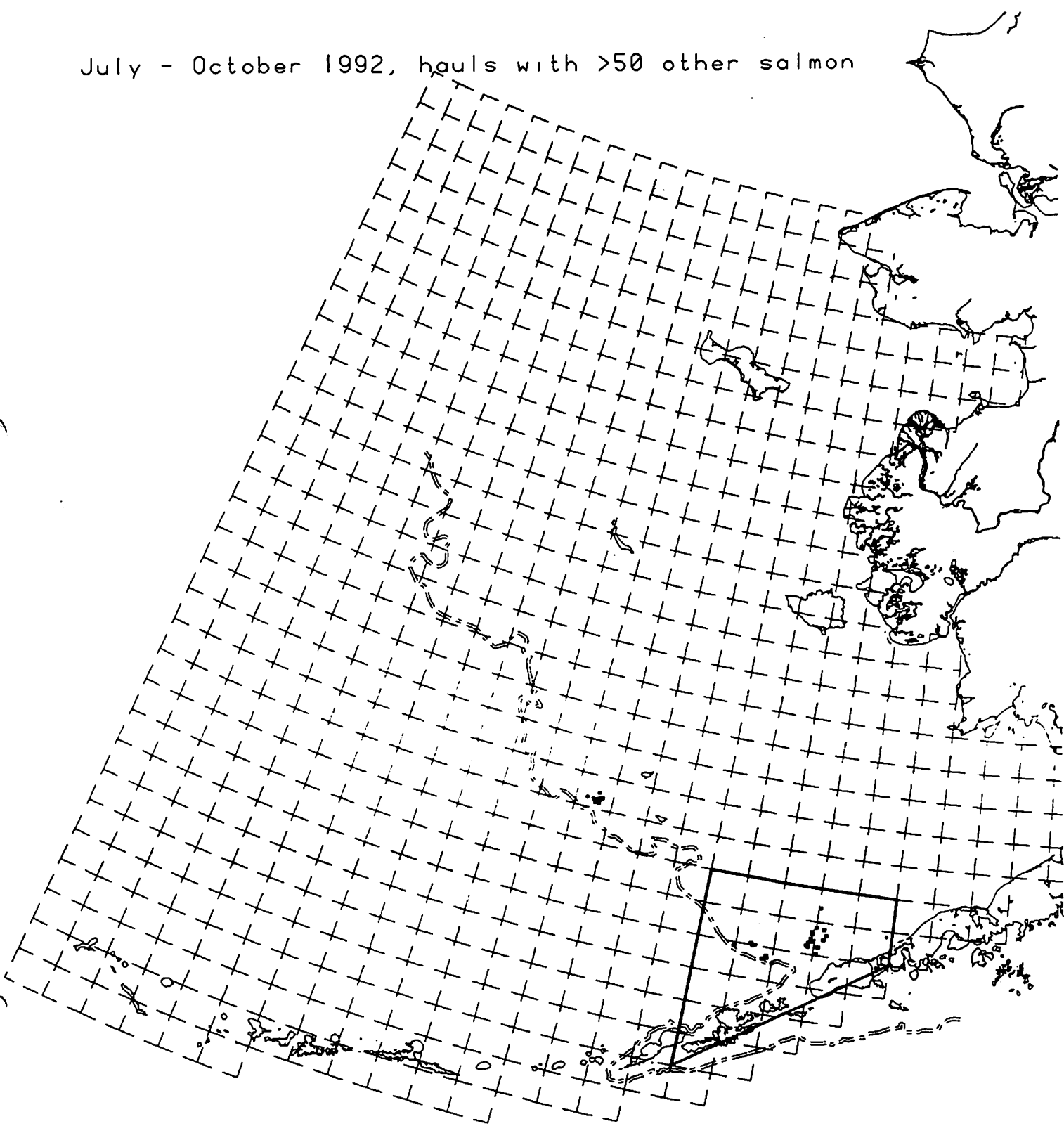


Figure 27. Outline of main concentration of observed trawls operating in the Bering Sea in 1993 during the months of July through October. Some individual hauls can occur outside of the highlighted areas. 200 m contour a dashed line.

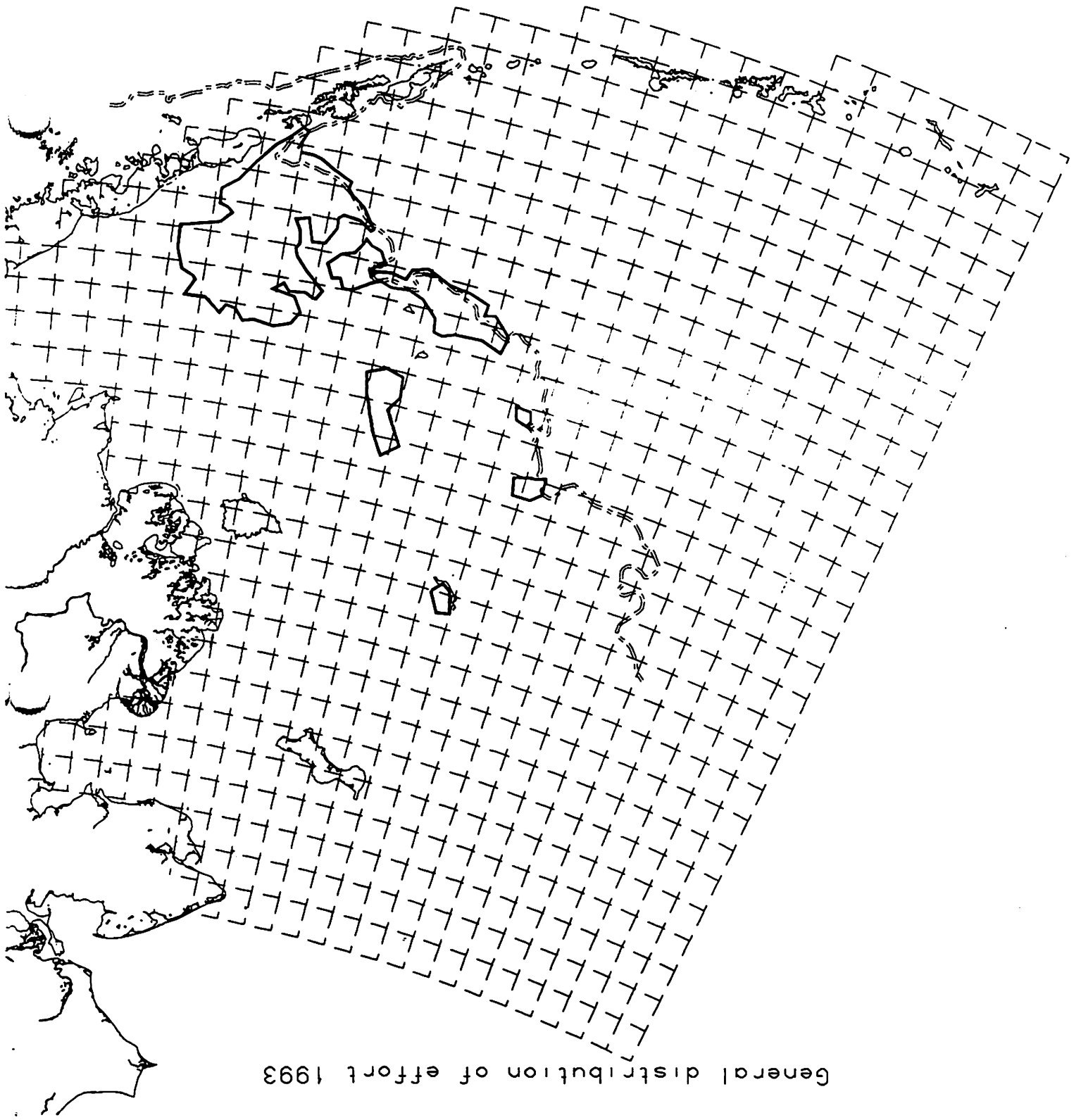


Figure 28. Location of observed trawls in the Bering Sea during the months of July through October in 1993 with an other salmon bycatch of more than 50 fish. The CVOA is highlighted and the 200 m contour is a dashed line.

July - October 1993 - hauls with >50 other salmon

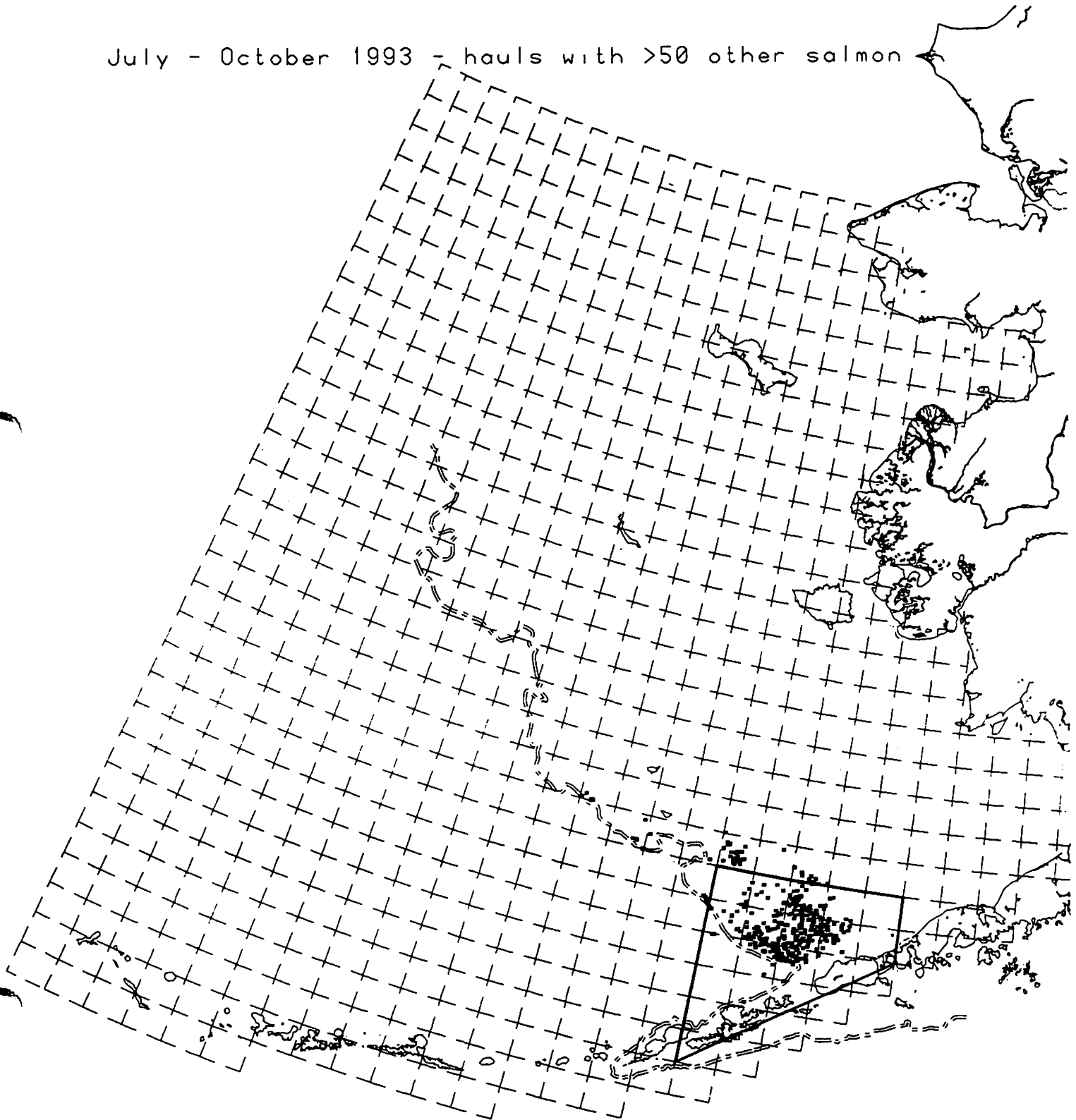


Figure 29. Top: Percentage of total annual groundfish catch from Bering Sea trawl fisheries by alternative areas. Bottom: Groundfish catch taken during the months July through October expressed as a percentage of total annual groundfish catch.

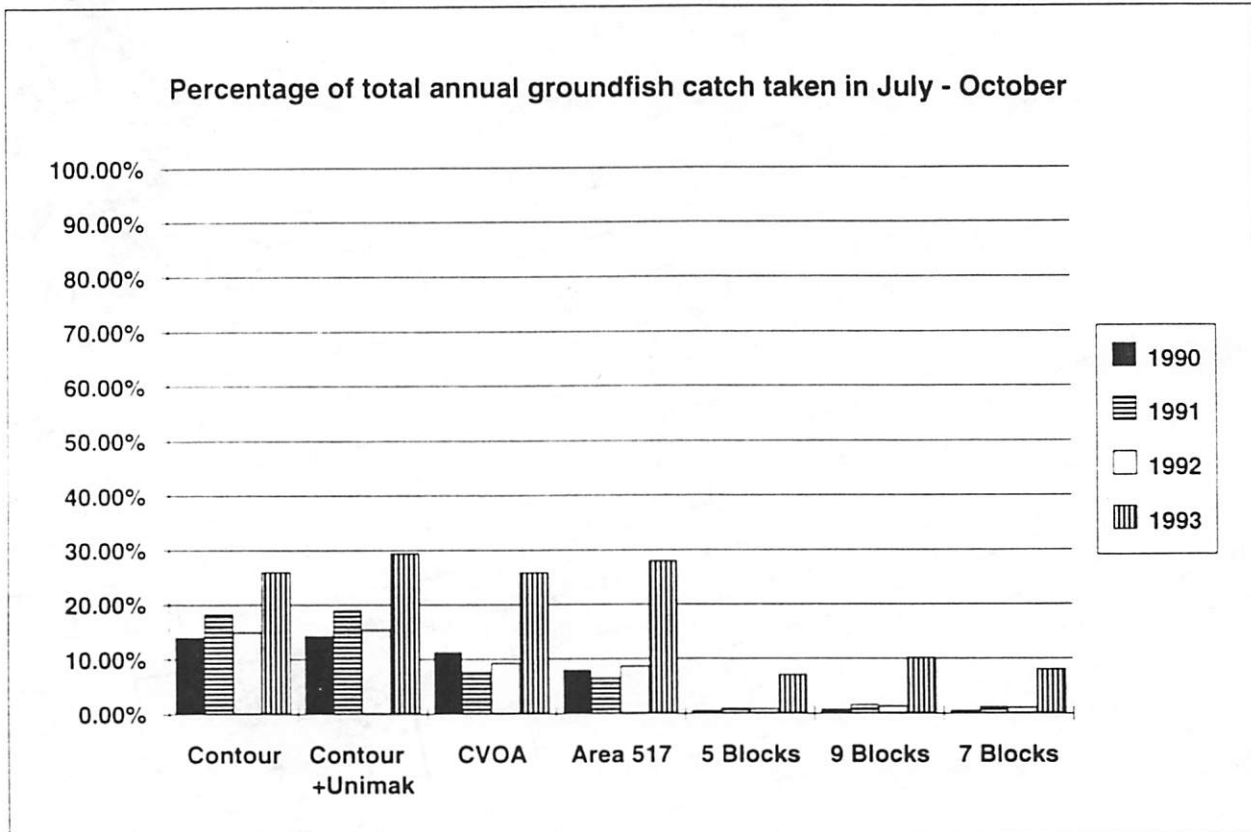
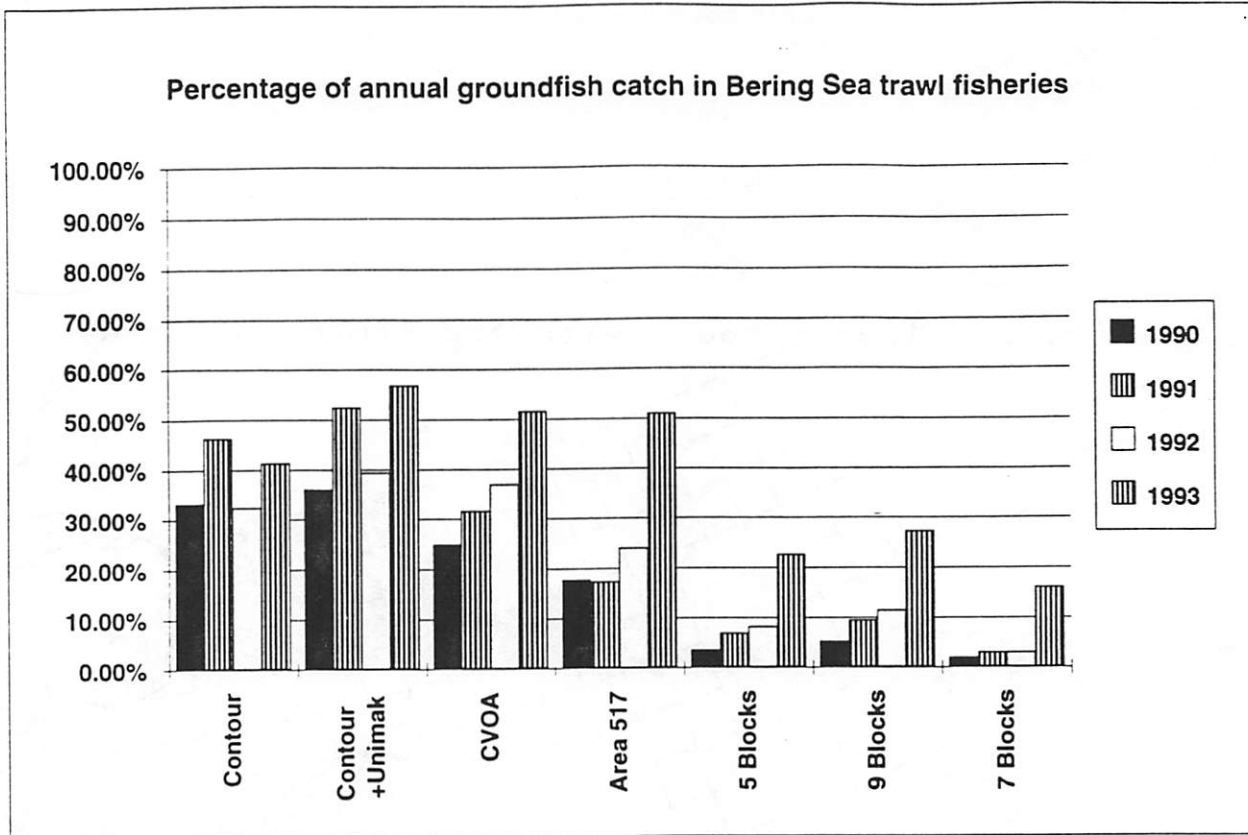


Figure 30. Top: Percentage of total annual other salmon bycatch from Bering Sea trawl fisheries by alternative areas. Bottom: Other salmon bycatch from the months July through October expressed as a percentage of total annual other salmon bycatch.

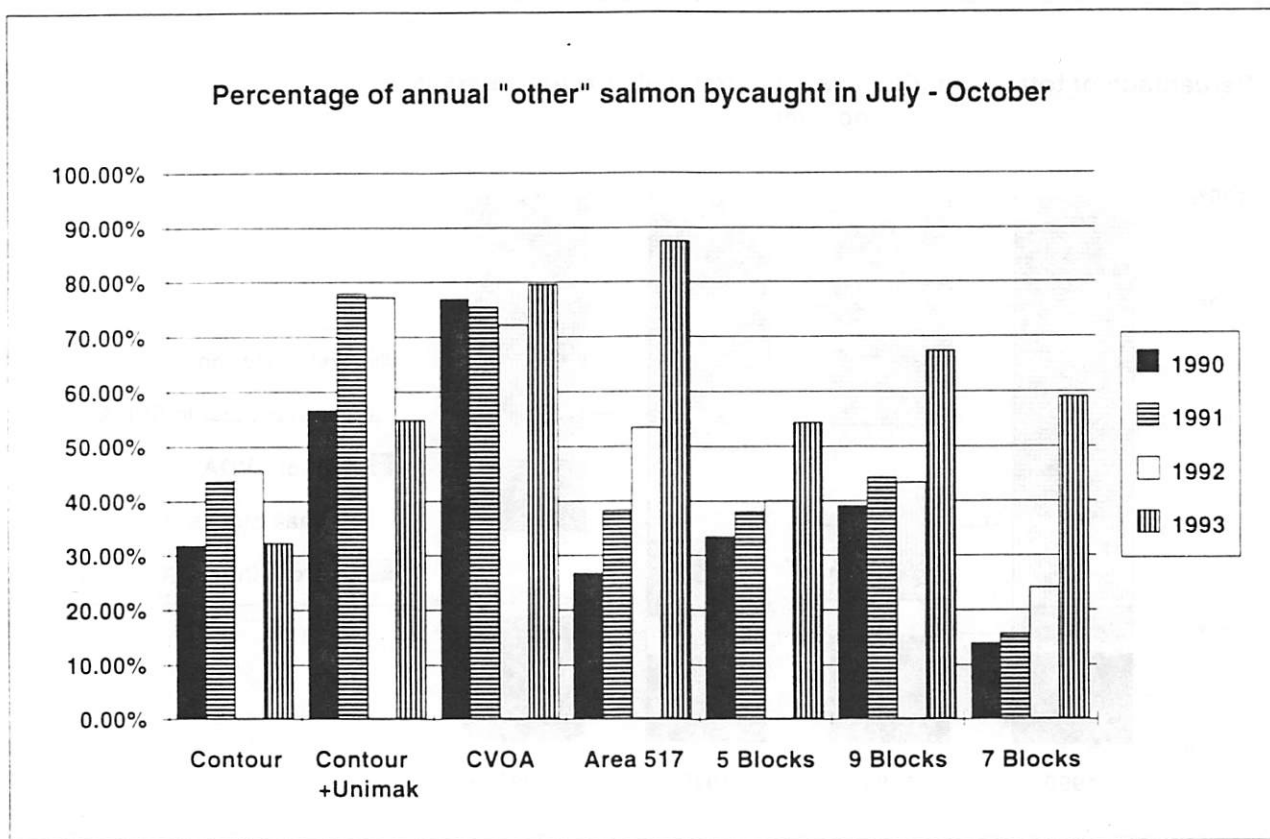
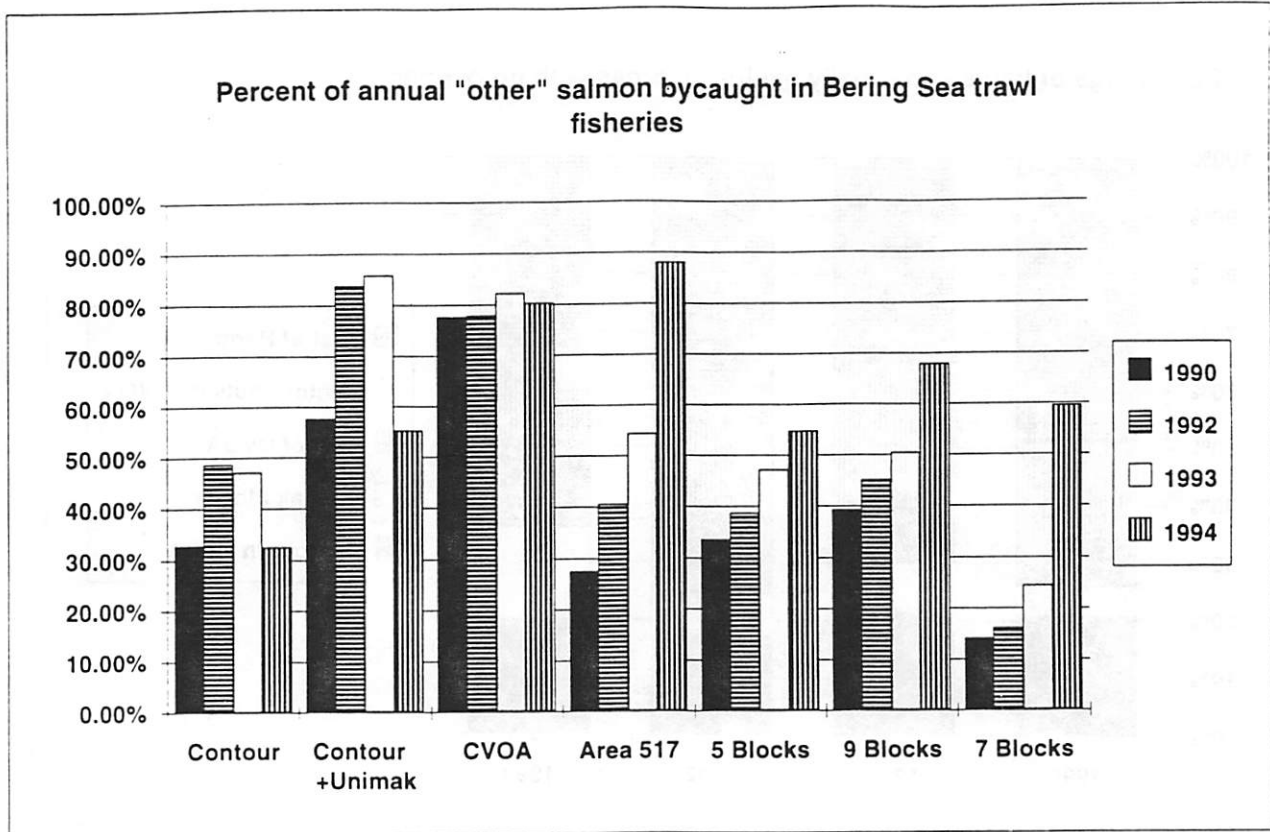


Figure 31. Bering Sea divided into 5 mutually exclusive areas. Top: The percentage of the number of annual hauls from each of 5 non-overlapping areas. Bottom: The percentage of total annual groundfish catch from each of 5 non-overlapping areas.

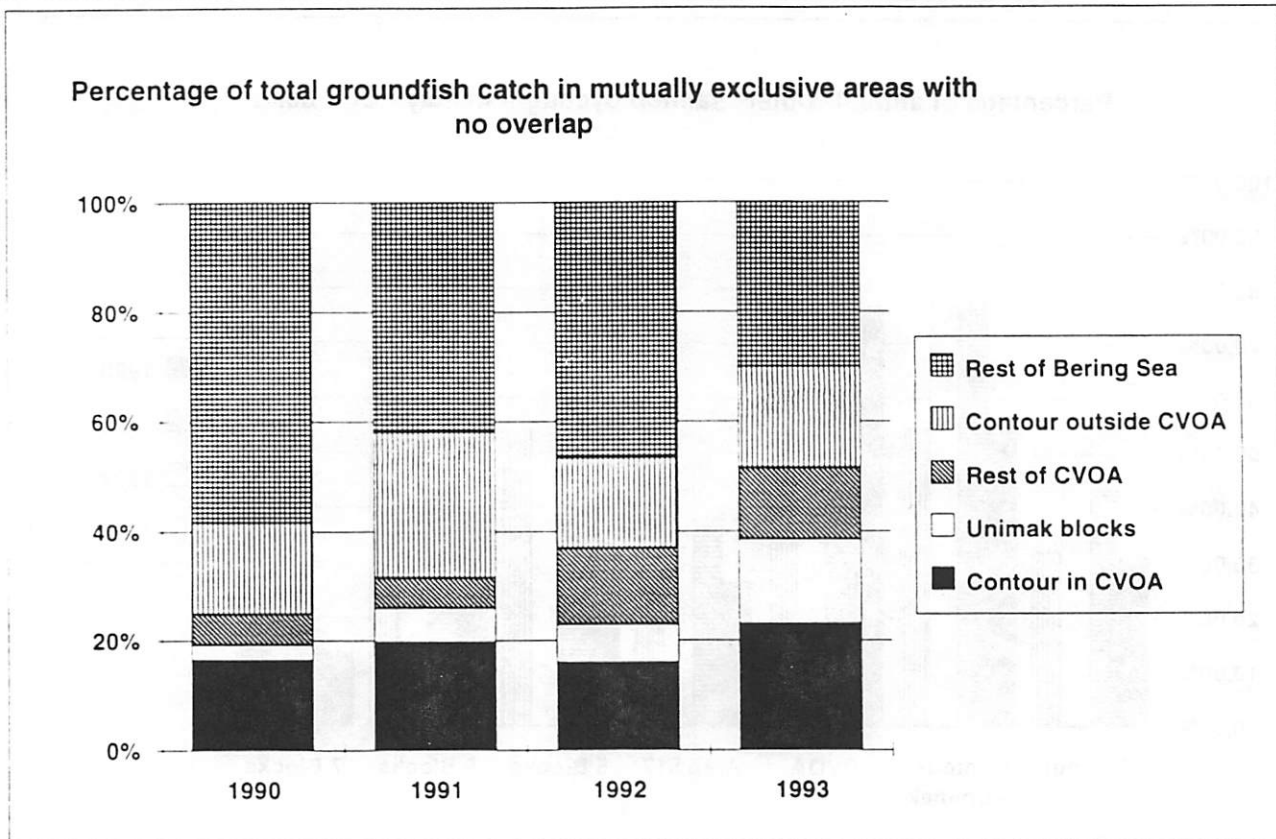
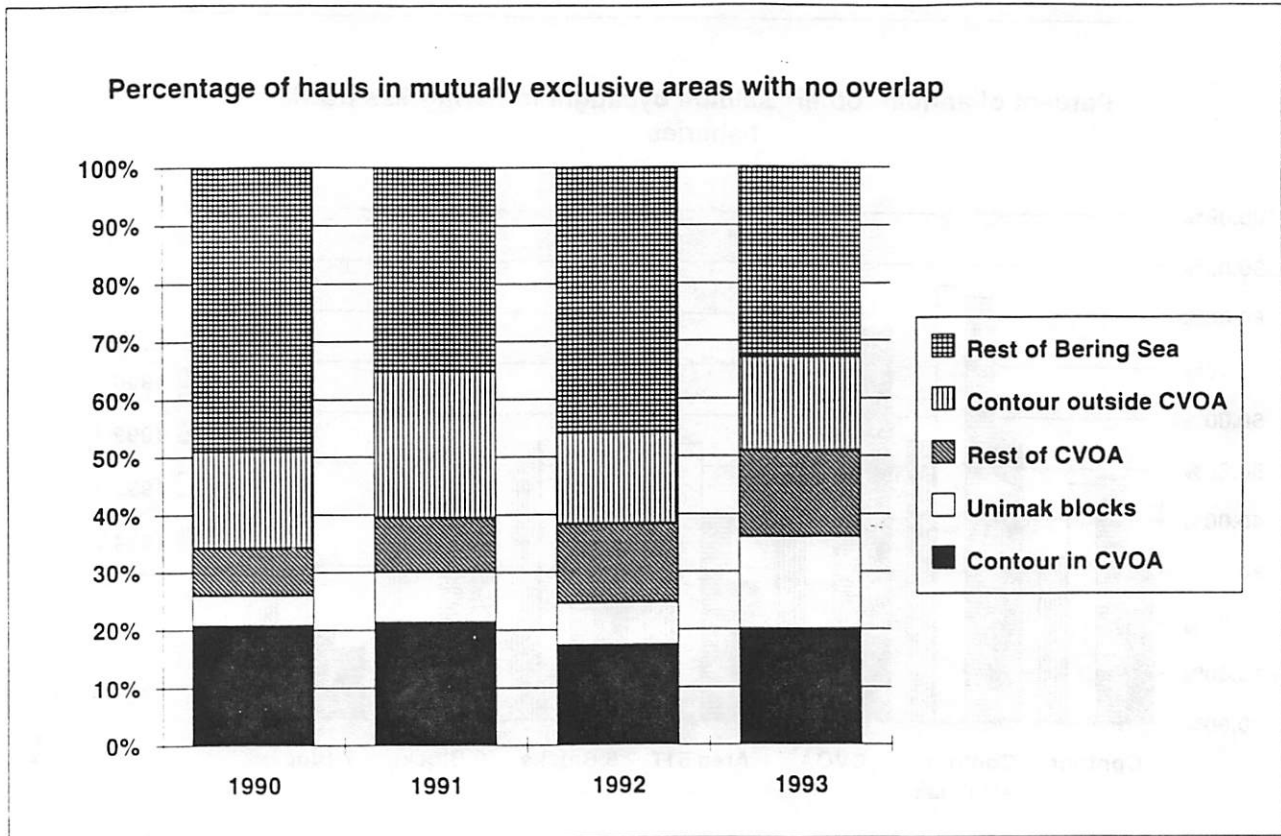
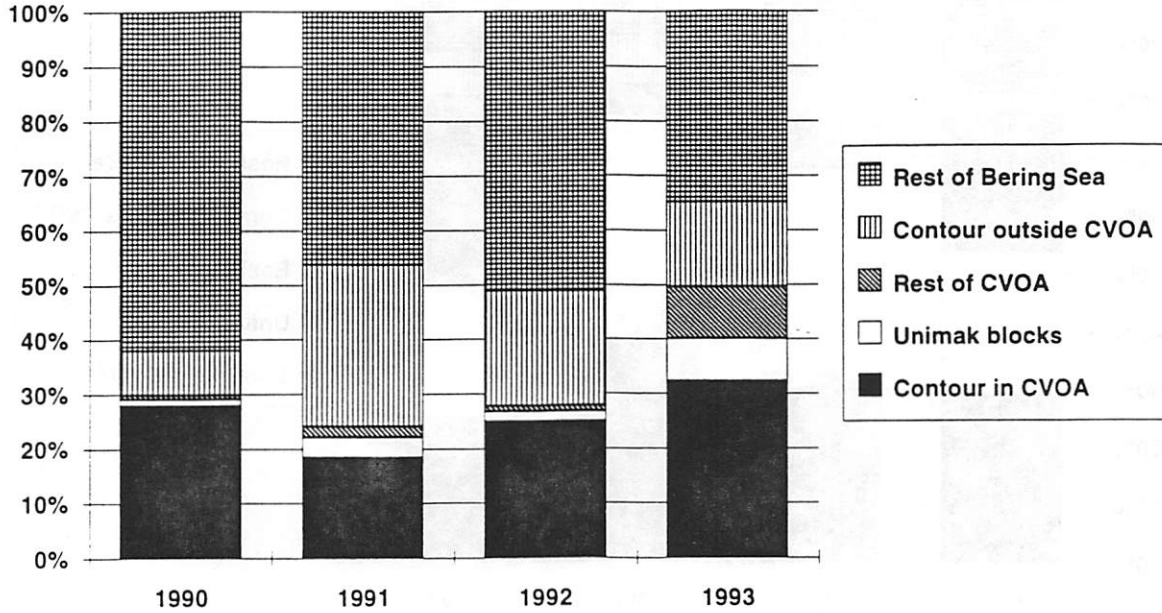


Figure 32. Bering Sea divided into 5 mutually exclusive areas. Top: The percentage of the number of annual hauls from each of 5 non-overlapping areas during July-October. Bottom: The percentage of total annual groundfish catch from each of 5 non-overlapping areas during July-October.

Percentage of hauls - July - October in mutually exclusive areas with no overlap



Percentage of total groundfish catch - July - October. In mutually exclusive areas with no overlap

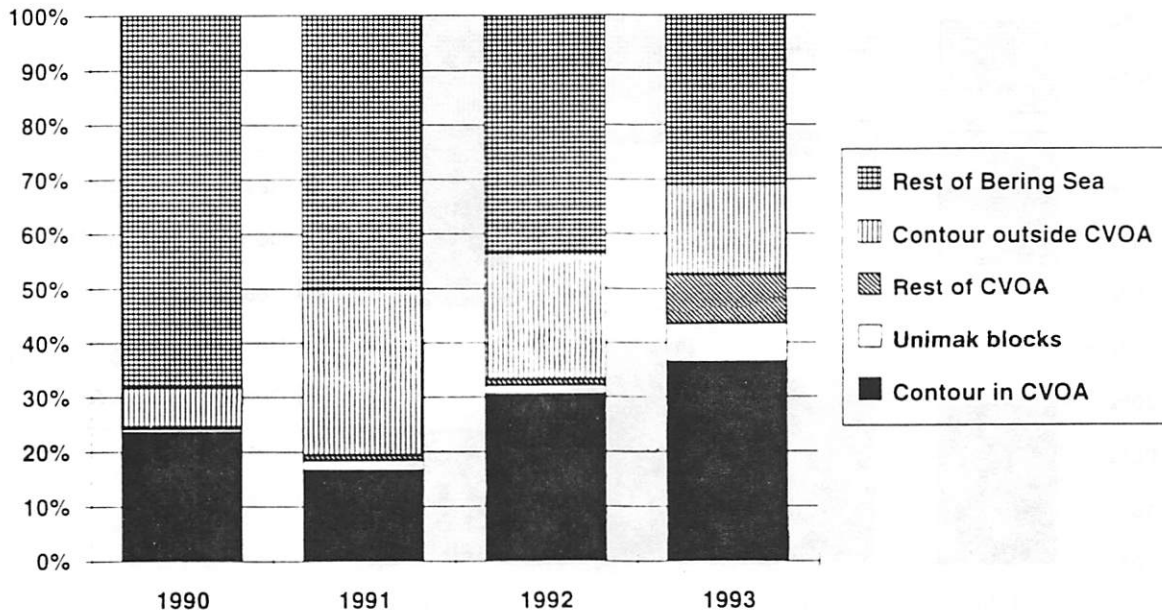
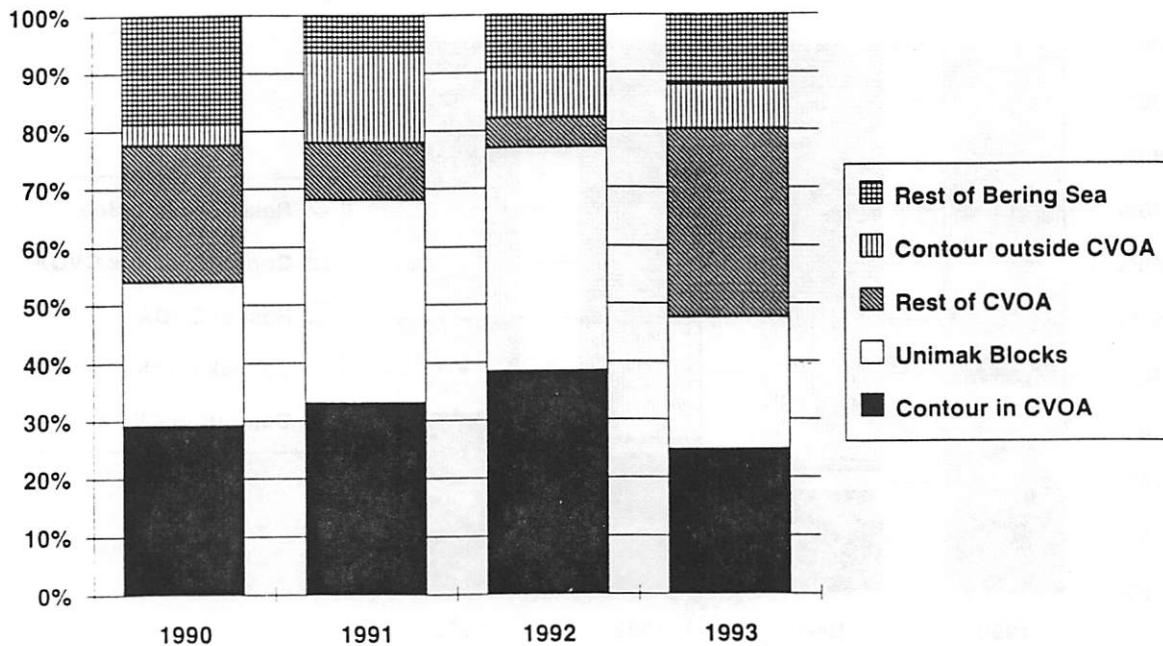


Figure 33. Bering Sea divided into 5 mutually exclusive areas. Top: The percentage of other salmon bycaught in each of 5 non-overlapping areas. Bottom: The percentage of total annual other salmon bycatch taken in each of 5 non-overlapping areas during the months July-October.

Percentage of Other salmon in mutually exclusive areas with no overlap



Percentage of Other salmon by area -July - October. In mutually exclusive areas with no overlap.

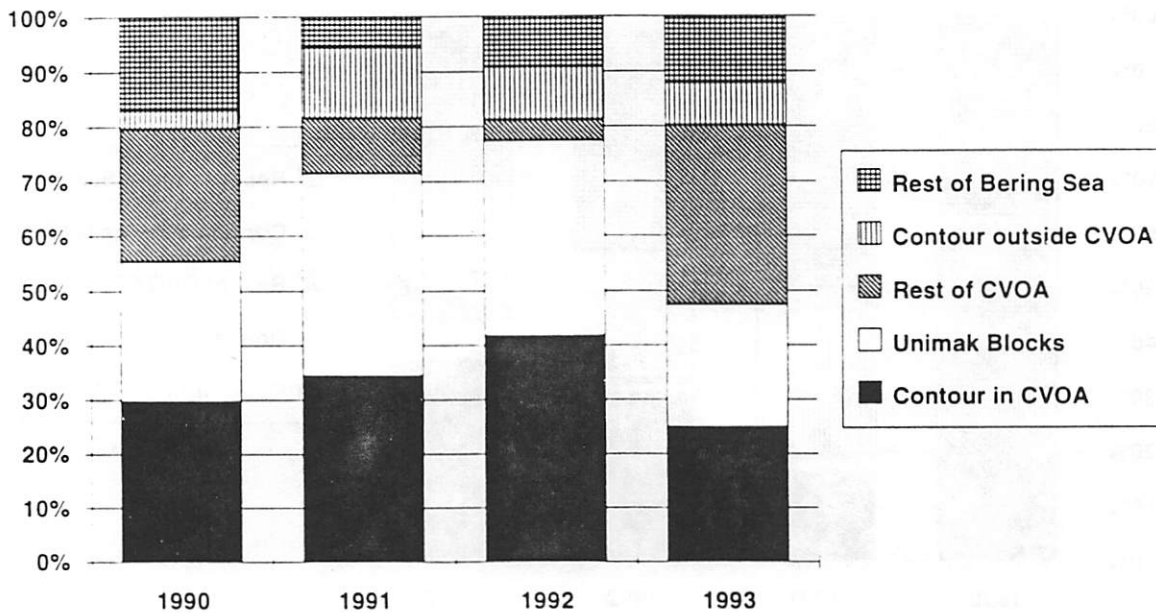


Figure 34.

Reproduced from: McRoy et al. 1985. "The shelf of the Bering Sea showing the approximate locations (X X X X X) of the inner (ca. 50 m isobath), middle (ca. 100 m isobath) and shelf-break (ca. 170 m isobath) fronts which divide the shelf into distinct oceanographic domains".

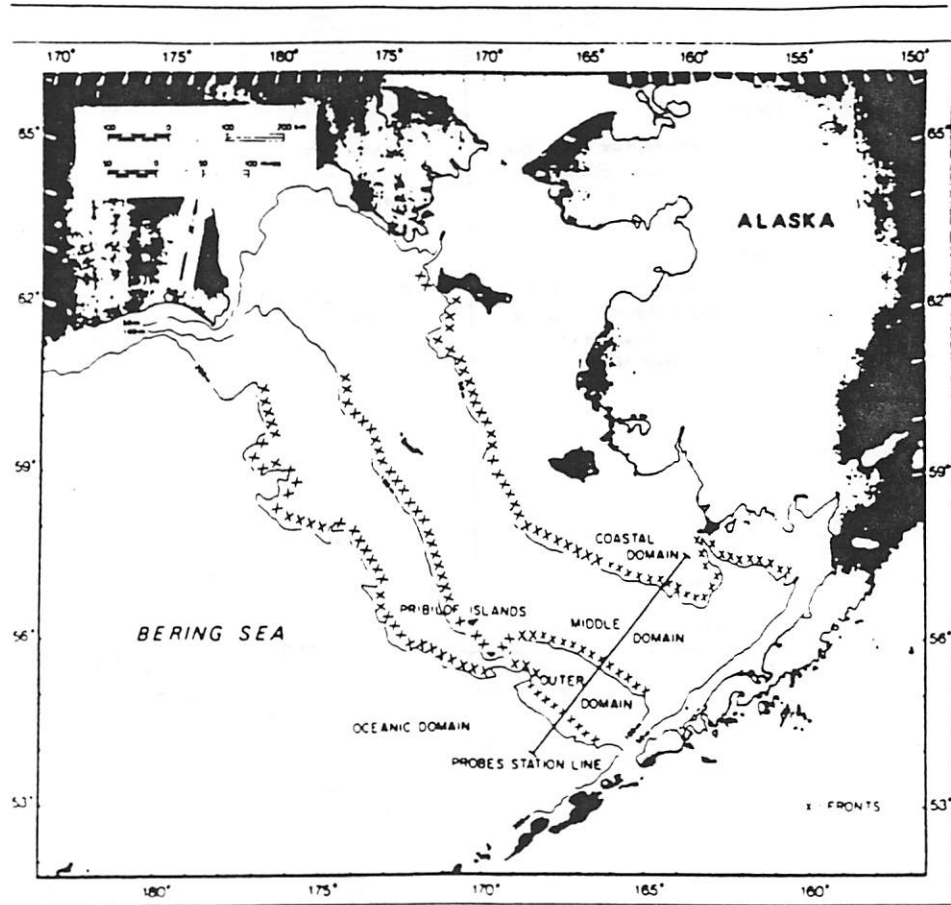


Figure 35.

Reproduced from: McRoy et al. 1985. "The consequences of the Cross-Shelf Model applied to organic matter partitioning and subsequent distributions of zooplankton and seabirds (Modified from Niebauer et al. 1981)".

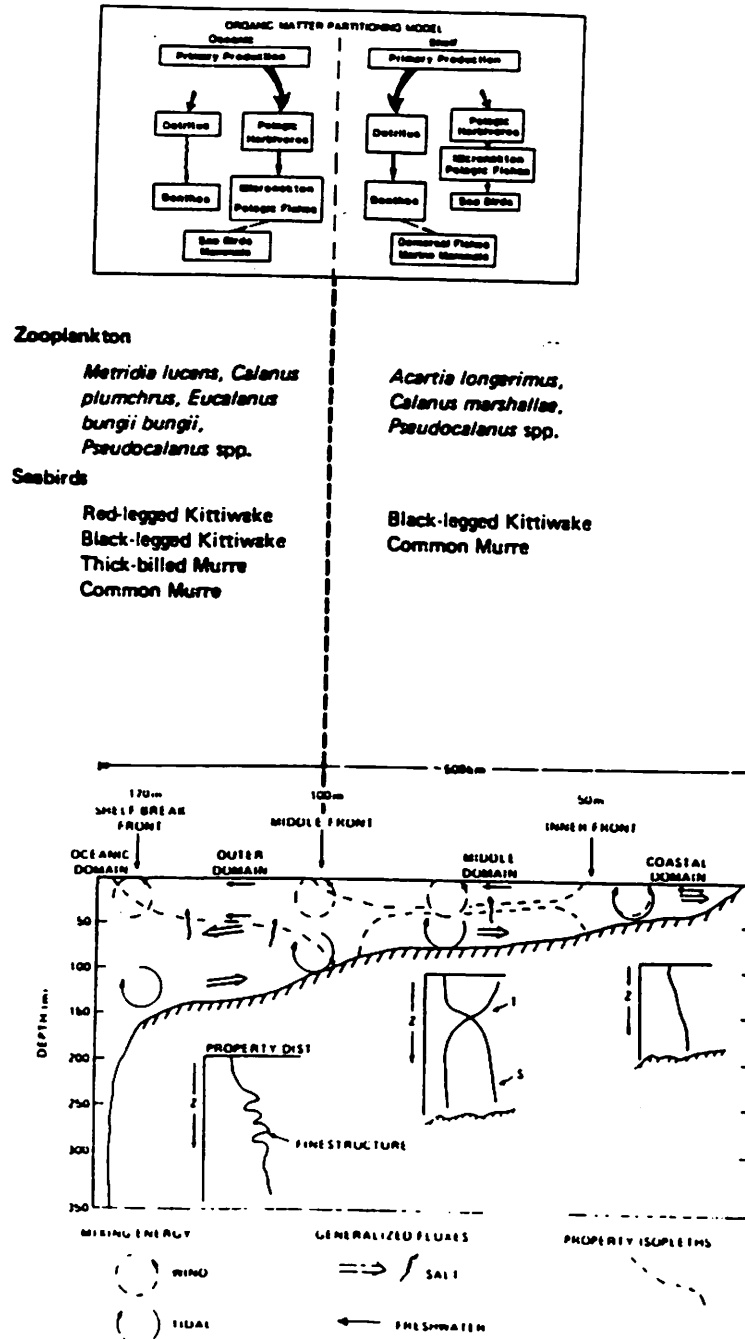


Figure 36.

Rate of bycatch by area expressed as the number of other salmon bycaught per metric ton of groundfish catch. For the months of July through October in defined areas in the Bering Sea.

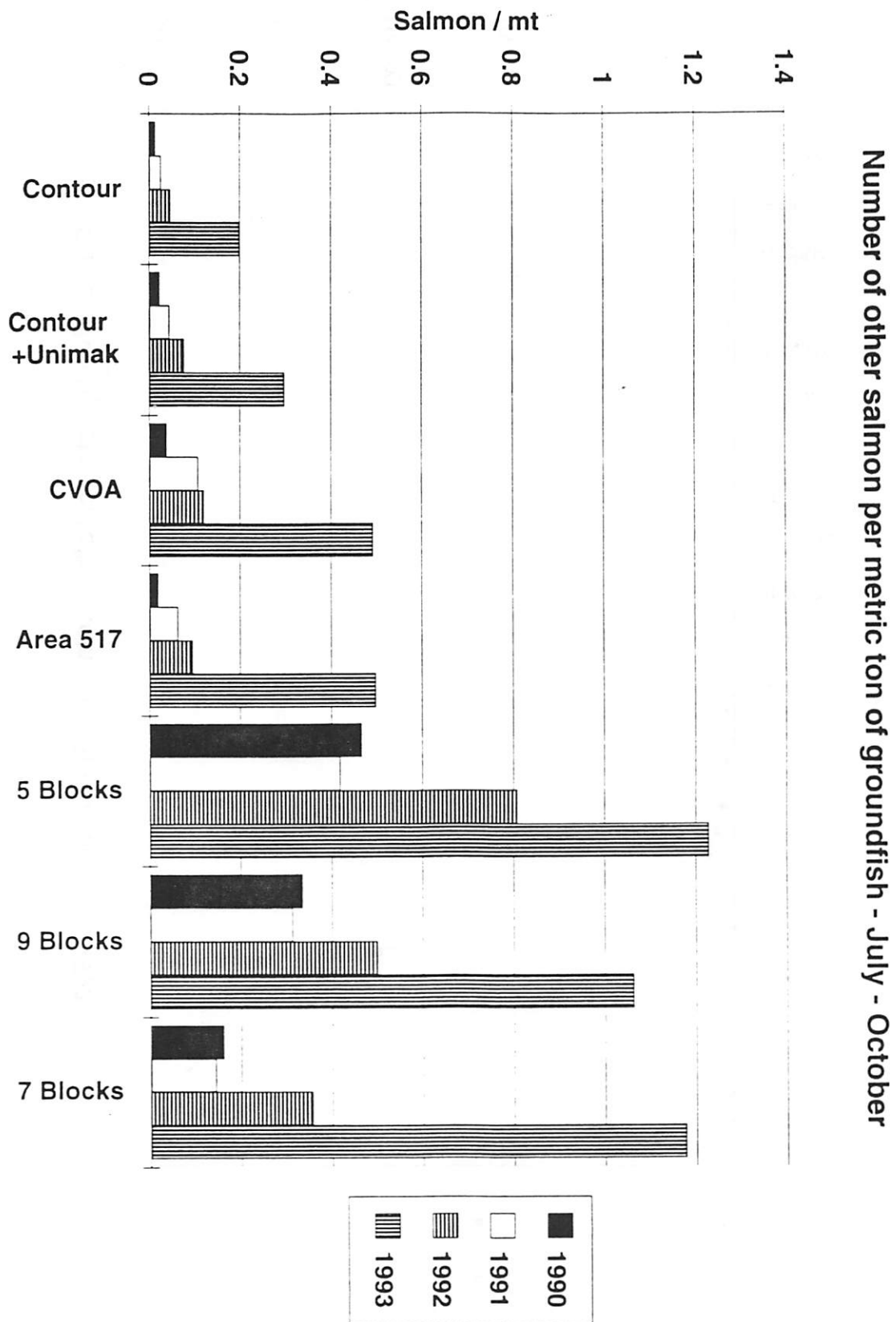


Figure 37.

Cumulative weekly bycatch of other salmon from the Bering Sea trawl fisheries in 1994 as reported on the NMFS Bulletin Board for identified target species.

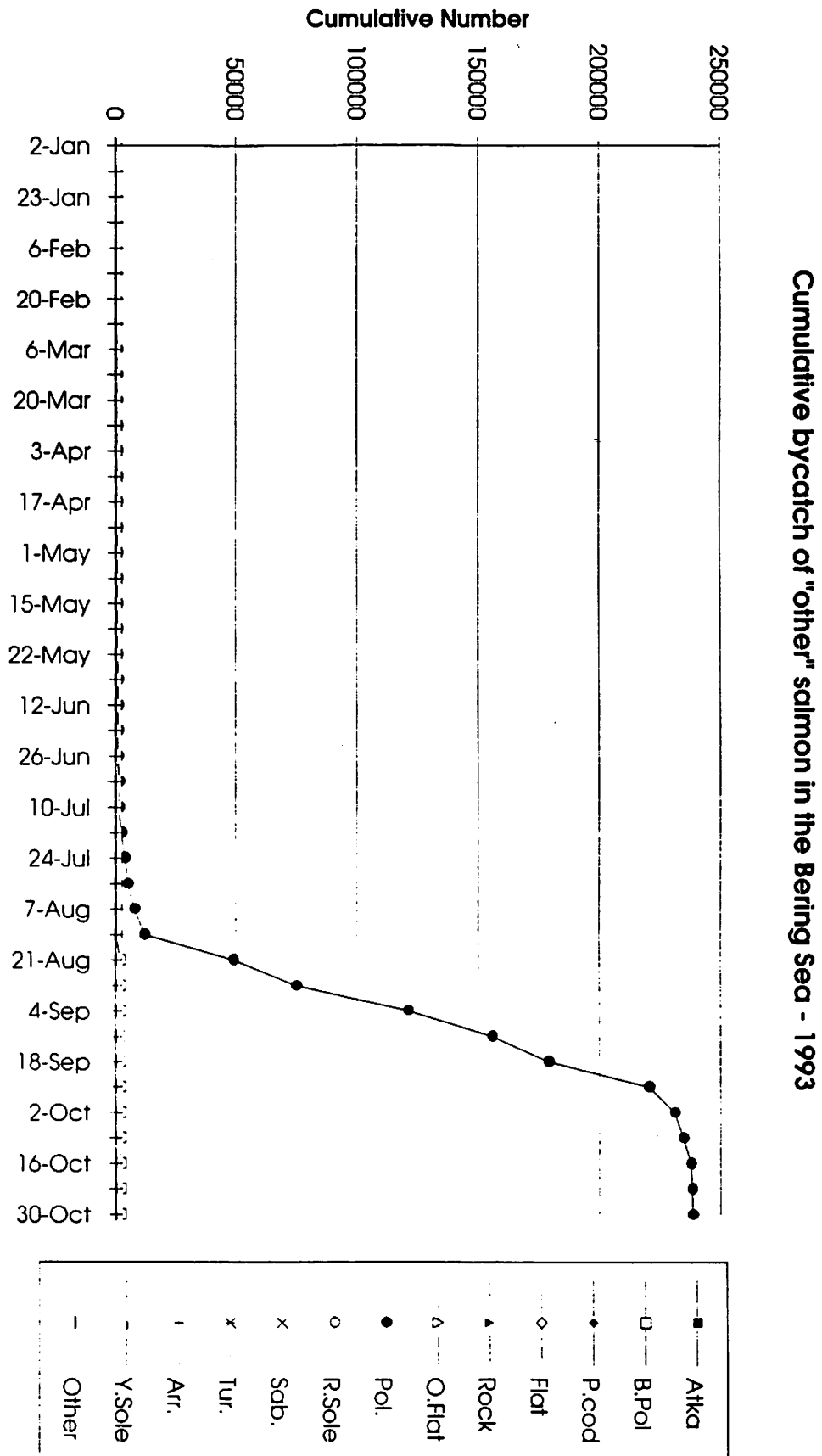


Figure 38.

Bycatch of chinook salmon in the trawl fisheries of the Bering Sea as reported by the NMFS observer program. Domestic reporting (since 1989) from the NMFS Bulletin Board.

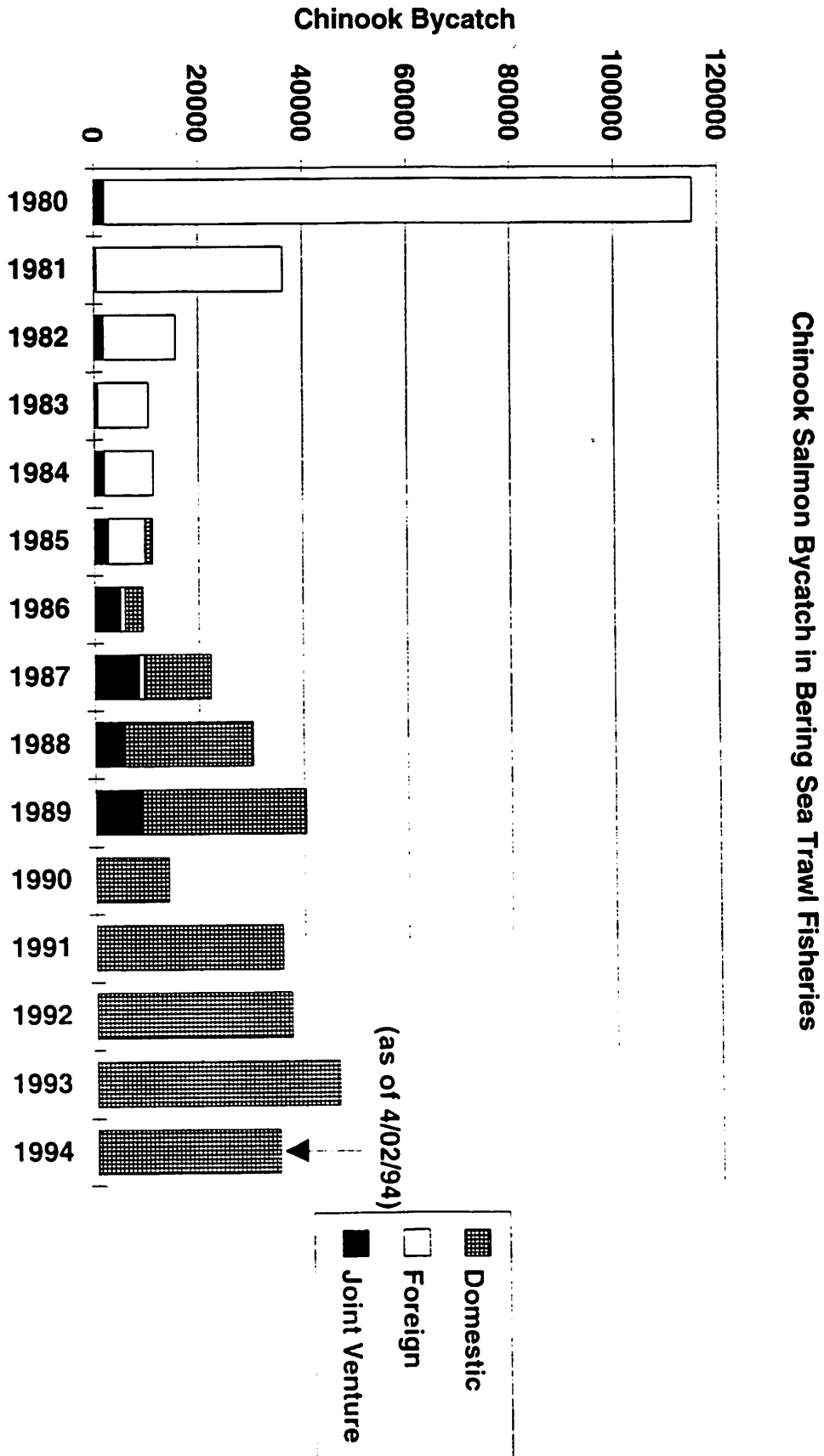


Figure 39. Cumulative weekly chinook salmon bycatch from trawl fisheries in the Bering Sea from 1990 to 4/2/94. (note: data for the final weeks of 1993 not reported ≈5-6,000 fish).

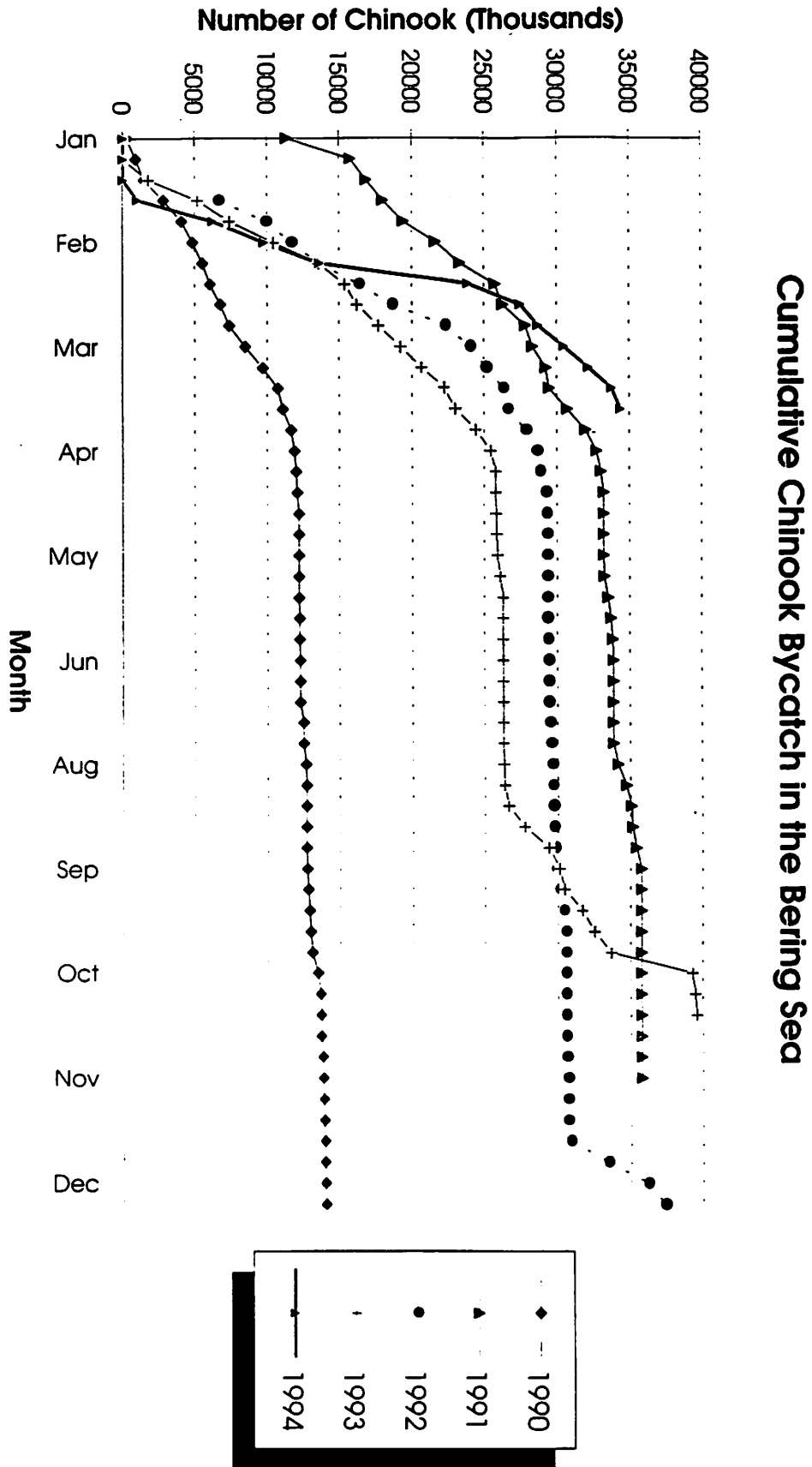


Figure 40. Hauls with a chinook salmon bycatch of more than 20 fish during the years 1990 - 1993 are plotted as dots. 200 m contour, contour buffer, and CVOA borders are indicated. $1/2^\circ$ latitude by 1° longitude blocks with higher salmon bycatch are identified with cross-hatch.

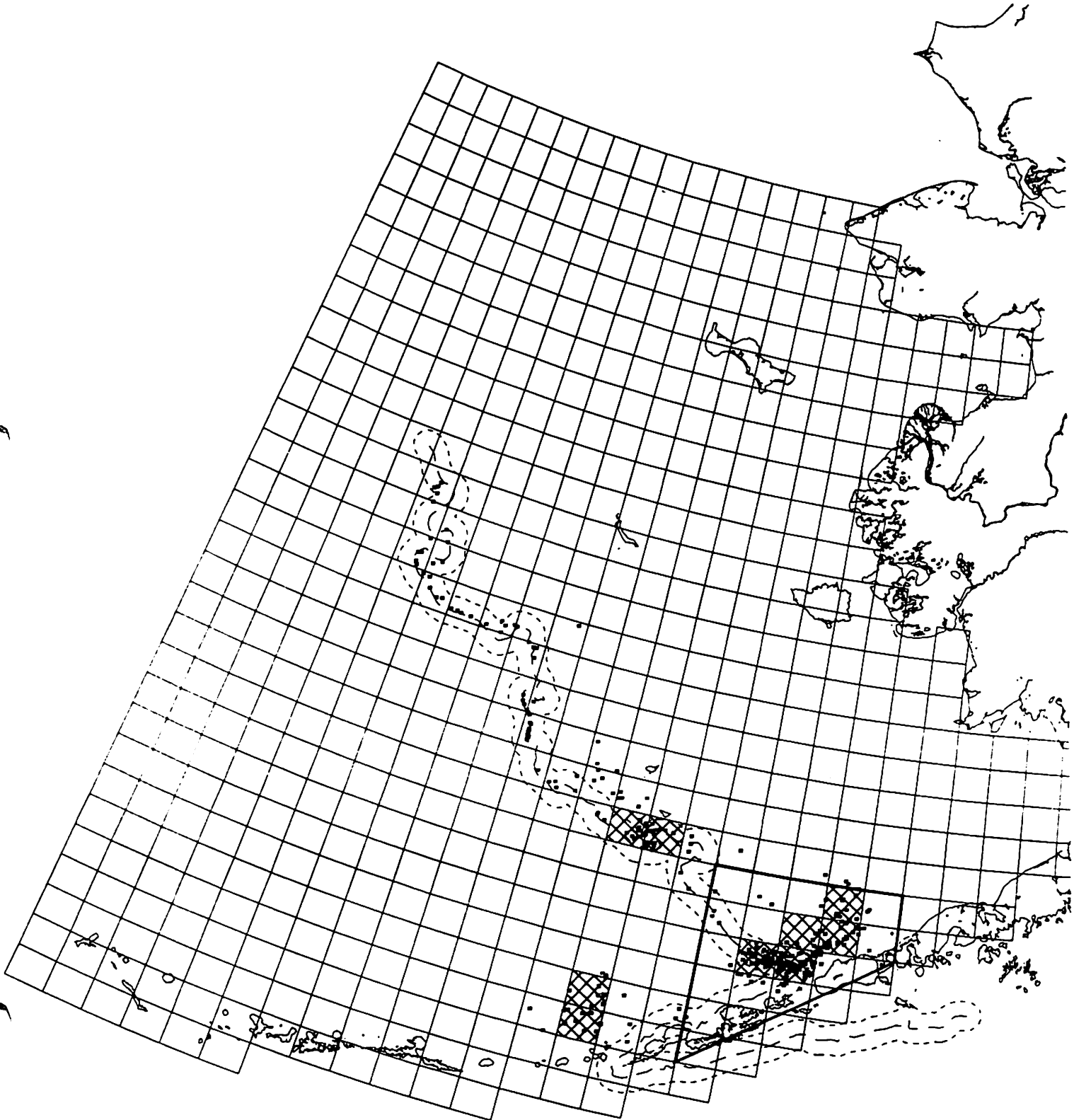


Figure 41. 8 blocks identified with high chinook salmon bycatch as in Figure 40.

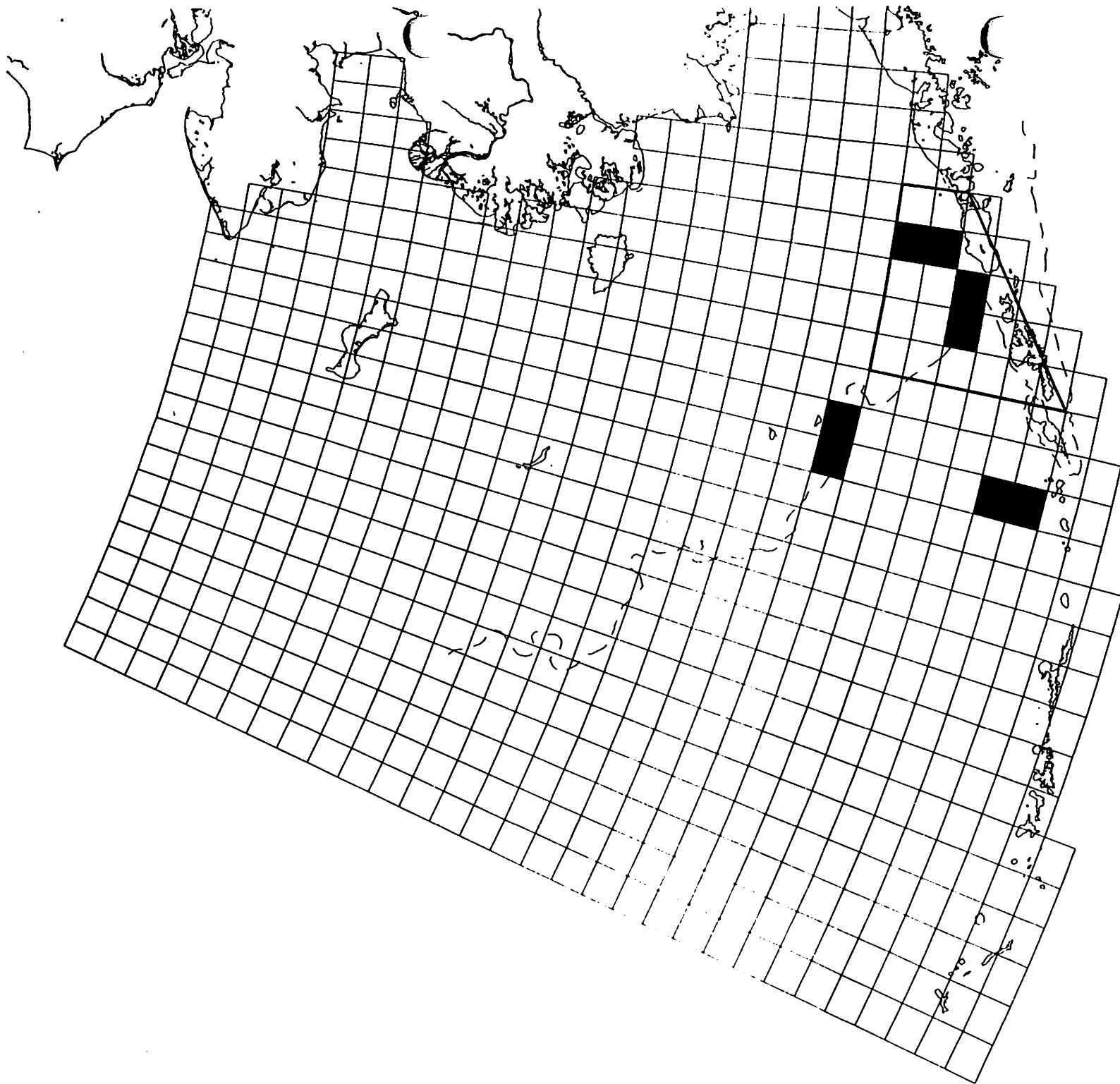


Figure 42. 9 blocks identified with high chinook salmon bycatch as in Figure 40.

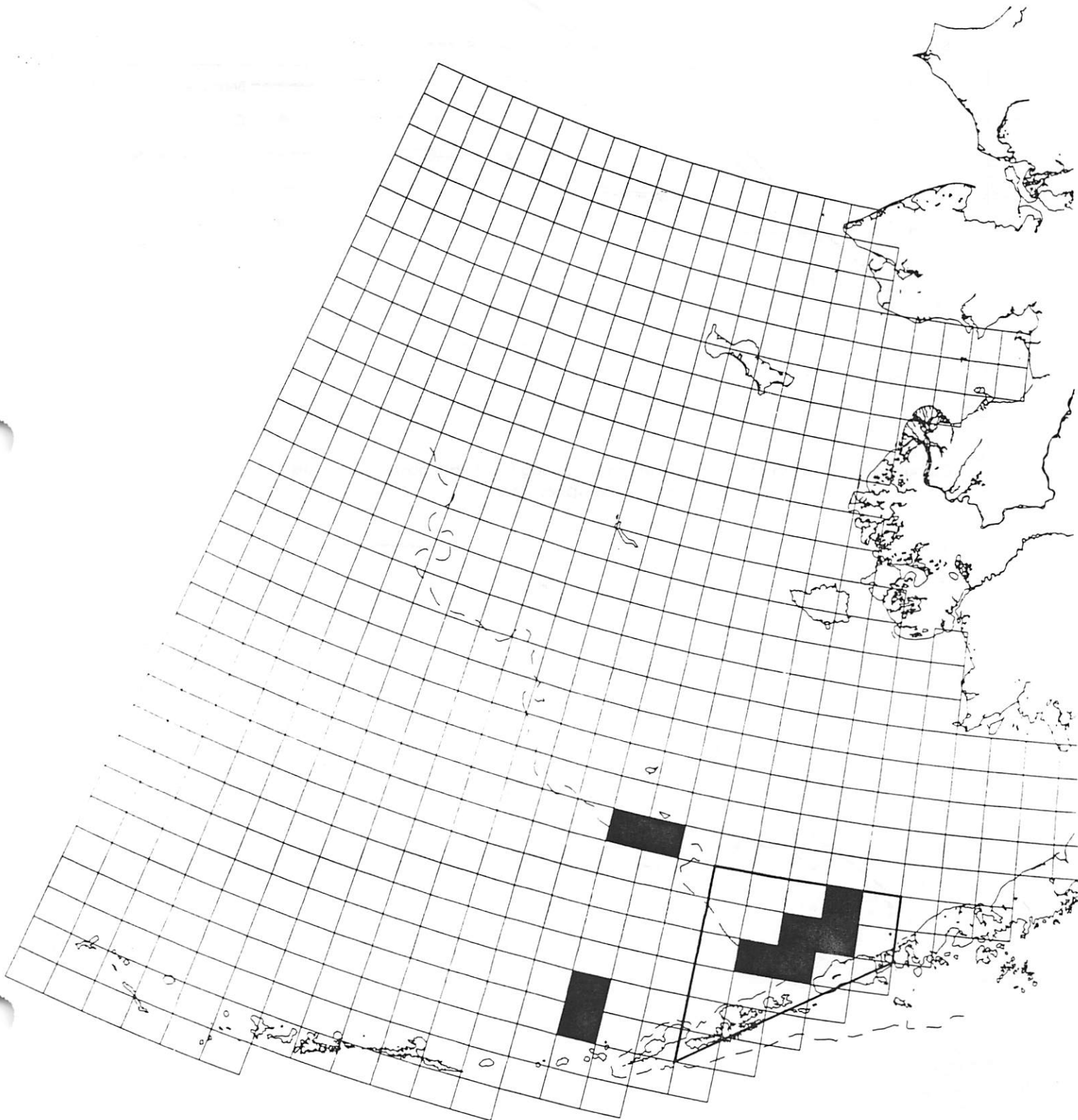


Figure 43. Top: Chinook salmon bycatch from 1990 for the months of January - April and September - December expressed as a percentage of the total for that period. Bottom: Cumulative percent of groundfish catch over the same period. The five identified areas can include portions of other areas (e.g. portions of the contour are contained in the 9 blocks).

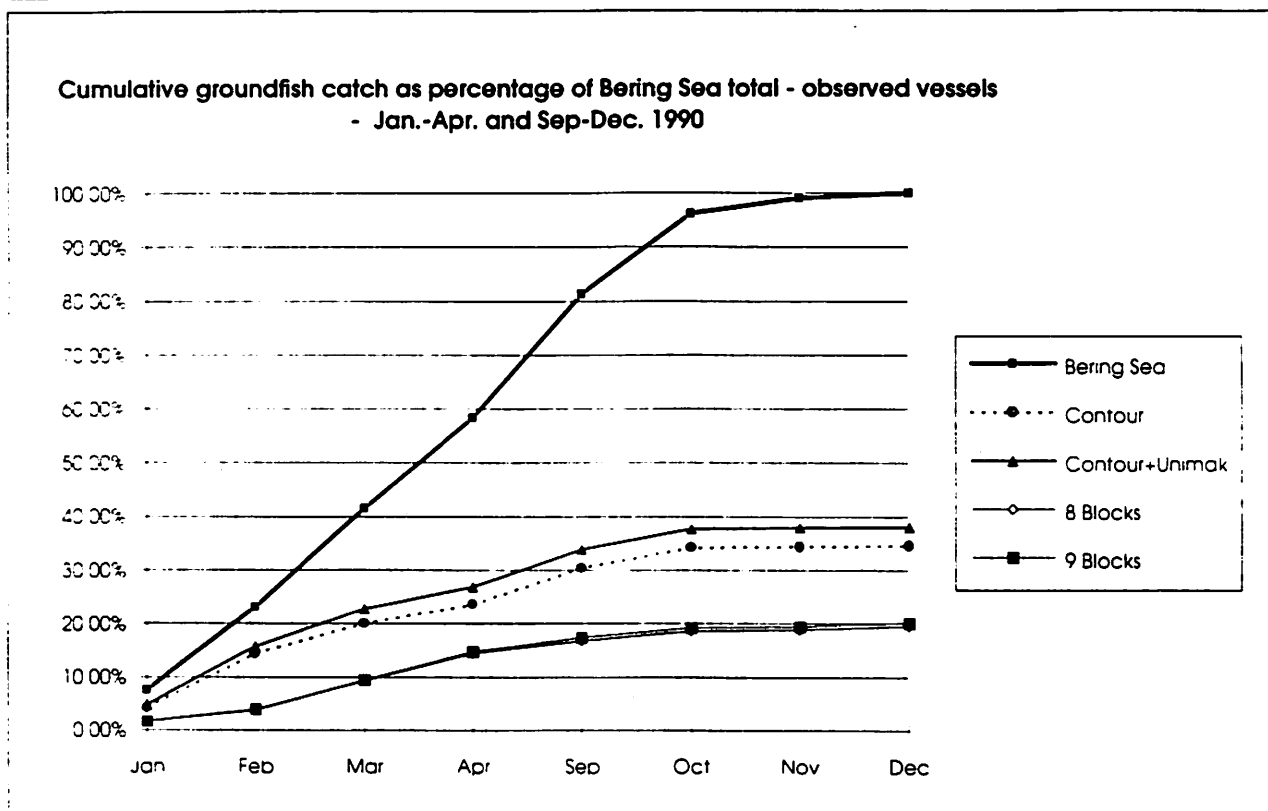
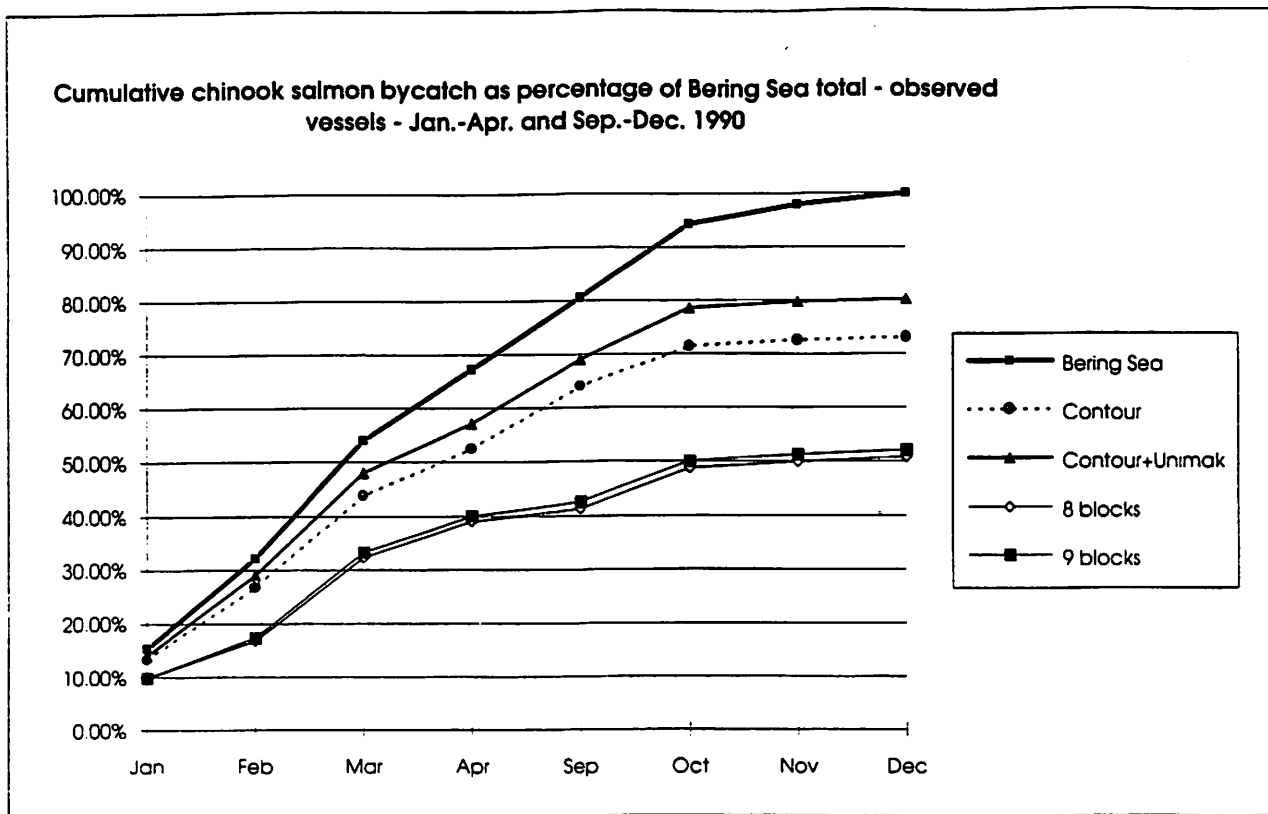


Figure 44. Top: Chinook salmon bycatch from 1991 for the months of January - April and September - December expressed as a percentage of the total for that period. Bottom: Cumulative percent of groundfish catch over the same period. The five identified areas can include portions of other areas (e.g. portions of the contour are contained in the 9 blocks).

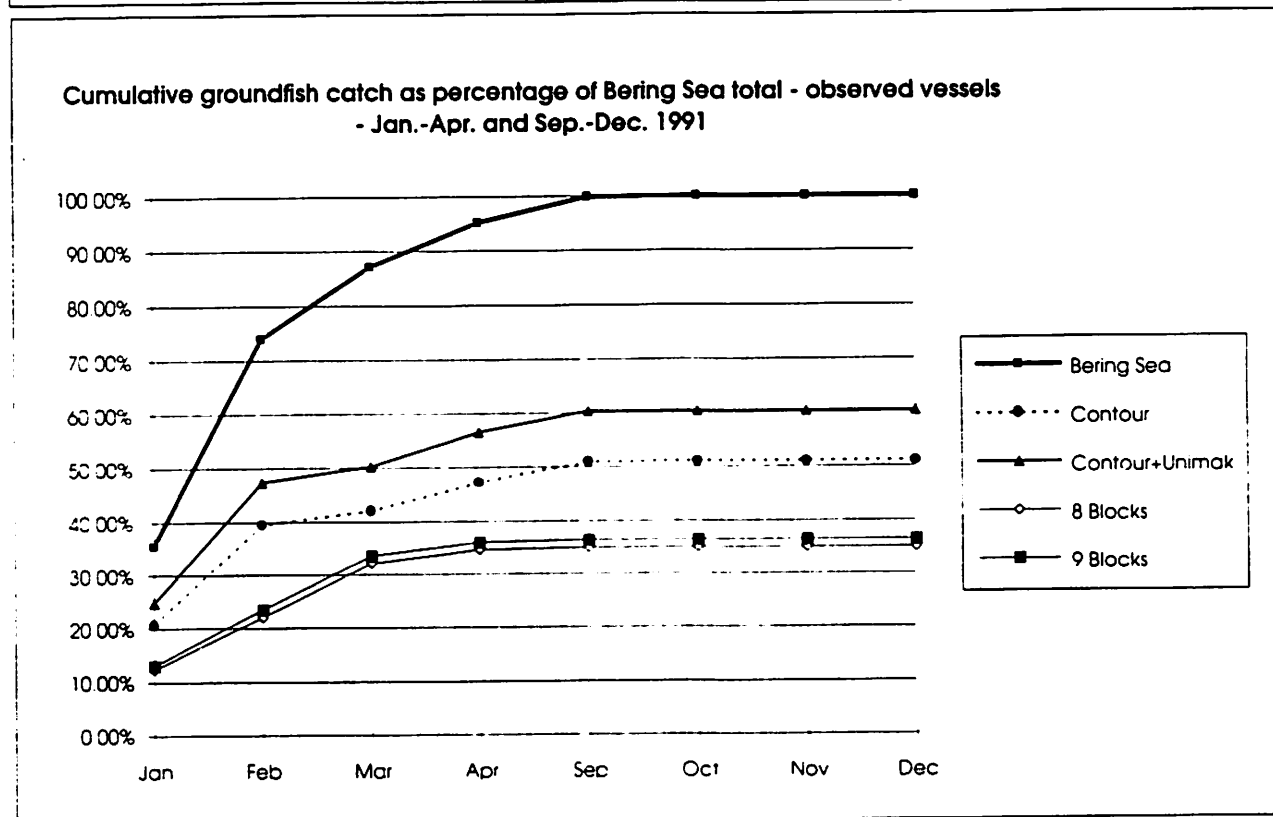
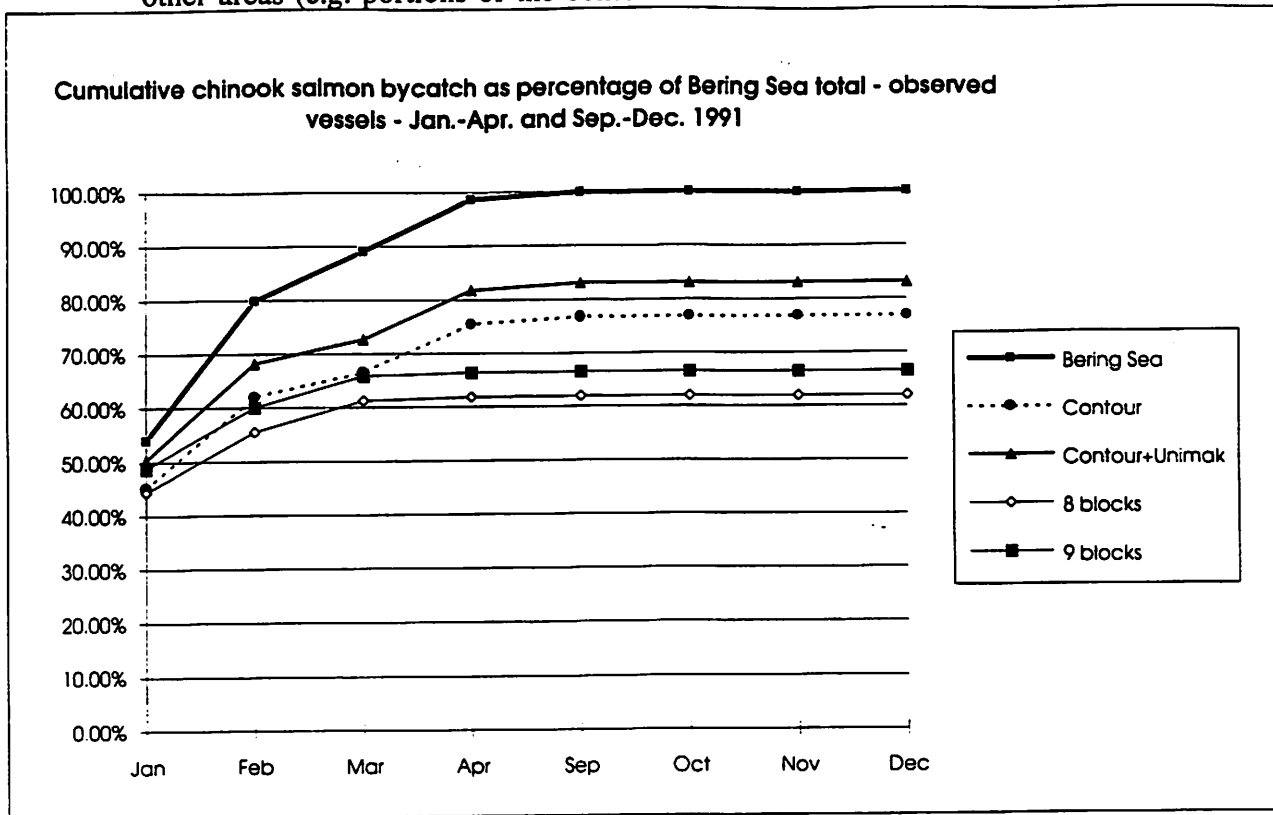


Figure 45.

Top: Chinook salmon bycatch from 1992 for the months of January - April and September - December expressed as a percentage of the total for that period. Bottom: Cumulative percent of groundfish catch over the same period. The five identified areas can include portions of other areas (e.g. portions of the contour are contained in the 9 blocks).

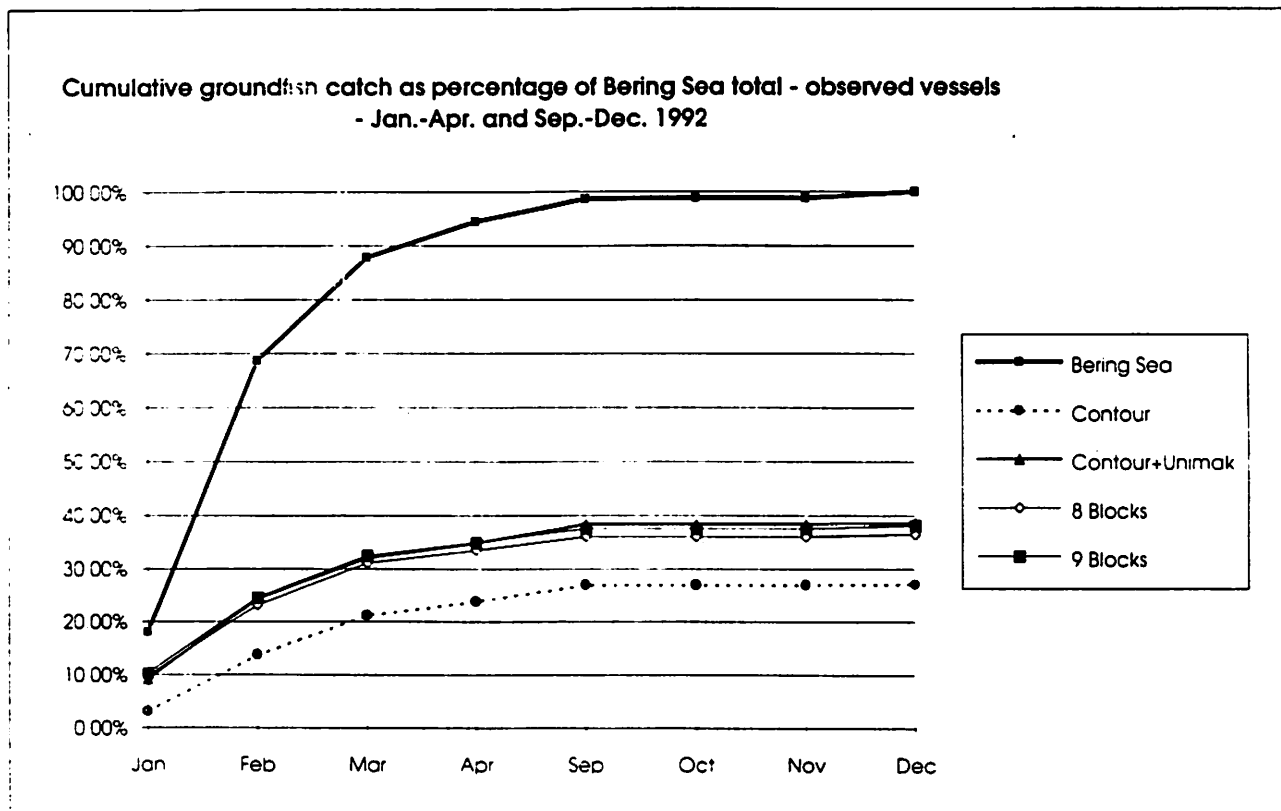
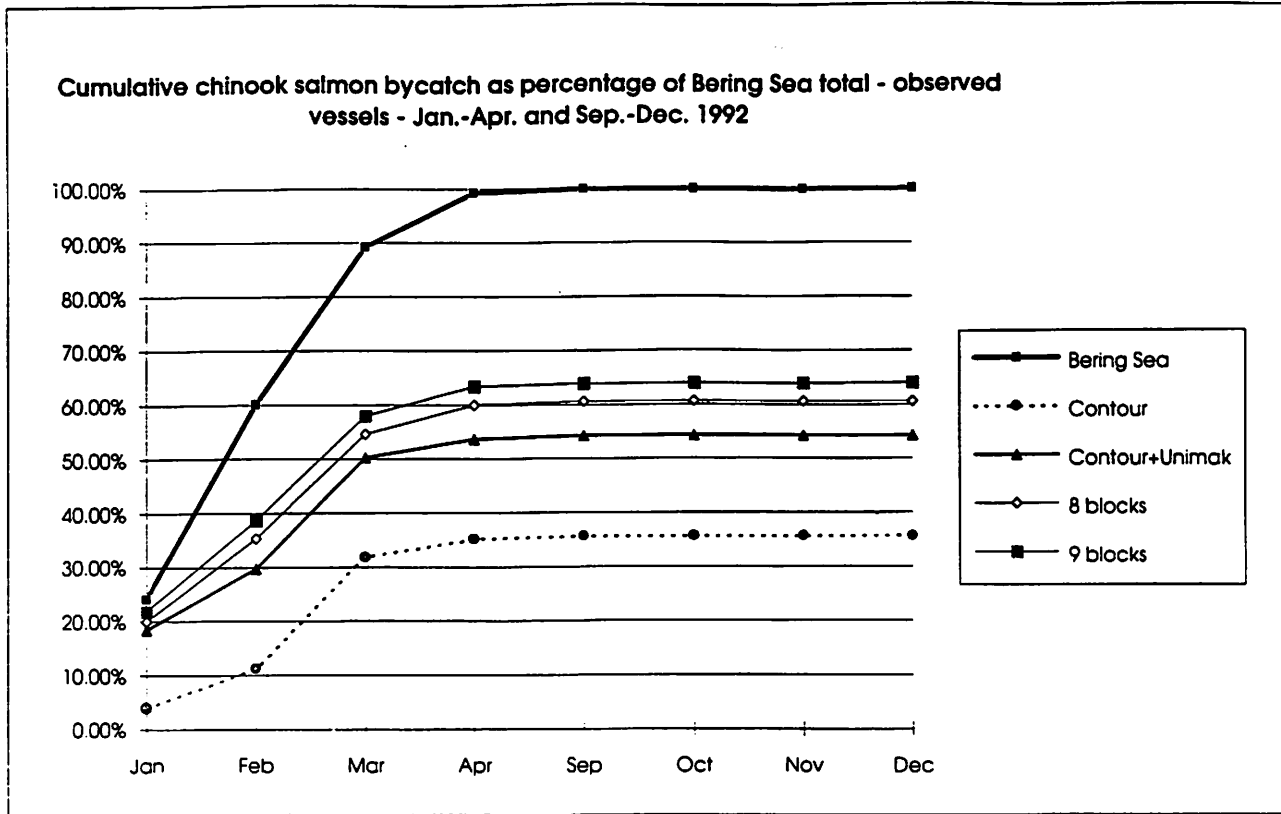


Figure 46. Top: Chinook salmon bycatch from 1993 for the months of January - April and September - December expressed as a percentage of the total for that period. Bottom: Cumulative percent of groundfish catch over the same period. The five identified areas can include portions of other areas (e.g. portions of the contour are contained in the 9 blocks).

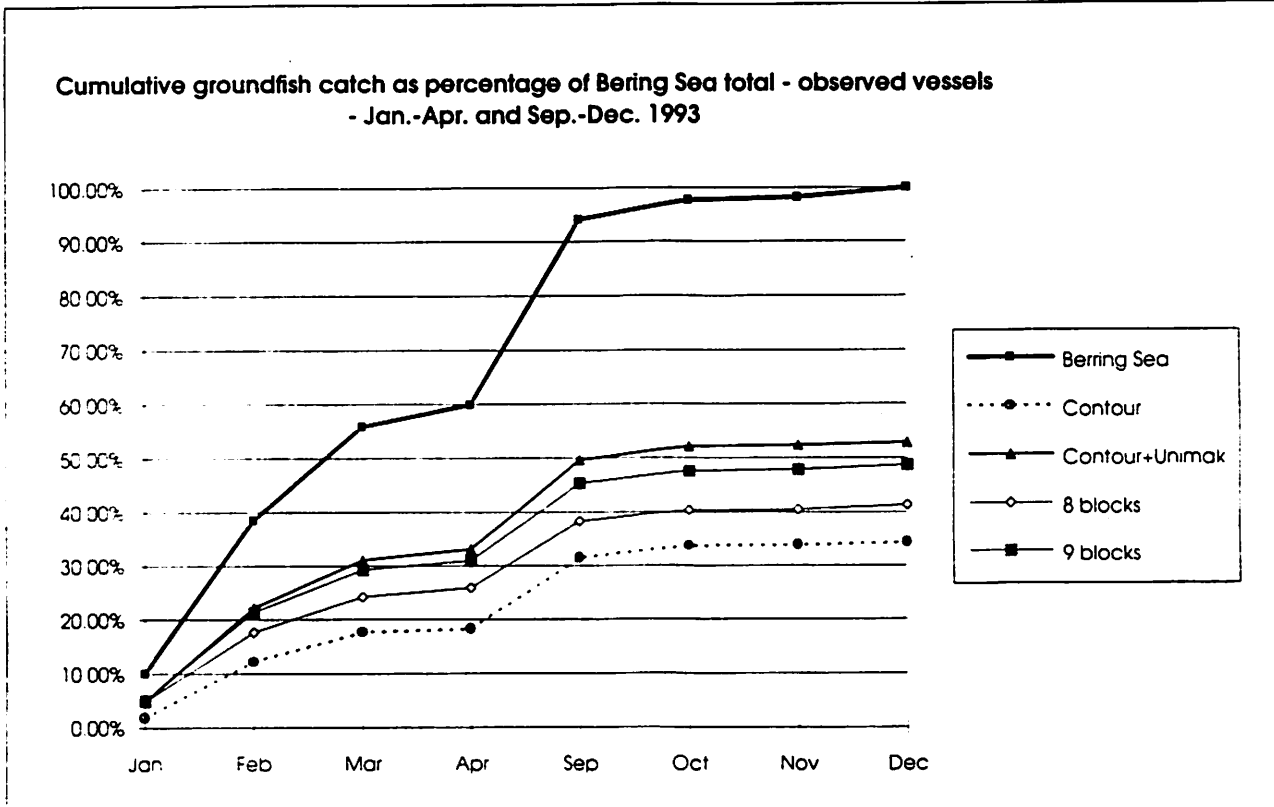
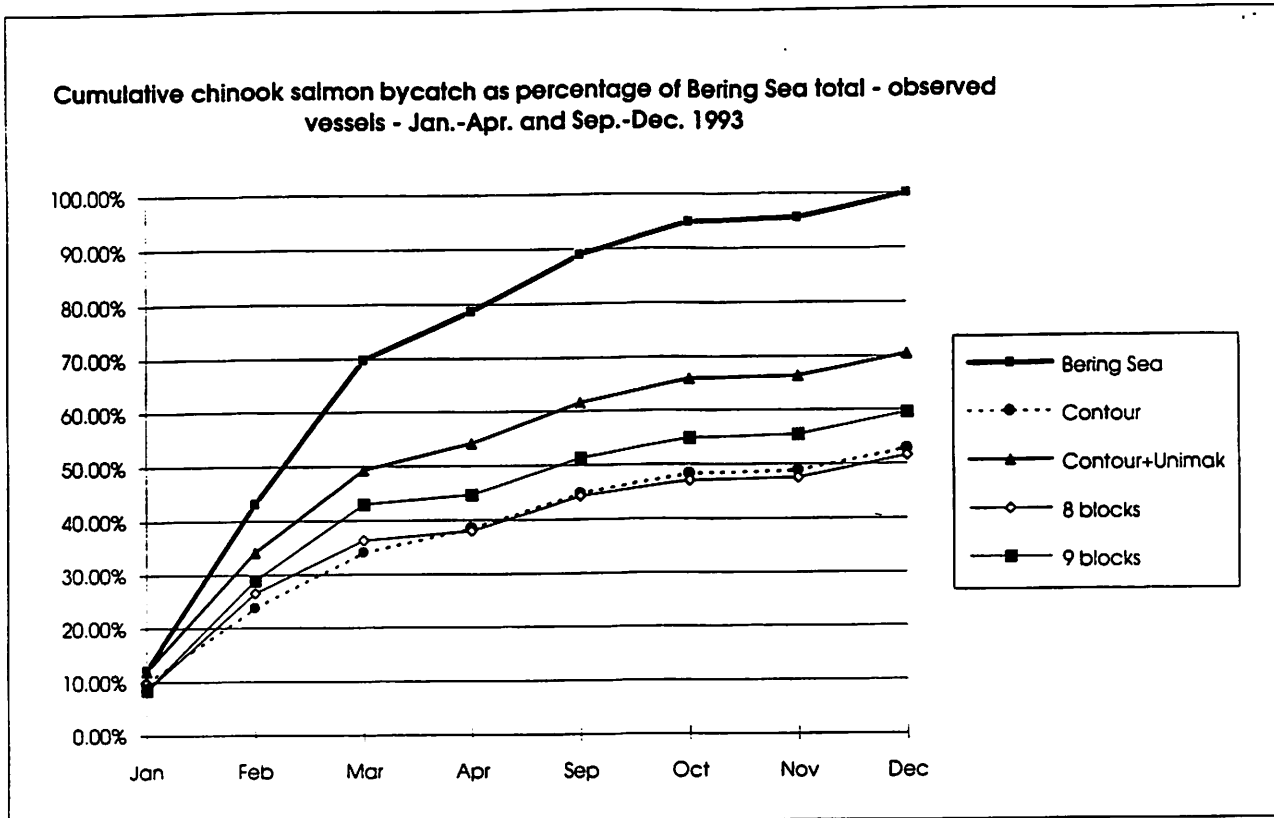


Figure 47. Bering Sea divided into 5 mutually exclusive areas. The percentage of total groundfish catch taken in each of 5 non-overlapping areas during the months January-April and September-December.

Groundfish catch in the Bering Sea - 1990-1993, January - April and September - December. Grouped into mutually exclusive areas with no overlap.

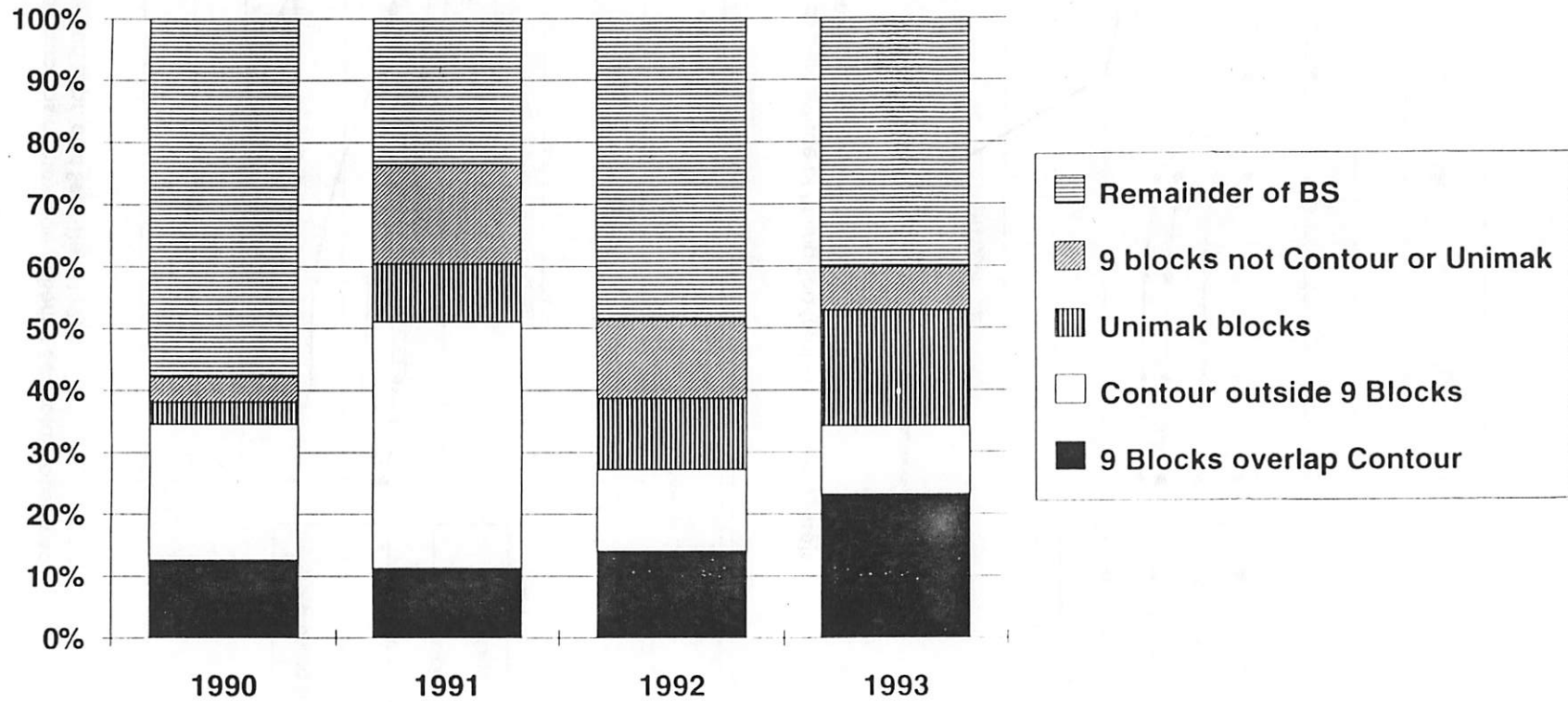
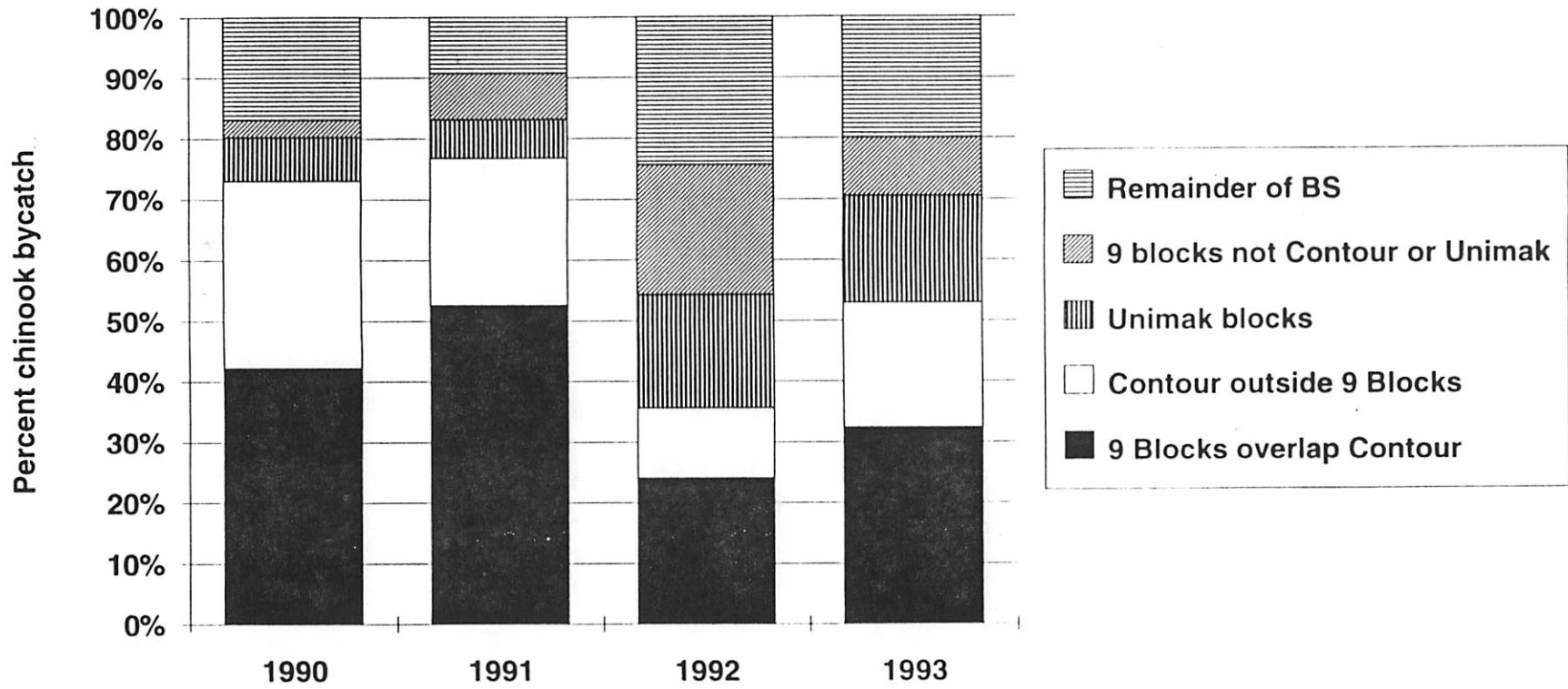


Figure 48. Bering Sea divided into 5 mutually exclusive areas. The percentage of chinook salmon bycatch taken in each of 5 non-overlapping areas during the months January-April and September-December.

Chinook bycatch in the Bering Sea, 1990 - 1993, January - April and September - December. Grouped into mutually exclusive areas with no overlap





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

D-3h
SUPPLEMENTAL

April 15, 1994

Mr. Clarence Pautzke
Executive Director
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99510

Dear Clarence,

Enclosed is a draft environmental assessment/regulatory impact review/initial regulatory flexibility analysis (EA/RIR/IRFA) for consideration by the North Pacific Fishery Management Council (Council). The EA/RIR/IRFA assesses alternatives for increased observer coverage during the pollock 'B' season fishery in the Bering Sea and Aleutian Islands area. The Council requested NMFS to prepare this analysis at its January 1994 meeting for final Council action at its April 1994 meeting.

Sincerely,

Steven Pennoyer
Director, Alaska Region

Enclosure



DRAFT
ENVIRONMENTAL ASSESSMENT
and
REGULATORY IMPACT REVIEW/INITIAL REGULATORY
FLEXIBILITY ANALYSIS FOR REGULATORY AMENDMENTS
TO INCREASE COVERAGE REQUIREMENTS FOR VESSELS
USING TRAWL GEAR IN STATISTICAL AREA 517 AND IN
THE CATCHER VESSEL OPERATIONAL AREA OF THE
BERING/SEA ALEUTIAN AREA

April 15, 1994

1.0 INTRODUCTION

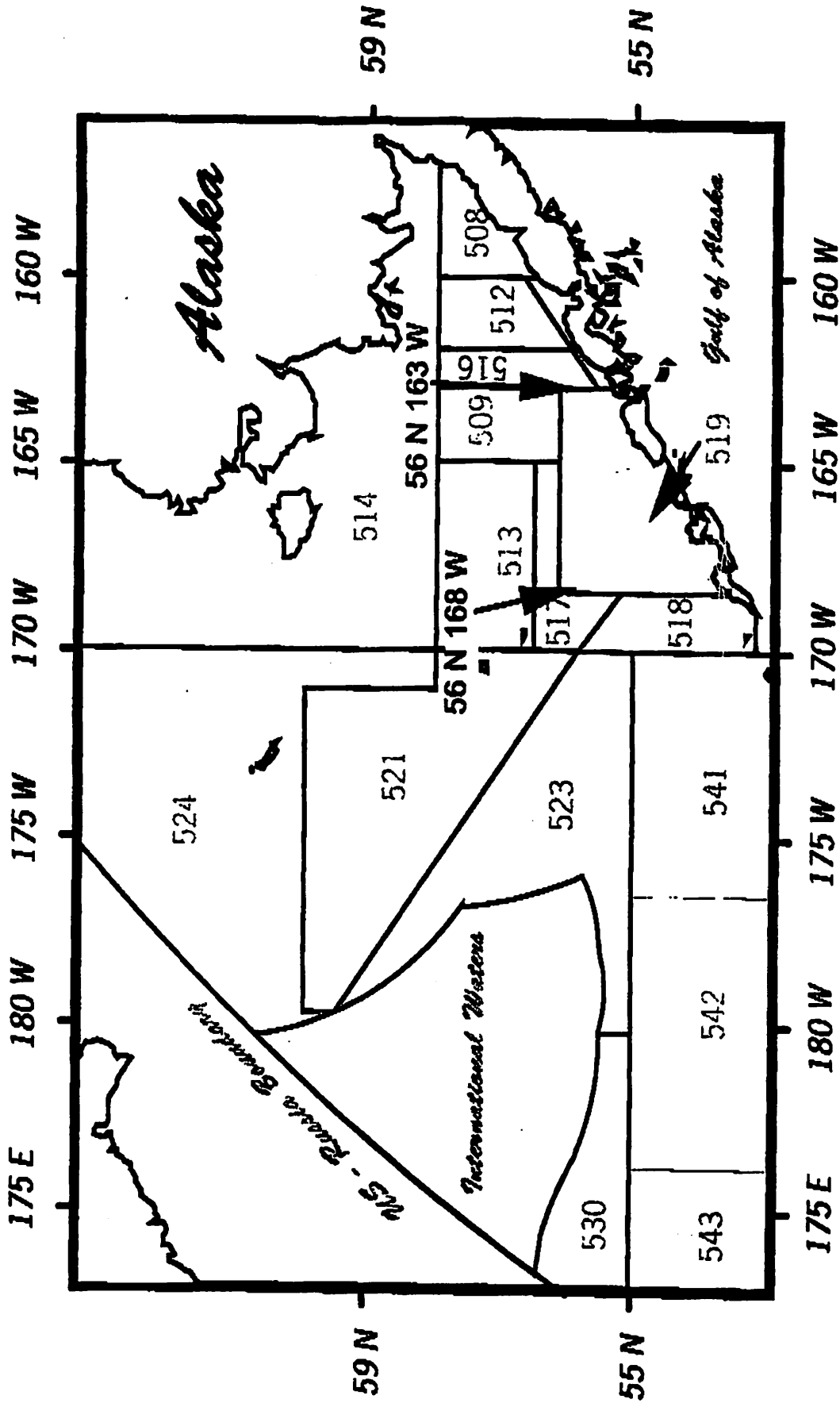
The groundfish fisheries in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska are managed under the Fishery Management Plan (FMP) for the Groundfish Fisheries of the Bering Sea/Aleutian Islands Management Area (BSAI). The FMP was developed by the North Pacific Fishery Management Council (Council) under the Magnuson Fishery Conservation and Management Act (Magnuson Act).

Actions taken to amend the FMP or implement other regulations governing the groundfish fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action and a description of alternative actions that may address the problem. This information is included in Section 1 of this document. Section 2 contains information on the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. Section 4 contains the Initial Regulatory Flexibility Analysis (IRFA) required by the RFA which specifically addresses the impacts of the proposed action on small businesses.

This Environmental Assessment/Regulatory Impact Review (EA/RIR) addresses a proposed regulatory amendment that would require additional observer coverage in Statistical Area 517 and in the Catcher Vessel Operational Area (CVOA) in the Bering Sea and Aleutian Island Management Area (Figure 1).

Figure 1. Catcher Vessel Operational Area of the BSAI
 (South of 56 00 N lat between 163 00 W and 168 00 W long)



EXECUTIVE SUMMARY

During the 1993 BSAI pollock 'B' season fishery 238,000 chum salmon were taken as bycatch. Coincident to this record high bycatch of chum salmon in the pollock fishery was a decline in chum salmon returns to the Alaska-Yukon-Kuskokwim Region (AYK). Although the bycatch experienced in this fishery may have had minimal impact on salmon returning to the AYK in 1993, the Council remained concerned about the decline of the AYK chum salmon run and wanted the ability to collect additional data on salmon bycatch by increasing observer coverage during the pollock 'B' season fishery.

At its January 1994 meeting, the Council requested NMFS to prepare an analysis of a regulatory amendment to increase observer coverage during the pollock 'B' season fishery. This analysis provides rationale for increased observer coverage to: (1) identify areas of high salmon bycatch and assess future management measures; (2) facilitate compliance with regulations requiring mandatory retention of salmon until a NMFS-certified observer has determined the species and number of salmon and completed the collection of biological samples and scientific data; and (3) identify vessel classes where high catches of groundfish per observer can potentially thwart the effectiveness of observer sampling strategies.

The Council specifically requested that NMFS develop an analysis to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517.

During this analysis, NMFS determined that, under the Council's proposed action, additional observer coverage on catcher vessels would not likely result in additional salmon bycatch data because catcher vessels participating in the pollock fishery typically do not process or sort their catch at sea and observers are provided with little opportunity to sample the salmon bycatch. Therefore, a third alternative was developed by NMFS as a means to satisfy the need for the collection of additional data, without causing adverse economic impacts to a significant number of catcher vessels. This third alternative would increase observer coverage during the Pollock 'B' season by requiring two NMFS-certified observers be present at all times on all mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery. This third alternative was developed in response to the following findings: (1) catcher vessels participating in the pollock fishery typically do not process or sort their catch at sea, and therefore, increasing coverage on catcher vessels is not likely to result in more data; (2) in total, catcher processors experienced the lowest amount of salmon bycatch while harvesting highest amounts of pollock during the 1993 pollock 'B' season fishery and consequently may not need additional observer coverage; and (3) obtaining data on salmon bycatch from catcher vessels participating in the CVOA and Statistical Area 517 where salmon bycatch is the highest and pollock harvests the lowest, can be accomplished by increasing observer coverage on shoreside processors and motherships that process these catcher vessels' catch. In addition, Alternative 3 was found to have less adverse impacts on the: (1) constricted budget of the NMFS Observer Program; (2) collection of fees for the implementation of the Research Plan; and (3) the ability of observer contractors to supply a sufficient number of NMFS-certified observers. This may be a problem for the 1994 pollock 'B' season when time and logistical planning necessary to obtain additional numbers of observers would be especially constraining.

NMFS anticipates that catcher vessels that qualify as a small entity for purposes of the Regulatory Flexibility Act would be adversely impacted under Alternative 2. The impacts under Alternative 2, are anticipated to result in a substantial economic impact of small entities under the Regulatory Flexibility Act (RFA). Motherships and shoreside processors participating in the pollock 'B' fishery are not considered small entities, therefore, Alternative 3, would not result in a significant economic impact on a substantial number of small entities under the RFA. In addition, the objectives of obtaining additional data on salmon bycatch for vessels participating in Statistical Area 517 and the CVOA during the BSAI pollock 'B' season fishery, can be accomplished through Alternative 3, which provides opportunity for observer sampling of catch from Statistical Area 517 and the CVOA where it is most needed.

PROBLEM STATEMENT

Record high chum salmon bycatch in the 1993 pollock 'B' fishery resulted in a Council recommendation for NMFS staff to prepare an analysis addressing the potential benefits that increased observer coverage could provide through the obtainment of additional data to identify areas of high salmon bycatch.

1.1 Background of the problem and need for action

The Alaska groundfish fisheries result in incidental fishing mortality of non-groundfish species that are fully utilized in other fisheries. Of particular concern is the AYK chum salmon stocks. In 1993, the BSAI groundfish fisheries incidentally caught 245,000 chum salmon (Table 1). This amount represents a significant increase from 1993 of chum bycatch salmon amounts (36,000). Most of 1993 bycatch occurred in the 'B' season pollock fishery that opened August 15 and closed September 22 for the offshore component and October 3 for the inshore component. The 1993 offshore component was reopened from December 15 through December 29. However, the change in the start date of the pollock 'B' season fishery from June 1 to August 15 was first implemented under a Final Rule published May 28, 1993 (58 FR 30997) may have contributed to the increase in salmon bycatch.

Coincident to the larger salmon bycatch experienced in the 1993 pollock 'B' season fishery was a widespread failure of chum salmon returns to the AYK Region. This failure of chum salmon returns was severe in the AYK Region and caused social, economic and cultural disruption as chum salmon is an important species for subsistence, commercial and personal use. Even though the bycatch chum salmon caught by the trawlers in the 1993 pollock 'B' season fishery did not directly contribute to the widespread failure of the chum salmon returns in the AYK region, it nonetheless was highlighted as a problem that needed additional data collection for analysis to identify high salmon bycatch areas and support the development of effective salmon bycatch management measures.

During its September 1993 meeting, the Council requested NMFS to implement regulations that would (1) prohibit the discard of salmon taken in the BSAI groundfish trawl fisheries until a NMFS-certified observer had determined the number and species of salmon taken and completed the collection of scientific data and biological samples; and (2) authorize the disclosure of observer data on vessel bycatch of prohibited species. These proposed regulations were published as a proposed rule in the Federal Register on January 13, 1994 (59 FR 2817). NMFS anticipates that a final rule will be effective by June 1994. The regulatory action will provide an opportunity to collect better data on salmon bycatch while supporting independent industry initiatives to

explore factors that may be correlated with salmon bycatch and identify changes in fishing operations that could reduce salmon bycatch rates. These data will be used to assess the quality of bycatch estimates derived from existing observer sampling procedures and provide additional information on which to assess the magnitude of salmon bycatch in the Alaska trawl fisheries.

In addition, the Council requested the Alaska Department of Fish and Game (ADF&G) and NMFS to prepare a summary report on the chum salmon bycatch problem experienced in the 1993 pollock 'B' season fishery and the impacts of chum salmon interceptions on the Western Alaska chum salmon fisheries. The ADF&G prepared a report on the status of Western Alaska chum salmon stocks and on management actions being considered by the State to address the chum salmon interception problem in other State managed fisheries. The NMFS report concluded that in 1993 the bycatch amounts of chum salmon experienced in the BSAI groundfish fisheries reflected a 5-fold increase over the 1992 bycatch level and that most of the bycatch occurred during the directed pollock 'B' season fishery. None of the chum salmon taken during the pollock 'B' season fishery likely were maturing fish migrating to Western Alaska spawning grounds because mature Western Alaska chum salmon typically enter river systems by the first week of August. Rather, most of the chum salmon taken in the 1993 pollock 'B' season fishery likely were a mix of Asian and Western Alaska fish in their third year of ocean life. These fish, therefore, would have returned to their respective spawning grounds in 1994 or 1995. Some fish intercepted in 1993 possibly were Japanese hatchery-raised chum salmon that would have returned as mature fish late in 1993 or early 1994. At this time, no information exists to determine what percentage of 1993 chum salmon bycatch in the pollock 'B' season fishery was comprised of Western Alaska fish. The Council would like to obtain additional data on salmon caught as bycatch during these fisheries.

These reports resulted in a Council request for NMFS staff to prepare an analysis for a proposed increase in observer coverage for all vessels participating in the directed pollock 'B' season fisheries so that additional data could be obtained on salmon bycatch during this fishery. The Council specifically requested that NMFS develop an analysis to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that process or harvest groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that process or harvest groundfish in statistical area 517.

TABLE 1. Salmon Bycatch in All Groundfish Trawl Fisheries During the Period the 1993 BSAI Pollock 'A' and Pollock 'B' Fisheries in the BSAI for January through March and August through October.

Month	Other Salmon Bycatch
January - 'A' Season	430
February - 'A' Season	926
March - 'A' Season	7
August - 'B' Season	66,762
September - 'B' Season	146,612
October - 'B' Season	18,625
'A' Total	1,363
'B' Total	231,999
'A' & 'B' TOTAL	233,362

The majority of the 1993 chum salmon bycatch was taken during the pollock 'B' season. Estimates of the number of other salmon taken in the 1993 'A' and 'B' seasons by month are presented in Table 1. Most of the other salmon category consists of chum salmon. The 1993 pollock 'B' season was reopened in the later part of December for the offshore component, however, the bycatch of chum salmon during this fishery was nominal. Excluded from Table 1 are chum salmon bycatch numbers during the month of December and in the pollock Community Development Quota (CDQ) fisheries.

Whether or not the higher amounts of salmon bycatch experienced in 1993 will continue in the future, this level of bycatch continues to be a sensitive issue among fishermen and others. Subsistence, commercial, and sport fishing advocates have lobbied the Council to adopt management measures to limit salmon bycatch in the Alaska groundfish trawl fisheries, especially those conducted in the BSAI.

Description of the Pollock 'B' Season Fishery

During the 1993 Pollock 'B' season fishery, 4 motherships, 36 catcher/processors, 58 catcher vessels under 125 feet LOA (14 of which delivered unsorted codends to motherships) and 11 catcher vessels that are equal to or greater than 125 LOA participated in this fishery. The catcher vessels delivering to shoreside processors caught approximately 218,000 mt of pollock while catcher vessels delivering to motherships during the offshore fishery caught approximately 131,000 mt of pollock and catcher/processors caught approximately 379,000 mt of pollock. The duration of the 1993 offshore fishery in the Bering Sea was 52 days including the 15 days that the fishery was reopened from December 15 through December 29, 1993, while the length of the inshore fishery in the Bering Sea was 49 days. During the period that Pollock 'B' was reopened

to the offshore fishery, a total of 5 salmon were taken from the other salmon category. NMFS initiated an analysis to determine the feasibility of obtaining salmon bycatch data on catcher vessels, catcher/processors and motherships and found that the majority of salmon bycatch could be sampled, for reasons that follow, by placing observers of motherships and shoreside processors.

According to the NMFS Observer Program, catcher/processors and motherships process the largest quantities of groundfish with the lowest percentage of the total catch actually sampled by an observer. However, observer data indicate catcher/processors experience the lowest salmon bycatch rates and amounts while motherships experience the highest salmon bycatch rates and amounts (Table 2). This could be attributed to the regulation that prohibited catcher/processors from fishing in the CVOA. Therefore, to obtain additional data on salmon bycatch, it may not be beneficial to increase observer coverage on catcher/processors.

Catcher vessels participating in the pollock fishery typically deliver their entire catch to motherships and shoreside processors as unsorted and unprocessed groundfish. This results in little opportunity for observer sampling on catcher vessels, however, observers at the shoreside processors and on motherships have opportunity to sample this catch. Since many catcher vessels empty their codends directly into refrigerated sea water tanks, the opportunity for observer sampling is greatly reduced. Catcher vessels occasionally discard catch at sea by dumping the entire codend at-sea without sorting. During 1993, approximately 3,800 mt of pollock were discarded at-sea by catcher vessels delivering to shoreside processors during the pollock 'B' season fishery. Catcher vessels empty their codends quickly to: (1) resume fishing; (2) provide stability to the vessel by moving the weight below deck as soon as possible for ballast; or (3) maintain product that is fit for human consumption by emptying the codend directly into the refrigerated sea water tanks. Discards at-sea occur when the cod end has pollock that is commercially undesirable. Commercially undesirable pollock catch can result when: (1) the size of the pollock is small; (2) the species composition is mixed and not primarily a pollock target; (3) the volume of the catch exceeds the amount available space in the hold; (4) the pollock delivered to the shoreside processor is rendered unfit for human consumption. Shoreside processing plants that reject pollock that is commercially undesirable may return the catch to the catcher vessel for discard at-sea.

Opportunity exists for observer sampling of catcher vessels onboard motherships or at shoreside plants because catcher vessels deliver pollock to shoreside plants and motherships where observer coverage exists. On motherships, the codends are transferred from catcher vessels to motherships where each mothership has one observer to sample the entire catch from all the catcher vessels. Based on the delivery system of catcher vessels participating in the pollock fishery, NMFS does not believe that additional observer coverage on these catcher vessels will provide more data and sampling opportunities. It is approximated that between 20 and 25 percent of the catch from motherships is sampled by the observer and 50 to 60 percent of the catch of catcher/processors is sampled by the observer. Table 3 provides an average of the mt of groundfish per observer based on the 1993 pollock 'B' season fishery.

TABLE 2. Other Salmon Bycatch in the 1993 Pollock 'B' Season Taken by Vessel Class.

Vessel Class	Pollock	Pollock %	Other Salmon	Other Salmon %
Catcher Processor	379,043	52	49,824	22
Shoreside Processor	217,867	30	74,752	32
Mothership	131,461	18	106,851	46

TABLE 3. Pollock Catch (mt) in the BSAI Midwater Pollock Fishery During the 1993 'B' Season and Associated Observer Coverage.

Vessels type	# of ves	# of obs	Pollock caught in 'B' season	Days fished	MT poll per obs.	MT poll per day
Mothership	4	4	131,461	54	32,866	608
Catch./proc	36	36	379,043	54	10,528	194
Catch/vess (30%)	44	13	217,867	38	9,472	249
Catch/vess (100%)	11	11				
TOTAL	110	65	728,371			

Observer Data on Salmon Bycatch in the BSAI Pollock Fishery.

Under existing observer regulations at §675.25, observer coverage requirements are based on the length of the vessel for catcher vessels and catcher processors and by the quantity of groundfish processed by shoreside plants and motherships. Two levels of coverage are required by vessels and processors catching or receiving groundfish: (1) the maximum observer coverage required is to have a NMFS-certified observer at all times while fishing for groundfish by vessels 125 feet LOA or greater and to have an observer everyday of a month during which a mothership or shoreside processor processes 1,000 mt of groundfish or more; and (2) the minimum observer coverage required is to have a NMFS-certified observer 30 percent of the days fished or days receiving groundfish for catcher vessels and catcher processors that are 60 through 124 feet LOA or shoreside processors or motherships that process 500 to 1,000 mt of groundfish during a calendar month, respectively. There are no observer coverage requirements for vessels less than 60 feet LOA or processors receiving less than 500 mt of groundfish during a calendar month.

Some motherships and shoreside processors, particularly those processing large quantities of groundfish, operate 24 hours a day and are capable of processing several vessels' catch at the same time. These motherships and shoreside processors experience a high proportion of groundfish and subsequent salmon bycatch per observer. Although shoreside processors receive groundfish from catcher vessels with observers onboard, much of the groundfish is typically unsorted before reaching the plant.

In addition, the primary duties of observers aboard catcher vessels and shoreside plants differ. One of the primary duties of an observer working at a shoreside processor is to assist the observers that are aboard catcher vessels. Since many catcher vessels do not sort at sea this is the only opportunity to obtain species composition, total weight, and prohibited species catch information.

In the 1993 pollock 'B' season fishery, the motherships and shoreside processors experienced the highest proportions of salmon bycatch, while the catcher/processors experienced the lowest proportion of salmon bycatch while catching more than half of the total pollock taken in this fishery (Table 4). This likely occurred due to the regulations which prohibit catcher/processors in the offshore component from participating in the CVOA. The salmon bycatch rates during the 1993 pollock 'B' season fishery were the highest for vessels and processors catching or receiving salmon in the CVOA.

Based on the metric tons of groundfish per observer by vessel class (Table 3) and duties of the observers working in shoreside plants, justification exists for recommending increased observer coverage on motherships and shoreside processors only. This is due to the observer duties on the catcher vessels participating in this fishery and to their limited ability to sample the catch due to the logistics of the catcher vessels. Catcher vessels do not process their fish at sea, and as a result, often do not sort their catch until delivering to either a shoreside processor or mothership. Shoreside processors and motherships receive groundfish from these catcher vessels. Catcher vessels delivering unsorted codends are not required to have observer coverage if they deliver to motherships. Therefore, additional salmon bycatch data from catcher vessels participating in the CVOA could be obtained by increasing the coverage on motherships and shoreside processors.

At this time, additional observer coverage to facilitate the collection of data on salmon bycatch and to specifically monitor chum salmon bycatch in the pollock fisheries could help provide additional data that would: (1) identify areas of high salmon bycatch and assess future management measures; (2) facilitate compliance with regulations requiring mandatory retention of salmon until a NMFS-certified observer has determined the number of salmon and completed the collection of biological samples and scientific data; and (3) identify vessel classes where high catches of groundfish per observer can potentially thwart the ability of observers to sufficiently sample catch to obtain representative data on prohibited bycatch rates.

Data collected from the increased observer coverage could potentially be used to assess the quality of catch and bycatch estimates derived from existing observer sampling procedures and provide additional information on which to assess the magnitude of salmon bycatch in the BSAI directed pollock 'B' season fishery. Additional information on salmon bycatch also could support the compliance of proposed regulations for mandatory salmon retention and allow industry to more fully explore factors that may be correlated with salmon bycatch and identify changes in fishing operations that could reduce salmon bycatch rates.

An increase in required observer coverage relative to the status quo could affect the implementation schedule for the proposed North Pacific Fishery Research Plan (Research Plan). The Research Plan would supersede the current Observer Plan and be implemented in two phases.

During the first phase, or start-up year, of the Research Plan, NMFS would accumulate necessary start-up funds in the North Pacific Observer Fund (Fund). Fees would be assessed against all fishing vessels and U.S. fish processors participating the Research Plan fisheries under jurisdiction of the Council based on the exvessel value of retained catch. Processors would be responsible for collecting all fee assessments and submitting payments to NMFS. During the start-up year of the Research Plan, vessels and processors also would continue to comply with observer coverage requirements set forth under the groundfish Observer Plan and existing Alaska State Bering Sea and Aleutian Islands area king and Tanner crab regulations (5 AAC 39.645). NMFS would issue rebates from the Fund to those who paid directly for required observer coverage during the first year of the Research Plan.

The second phase of the Research Plan would be initiated once sufficient funds were generated to allow full operation of the Research Plan and to ensure that cash flow is adequate to meet start-up costs. The period of time required to generate this level of funding during the first phase of the Research Plan would be affected by the proportion of the total fees collected during this phase that must be used to issue rebates for direct observer costs. The higher the level of required observer coverage, the greater the percentage of the first year start-up funds that would be allocated for rebates rather than funding the second phase of the Research Plan.

The Council instructed NMFS to prepare an analysis of a regulatory amendment that would authorize the following observer coverage requirements for all vessels fishing with trawl gear during the directed pollock 'B' season fishery in the BSAI: (1) Two NMFS-certified observers aboard all trawl vessels at all times that are greater than 125 feet length overall (LOA) fishing in the CVOA or statistical area 517; and (2) 100 percent observer coverage for all trawl vessels less than 125 LOA fishing in Statistical area 517.

However, based on the description of the problem, the proposed regulations for mandatory retention of all salmon until counted by an observer, and the ability for observers to sort and collect data, NMFS is recommending a third alternative: Two NMFS-certified observers aboard all motherships and shoreside processors participating in the pollock 'B' season fishery that receive pollock harvested in the CVOA or Statistical Area 517. NMFS provided an analysis on this alternative based on concerns that requiring all vessels participating in the pollock 'B' season fishery may not result in a significantly improved data on salmon bycatch. NMFS also had concerns that requiring an increase in observer coverage for the entire fleet would pose financial burdens on the Observer Program at a time when there are limited resources and budget constraints.

1.2 THE ALTERNATIVES

Alternative 1. (Status quo alternative) Do not require additional observer coverage.

Under this alternative the observer coverage requirements would remain the same under regulations at 50 CFR 675.25.

Alternative 2. Implement regulations to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517. Pending its approval, the Research Plan would supersede all observer coverage requirements because it proposes to make annual determinations of the level of observer coverage required in the groundfish and other Research Plan Fisheries. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

Under this alternative all vessels fishing for groundfish in Statistical Area 517 or the CVOA during the pollock 'B' season fishery would be required to increase their observer coverage. Vessels from 0 through 60 feet LOA would experience an increase from 0 percent coverage to 100 percent coverage, vessels from 60 feet through 124 feet LOA would have an increase from 30 percent to 100 percent coverage, and vessels 125 feet or longer LOA would have an increase from 100 percent coverage to 200 percent coverage.

Alternative 3. Implement regulations to increase observer coverage requirements to carry two NMFS-certified observers at all times on all mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery during the Pollock 'B' season fishery. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

Under this alternative, mothership vessels and shoreside processors receiving pollock from catcher vessels participating in the directed pollock 'B' season fishery in Statistical area 517 or the CVOA would be required to carry 2 NMFS-certified observers at all times during the Pollock 'B' season fishery. The motherships typically have the lowest observer coverage per metric ton of pollock. Motherships processed 18 percent of the pollock during the 1993 pollock 'B' season fishery and accounted for 46 percent of the other salmon bycatch. Shoreside operators processed 30 percent of the pollock during the 1993 pollock 'B' season fishery and accounted for 32 percent of the other salmon bycatch. In addition, shoreside processors typically have large factory operations which makes it difficult to monitor salmon bycatch due to the additional distances that the observer needs to cover and the consequent additional sampling logistics that need to be implemented.

With respect to regulations requiring retention of salmon to collect scientific and biological data, the proposed alternative could potentially result in a better sampling strategy with regard to the collection of salmon bycatch data by providing additional coverage and opportunity to collect salmon data by increasing observer sampling at sites where pollock from the CVOA is processed and where salmon bycatch is the highest.

2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. An Environmental Impact Study (EIS) must be prepared if the proposed action may be reasonably expected: (1) to jeopardize the productive capability of the target resource species or any related stocks that may be affected by the action; (2) to allow substantial damage to the ocean and coastal habitats; (3) to have a substantial adverse impact on

public health or safety; (4) to affect adversely an endangered or threatened species or a marine mammal population; or (5) to result in cumulative effects that could have a substantial adverse effect on the target resource species or any related stocks that may be affected by the action. An EA is sufficient as the environmental assessment document if the action is found to have no significant impact (FONSI) on the human environment. An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives for the subject proposed action were discussed in Sections 1.1 and 1.2 of this document, and the list of preparers is in Section 8. Section 2 contains the discussion of the environmental impacts of the alternatives, including impacts on threatened and endangered species and marine mammals.

2.1 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

Potential biological effects on the environment under Alternatives 1 through 3 are those caused by changes in the associated mortality of groundfish or other fish species, marine mammals, including Steller sea lions and harbor seals, and seabirds that could result from the adoption of any of the proposed alternatives. A summary of the effects of the 1994 groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, other predators and prey, and threatened or endangered salmon is set forth in the final environmental assessment for 1994 groundfish total allowable catch specifications (USDOC, 1994).

No additional physical impacts on the sea bed and associated benthos (i.e., attached animals and plants) would result from fishing activities under Alternatives 1 through 3.

Alternative 1. (Status quo alternative) Do not increase observer coverage during the directed fishery for pollock in statistical area 517 and the CVOA. Although adoption of the status quo alternative would not produce any changes in observer coverage requirements, this alternative could potentially ignore any adverse effects that groundfish harvesting operations have on the biological and physical environment if mortality of non-target species are increased through the lack of data which could support the development of future management measures.

Alternative 2. Implement regulations to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517. Pending its approval, the Research Plan would supersede all observer coverage requirements because it proposes to make annual determinations of the level of observer coverage required in the groundfish and other Research Plan Fisheries. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

Under this alternative all vessels would experience an increase observer coverage that participate in the pollock 'B' season fishery in Statistical Area 517 and the CVOA. Vessels from 0 through 60 feet LOA would experience an increase from 0 percent coverage to 100 percent coverage, vessels from 60 feet through 124 feet LOA would have an increase from 30 percent to 100 percent coverage, and vessels 125 feet or longer LOA would have an increase from 100 percent coverage to 200 percent coverage.

If the trend of high salmon bycatch that was experienced in the 1993 pollock 'B' season fishery continues, additional observer coverage could provide an opportunity for the additional sampling of salmon bycatch that could potentially identify areas where high bycatch rates of salmon occur. However, it can be foreseen that the extent of this additional coverage is not likely to produce an overall benefit in identifying areas of high salmon bycatch because observers aboard catcher vessels have little opportunity to sample while onboard catcher vessels. Under this alternative, the extent of the increase in observer coverage could prove to be excessive with regard to the observers ability to sample on catcher vessels.

Alternative 3. Implement regulations to increase observer coverage requirements to carry two NMFS-certified observers at all times on all mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery during the Pollock 'B' season fishery. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

This alternative would provide additional observer coverage where it is most needed and necessary to develop future management measures addressing salmon bycatch. This alternative is consistent with the original intent and objective of the Council bycatch management measures and focuses on where the increase in observer coverage would be most effective for the purpose of facilitating the collection of data on salmon bycatch.

2.2 EFFECTS ON ENDANGERED AND THREATENED SPECIES AND ON THE ALASKA COASTAL ZONE

None of the alternatives are expected to have any adverse effect on endangered or threatened species or their habitat. Thus, formal consultation under Section 7 of the Endangered Species Act is not required.

Also, each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA. E.O. 12866 defines a "significant regulatory action" as likely to result in (1) an annual effect on the economy of \$100 million or more; (2) an adverse effect in a material way on the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; or (3) a novel legal or policy issue.

3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not

regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA. E.O. 12866 defines a "significant regulatory action" as likely to result in (1) an annual effect on the economy of \$100 million or more; (2) an adverse effect in a material way on the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; or (3) a novel legal or policy issue. Requirements of the RFA are addressed in Section 4.

The alternatives that are being considered are a result of the need for salmon bycatch data through additional observer coverage during the pollock 'B' season fishery due to the high chum salmon bycatch associated with the 1993 pollock 'B' season fishery. The objective of the additional observer coverage is to provide data that would potentially identify areas of high salmon bycatch. A discussion below, of the each alternative is provided.

3.0.1 Alternative 1: Status Quo (Status quo alternative)

Do not require additional observer coverage.

Under this alternative the observer coverage requirements would remain the same under regulations at 50 CFR 675.25 where no additional cost to management agencies or the industry can be foreseen. Costs that could be incurred to commercial and subsistence salmon users, as a result of high salmon bycatch are unknown.

3.0.2 Alternative 2: Implement regulations to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517. Pending its approval, the Research Plan would supersede all observer coverage requirements because it proposes to make annual determinations of the level of observer coverage required in the groundfish and other Research Plan Fisheries. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

The extent of the increase in observer coverage, under this alternative, could prove to be excessive with regard to the observers ability to sample on catcher vessels where the overall benefit relative to the costs associated could prove marginal. This is because some of the catcher vessels do not sort until they deliver to shoreside processors and coverage on these vessel is not likely to improve the quantity and quality of salmon bycatch data. In addition, catcher/processors experience lower percentages of salmon bycatch and additional observer coverage may not be

necessary. Although reasons for this lower bycatch rate are unknown potential exists that it is due to (1) the area that catcher/processors fish and (2) the 100% observer coverage level.

Although no vessel participated in this fishery that was less than 60 feet LOA, the adoption of alternative two could potentially effect vessels in this size class. Some of the catcher vessel 60 feet or greater will be potentially adversely effected by this regulation. Table 4 shows that there are 44 vessels that are between 60 and 125 feet LOA; and that there are 52 vessels greater than 125. The adoption of the second alternative could adversely impact some of these catcher vessels. This analysis includes a third alternative that reduces the regulatory burden while maintaining the goals and objectives of obtaining additional data on salmon bycatch.

The costs of implementing Alternative 2 are summarized in Table 4. The entire cost of implementing Alternative 2 is \$1,674,800. The cost of implementation per vessel: (1) 60 through 124 feet LOA would be approximately \$10,600; and (2) 125 feet LOA or greater, motherships and catcher/processors would be approximately \$21,200. There are 44 vessels 60 through 124 feet LOA that would collectively pay a total of \$466,400; 52 vessels and catcher/processors 125 feet LOA or greater, and 5 motherships that would collectively pay \$1,208,400.

3.0.3 Alternative 3: Implement regulations to increase observer coverage requirements to carry two NMFS-certified observers at all times on all mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery during the Pollock 'B' season fishery. This requirement does not apply to vessel and processors during their Community Development Program (CDQ) fishery.

Under this alternative all mothership vessels and shoreside processors would be required to carry 2 NMFS-certified observers when receiving pollock from vessels participating in the pollock 'B' season fishery.

The costs of implementing Alternative 3 are summarized in Table 4. The entire cost of implementing Alternative 3 is \$223,000. The cost of implementation per vessel or processor: (1) for shoreside processor cost would be approximately \$19,600; and (2) for motherships \$21,200. There are 5 mothership vessels that would collectively pay a total of \$98,000; and 5 100 percent coverage shoreside processors and one 30 percent shoreside processor that would collectively pay a total of \$118,000.

TABLE 4. Estimated Observer Costs for the 1994 Pollock 'B' Season Fishery. Estimated from the 1993 Pollock 'B' Season Fishery.

VESSEL SIZE	Status Quo	Cost of Alter. 2	Cost of Alter. 3	1 Ves	Cost to Fleet (2 and 3)
Under 60 feet	0	0	STATUS QUO	0	Alter. 2 \$0 Alter. 3 \$0
60 - 124 Inshore	(49 days x 30%) = (14.7 days x \$200 = \$2,940/vess	(49 days x \$200) = \$9,800/vess	STATUS QUO	44	Alter. 2 \$431,200 Alter. 3
60 - 124 Offshore	(53 days x 30%) = (15.9 days x \$200) = \$3,180/vess	(53 days x \$200) = \$10,600/ vess	STATUS QUO	44	Alter. 2 \$466,400 Alter. 3
125+ Inshore	(49 days x \$200) = \$9,800/vess	(49 days x 2 x \$200) = \$19,600/ vess	STATUS QUO	52	Alter. 2 \$1,019,200 Alter. 3
125+ Offshore	(53 days x \$200) = \$10,600/vess	(53 days x 2 x \$200) = \$21,200/ vess	STATUS QUO	52	Alter. 2 \$1,102,400 Alter.3
Mothership Inshore (125+)	(49 days x \$200) = \$9,800/vess	(49 days x 2 x \$200) = \$19,600/ vess	(49 days x 2 x \$200) = \$19,600/ vess	5	Alter. 2,3 \$98,000
Mothership Offshore (125+)	(53 days x \$200) = \$10,600/vess	(53 days x 2 x \$200) = \$21,200/ vess	(53 days x 2 x \$200) = \$21,200/ vess	5	Alter. 2,3 \$106,000
Shoreside Proc. 30%	(49 days x 30%) = 14.7 days x \$200) = \$2,940/proc	N/A	(49 days x 2 x \$200) = \$19,600/ proc	1	Alter 3 \$19,600
Shoreside Proc. 100%	(49 days x \$200) = \$9,800/proc	N/A	(49 days x 2 x \$200) = \$19,600/ proc	5	Alter. 3 \$98,000

¹Calculations are based on the number of vessels that participated in the pollock 'B' season fishery based on length and not whether they fished inshore or offshore. A total of 44 vessels participated in the 1993 pollock 'B' season that were between 60 through 124' LOA; a total of 52 vessels participated in the 1993 pollock 'B' season that were greater than 125' LOA and a total of 5 vessels were motherships that participated in the 1993 pollock 'B' season fishery.

3.2 Reporting Costs

Reporting costs by vessels currently participating in the groundfish fisheries off Alaska will not change as a result of any of the alternative already considered.

3.2 Administrative, Enforcement and Information Costs

The administrative costs associated with the implementation of Alternative 2 will increase with the number of observers that NMFS will need to train, outfit, debrief and enter data for. The following table provides the expected increase in costs that NMFS could incur under Alternative 2. These costs are estimated from the 1993 Pollock 'B' season fishery and are based on the duration of the fishery, the number of observers needed for the increased coverage requirements, an estimate of gear depreciation, de-briefing and data entry costs.

In 1993 the directed pollock 'B' season fishery the offshore component fished 52 days and the inshore component fished 49 days. In 1993, 58 vessels participated in this fishery that were under 125 feet LOA, and 52 were greater or equal to 125 feet LOA. NMFS Observer Program estimates that a increase in costs of \$141 per additional observer will be needed for gear associated with Alternative 2. The expected costs of debriefing observers and entering data is \$16,250.

The costs associated with implementing alternative 3 which would increase the number of observers that NMFS would need to train, outfit, debrief and enter data for by 11 are estimated to be less than \$6,000. The costs associated with implementing Alternative 2 which would increase the number of observers that NMFS would need to train , outfit, debrief and enter data for by approximately 100 are estimated to be approximately \$52,000.

In summary, administrative costs incurred under alternative 2 and 3 by the NMFS Observer program for Pollock 'B' season fishery are summarized in Table 5.

TABLE 5. ADMINISTRATIVE COSTS INCURRED BY THE NMFS OBSERVER PROGRAM FOR THE POLLOCK 'B' SEASON FISHERY.

	<u>Alternative 2</u>	<u>Alternative 3</u>
Gear Depreciation	\$11,400	\$1,254
NMFS staffer	\$24,255	\$2,668
De-briefing Costs	\$16,250	\$1,788
TOTAL	\$51,905	\$5,710

Administrative Costs to the Fishing Industry

Administrative costs to observer contractors could increase if Alternative 2 was adopted. This due to the planning necessary when observer coverage requirements increase prior to a period when the largest number of observers are needed to cover a particular fishery. Before an observer is eligible with NMFS he must be trained and certified. The timeliness of these events can potentially cause problems with the supply of available observers. Potentially, some participants could be constrained from participating in this fishery if the supply of observers could not meet the demands of the vessels requiring observers due to: (1) the availability of observers; and the (2) the time it takes to contract, train and receive a NMFS-certified observer. Alternative 2 would require that the number of observers be doubled in the directed pollock 'B' season fishery.

Upon short notice, Alternative 2 would be difficult to implement because of the extent of additional coverage required. Alternative 3 would not be considered difficult to implement because, based on the 1993 pollock 'B' season fishery, only 10 additional observers would be required.

Alternative 3 would minimize the cost while maximizing the benefits because of the percentage of bycatch salmon processed by shoreside processors and mothership during the 1993 pollock 'B' season fishery (Table 2 and 4). Increasing the observer coverage on motherships and shoreside processors could increase sampling to approximately 50 percent of the hauls. Under Alternative 2, on catcher/processors approximately 50 to 60 percent of the hauls are sampled by observers, increasing the coverage would provide an opportunity to sample 100 percent of the hauls and catch. Since catcher vessels often do not process or sort at sea, NMFS does not believe that increasing the observer coverage will provide greater quantities of salmon bycatch data. Therefore, Alternative 3 offers an opportunity to increase observer coverage where it is most needed for obtaining salmon bycatch data without impacting the entire fleet and without posing substantial administration fees to the observer program.

4.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The objective of the Regulatory Flexibility Act is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation.

If an action will have a significant impact on a substantial number of small entities an Initial Regulatory Flexibility Analysis (IRFA) must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

NMFS has defined all fish-harvesting or hatchery businesses that are independently owned and operated, not dominant in their field of operation, with annual receipts not in excess of \$2,000,000 as small businesses. In addition, seafood processors with 500 employees or fewer, wholesale industry members with 100 employees or fewer, not-for-profit enterprises, and government jurisdictions with a population of 50,000 or less are considered small entities. A "substantial number" of small entities would generally be 20% of the total universe of small entities affected by the regulation. A regulation would have a "significant impact" on these small entities if it resulted in a reduction in annual gross revenues by more than 5 percent, annual compliance costs that increased total costs of production by more than 5 percent, or compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities.

If an action is determined to affect a substantial number of small entities, the analysis must include:

- (1) a description and estimate of the number of small entities and total number of entities in a particular affected sector, and total number of small entities affected; and
- (2) analysis of economic impact on small entities, including direct and indirect compliance costs, burden of completing paperwork or recordkeeping requirements, effect on the competitive position of small entities, effect on the small entity's cashflow and liquidity, and ability of small entities to remain in the market.

4.1 ECONOMIC IMPACT OF SMALL ENTITIES

The minimum number of small entities that could potentially be impacted by alternative 2 are sixty-nine. In the 1993 directed pollock 'B' season fishery, there were 110 participants. This alternative would impact 63 percent of the participants in this fishery. Therefore, this regulation would impact a substantial number of entities in the pollock 'B' season fishery.

In the 1993 pollock 'B' season fishery there were approximately: (1) 36 catcher processors; (2) 44 vessels less than 125 feet LOA; (3) 11 vessels greater than 125 feet LOA; (4) 4 motherships and (5) 5 shoreside processors. Some of these could be considered to be small entities. Of these, all catcher processors, motherships and shoreside processors are not considered small entities while approximately 93 percent of the catcher vessels could be considered small entities, because they could potentially have annual receipts less than \$2,000,000. In 1993, there were a total of 106 entities participating in the fishery of which 96 are catcher vessels. Therefore, catcher vessels represent approximately 91 percent of the pollock 'B' industry. Alternative 2 does affect a substantial number of small entities. This alternative could result in a more than 5 percent increase in the cost of production

Requiring increased observer coverage under Alternative 2 would affect a substantial number of small entities because this alternative requires increased observer coverage on all vessels. Increases in observer coverage under Alternative 2 could result in a more than 5 percent increase in cost of production for the catcher vessels that are considered small entities. In addition, salmon bycatch from catcher vessels could be obtained from motherships and shoreside processors under Alternative 3. Alternative 3 does not affect a substantial number of small entities.

Table 4 identifies the vessel classes and the number of participants in each class based on the 1993 pollock 'B' fishing season. It has been determined that Alternative 2 could adversely impact some number of small entities because it may result in a more than 5 percent increase in the cost of production for catcher vessels. Although no vessel participated in this fishery that were less than 60 feet LOA, the adoption of alternative two could potentially effect vessels in this size class. Some of the catcher vessel 60 feet or greater will be potentially adversely effected by this regulation. Table 4 shows that there are 44 vessels that are between 60 and 125 feet LOA; and that there are 52 vessels greater than 125. The adoption of the second alternative could adversely impact some of these catcher vessels.

Alternative 2 could increase the total annual compliance cost by more than 5 percent of the total cost of production to catcher vessels that are considered small entities. In 1993, no vessels participated in the Pollock 'B' season fishery that were less than 60 feet LOA, however, alternative 2 could potentially prevent some number of small entities under 60 feet LOA from entering this fishery. In addition, catcher vessels could potentially be adversely affected as a result of this regulation and potentially forced to cease participating in the pollock 'B' season fishery as a result the increase in observer costs under Alternative 2.

Implementation of Alternative 3 would affect all motherships and shoreside processors who wish to participate in the pollock 'B' season fishery in the future. The primary impact would be a 100% increase in the cost of compliance with this additional coverage requirement. However, motherships and shoreside processors participating in the pollock 'B' season fishery generally have annual gross receipts over \$2,000,000 and are not considered small entities.

Administrative costs to observer contractors could increase if this regulation became effective immediately prior to the pollock 'B' season fishery. Alternative 2 would have the largest impact on the fishing industry in terms of costs, while Alternative 3 would have a substantially lower impact and be manageable. Alternative 1, status quo would have no additional impact.

5.0 SUMMARY

During the 1993 pollock 'B' season fishery 238,000 chum salmon were taken as bycatch. Coincident to this record high bycatch of chum salmon in the 1993 pollock 'B' season fishery was a decline in chum salmon returns to the Alaska-Yukon-Kuskokwim Region (AYK). Although the bycatch experienced in this fishery may have had minimal impact on the 1993 AYK escapement, the Council remained concerned about the decline of the AYK chum salmon run and wanted the ability to collect additional data on salmon by increasing observer coverage during the pollock 'B' season fishery.

The Council recommended that NMFS provide an analysis of a regulatory amendment to increase observer coverage during the pollock 'B' season fishery at the January, 1994 meeting. This analysis resulted in rationale for increased observer coverage to: (1) identify areas of high salmon bycatch and assess future management measures; (2) facilitate compliance with regulations requiring mandatory retention of salmon until a NMFS-certified observer has determined the species the number of salmon and completed the collection of biological samples and scientific data; and (3) identify vessel classes where high catches of groundfish per observer can potentially thwart the ability of observers to sufficiently sample catch to obtain representative data on prohibited bycatch rates.

The Council specifically requested that NMFS develop an analysis to increase observer coverage requirements for all vessels fishing with trawl gear during the directed BSAI pollock 'B' season fishery so that: (1) two NMFS-certified observers would be required onboard all trawl vessels that are greater than 125 feet length overall (LOA) that harvest or process groundfish from the CVOA or statistical area 517; and (2) 100 percent observer coverage would be required for all trawl vessels less than 125 feet LOA that harvest or process groundfish in statistical area 517. Pending its approval, the Research Plan would supersede all observer coverage requirements because it proposes to make annual determinations of the level of observer coverage required in the groundfish and other Research Plan Fisheries. This requirement would not apply to vessels and processors participating in the Community Development Program (CDQ) fishery.

NMFS anticipates that catcher vessels that qualify as a small entity for purposes of the Regulatory Flexibility Act would be adversely impacted under Alternative 2. Therefore, a third alternative was developed by NMFS as a means to satisfy the need for the collection of additional data, without causing adverse economic impacts to a significant number of small entities. This alternative is intended to provide as much additional data from the catcher vessel fleet that delivers to shoreside processors and motherships without requiring additional observer coverage on catcher vessels. Also, this third alternative would not require an increase in observer coverage on catcher processors which are prohibited from harvesting in the CVOA. This third alternative would increase observer coverage during the Pollock 'B' season by requiring two NMFS-certified observers be present at all times on all mothership vessels and shoreside processors that receive pollock harvested from statistical area 517 or the CVOA by vessels participating in the directed pollock fishery. The impacts under Alternative 2, are anticipated to result in a substantial

economic impact of small entities under the Regulatory Flexibility Act. Under Alternative 3, NMFS does not anticipate that any mothership or shoreside processor would result in a significant economic impact on a substantial number of small entities under the Regulatory Flexibility.

In addition, NMFS found that additional observer coverage on catchers vessels who do not typically process or sort their catch at sea, would not result in additional salmon bycatch data. Therefore, NMFS is recommending Alternative 3, as a means of collecting additional data on salmon bycatch.

None of the alternatives considered are likely to result in an "significant regulatory action" as defined in E.O. 12866. Act.

6.0 REFERENCES

United States Department of Commerce, USDOC, 1994. Final Environmental Assessment for 1994 Groundfish Total Allowable Catch Specifications Implemented under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska. NOAA, NMFS, Alaska Region, Juneau, AK, January 1993

NMFS, 1994. Summary Report of the Chum Salmon Bycatch Problems Experienced in the 1993 Pollock Fishery. NOAA, NMFS, Alaska Region, Juneau, AK, January, 1994.

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Total number of Observers Required Under Each Alternative

Vessels type	No.	Alternative 1 (Status Quo)	Alternative 2	Alternative 3
Shoreside-30%	1	1	1	2
Processor-100%	5	5	5	10
Mothership	4	4	8	8
Catch/proc	36	36	72	36
Catch/vess (30%)	44	13	44	13
Catch/vess (100%)	11	11	22	11
TOTAL OBSERVERS		70	152	80

TABLE 4. Estimated Observer Costs for the 1994 Pollock 'B' Season Fishery. Estimated from the 1993 Pollock 'B' Season Fishery.

VESSEL SIZE	Status Quo	Cost of Alter. 2	Cost of Alter. 3	Ves	Cost to Fleet (2 and 3)
Under 60 feet	0	0	STATUS QUO	0	Alter. 2 \$0 Alter. 3 \$0
60 - 124 Inshore	(49 days x 30%) = (14.7 days x \$200) = \$2,940/vess	(49 days x \$200) = \$9,800/vess	STATUS QUO	44	Alter. 2 \$431,200 Alter. 3
60 - 124 Offshore	(53 days x 30%) = (15.9 days x \$200) = \$3,180/vess	(53 days x \$200) = \$10,600/ vess	STATUS QUO	44	Alter. 2 \$466,400 Alter. 3
125+ Inshore	(49 days x \$200) = \$9,800/vess	(49 days x 2 x \$200) = \$19,600/ vess	STATUS QUO	51	Alter. 2 \$999,600 Alter. 3
125+ Offshore	(53 days x \$200) = \$10,600/vess	(53 days x 2 x \$200) = \$21,200/ vess	STATUS QUO	51	Alter. 2 \$1,081,200 Alter. 3
Mothership Inshore (125+)	(49 days x \$200) = \$9,800/vess	(49 days x 2 x \$200) = \$19,600/ vess	(49 days x 2 x \$200) = \$19,600/ vess	4	Alter. 2,3 \$78,400
Mothership Offshore (125+)	(53 days x \$200) = \$10,600/vess	(53 days x 2 x \$200) = \$21,200/ vess	(53 days x 2 x \$200) = \$21,200/ vess	4	Alter. 2,3 \$84,800
Shoreside Proc. 30%	(49 days x 30%) = 14.7 days x \$200 = \$2,940/proc	N/A	(49 days x 2 x \$200) = \$19,600/ proc	1	Alter 3 \$19,600
Shoreside Proc. 100%	(49 days x \$200) = \$9,800/proc	N/A	(49 days x 2 x \$200) = \$19,600/ proc	5	Alter. 3 \$98,000

²calculations are based on the number of vessels that participated in the pollock 'B' season fishery based on length and not whether they fished inshore or offshore. A total of 44 vessels participated in the 1993 pollock 'B' season that were between 60 through 124' LOA; a total of 52 vessels participated in the 1993 pollock 'B' season that were greater than 125' LOA and a total of 5 vessels were motherships that participated in the 1993 pollock 'B' season fishery.

Cost Comparison of Maximum Observer Coverage Costs Resulting From Increased Observer Coverage Requirements During the BSAI Pollock 'B' Season Under Alternatives 1, 2, and 3

<u>Vessel or Processor Class</u>	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Catcher vessels and Catcher/processors 60-125 ft	\$ 139,920	\$ 466,400	\$ 139,920
Catcher vessels and Catcher/processors \geq 125 ft	498,200	996,400	498,200
Motherships	42,400	84,800	84,800
Shoreside processors (30% operation)	2,940	2,940	19,600
Shoreside processors (100% operation)	<u>49,000</u>	<u>49,000</u>	<u>98,000</u>
TOTAL COSTS	\$ 732,460	\$1,599,540	\$ 840,520
Increased Costs relative to Alternative 1	\$ 0	\$ 867,080	\$ 108,060

Salmon Research Foundation

Report to North Pacific Fishery Management Council

April 23, 1994

This report summarizes the Salmon Research Foundation's ("Foundation") activities since the last Council meeting. It is divided into 3 sections:

- I. Foundation formation and status of initiative-related policies and regulations;
- II. Review of the 1994 "A" season bycatch avoidance program and recommendations concerning the 1994 "B" season; and
- III. Projected activities.

I. Foundation Formation and Status of Policies and Regulations

A. Foundation Formation. The Foundation is an Alaska nonprofit corporation established in December of 1993 as part of the Salmon Bycatch Control Policy adopted by the Council at its June and September 1993 meetings. The Foundation's purpose is to use the income from salmon bycatch assessment payments to develop a Bering Sea/Aleutian Islands ("BS/AI") salmon bycatch avoidance program, and to conduct research concerning the stocks of origin of salmon taken as bycatch in those areas.

The Salmon Research Foundation board of directors is composed of four Alaskans, four groundfish industry representatives, and a ninth, "at-large" director. The Alaska directors are Dan Albrecht and Jon Zuck of Anchorage, John White of Bethel, and Val Angasan from Dillingham. Mr. Albrecht is Executive Director of the Yukon River Drainage Fisheries Association, an organization uniting upper and lower Yukon River salmon fishermen to work on management issues. Mr. Zuck is a technical advisor to the Norton Sound Economic Development Corporation, a CDQ-related organization. Dr. White, the Foundation's President, is chairman of the Kuskokwim River Salmon Management Working Group, a co-management group that deals with Kuskokwim River salmon harvest issues. Mr. Angasan is a long time Bristol Bay fisherman and former member of the Alaska Board of Fisheries.

Directors representing the groundfish industry are Brent Paine, Dave Fraser, Vince Curry and Joe Blum, all of Seattle. Mr. Paine is Executive Director of United Catcher Boats, a trade organization representing 55 groundfish trawl vessels that deliver to shoreplants and motherships. Mr. Fraser, Vice President of the Foundation, is a trawl vessel owner and operator who has served on the Council's Advisory Panel. Mr. Curry is the Foundation's Secretary-Treasurer, and President of Pacific Seafood Processors Association, a trade association representing shoreside processing plants. Mr. Blum is Executive Director of the American Factory Trawler Association.

Dr. Phil Mundy, from Lake Oswego, Oregon, is the Foundation's At-Large director. Dr. Mundy is a former Chairman of the Council's Scientific and Statistical Committee, and former Chief Fisheries Scientist of the Alaska Department of Fish and Game.

B. Status of Policies and Regulations. At formation, the Foundation's most immediate objectives were to implement a voluntary assessment calculation and collection program and initiate a pilot bycatch avoidance program for the 1994 pollock "A" season. To achieve these objectives, two significant changes in the NMFS regulatory framework for the BS/AI groundfish fisheries were necessary. A description of the reasons for and nature of those changes and a brief report on their status follows.

1. Release of Bycatch Data. It would not be possible to develop the Foundation's bycatch avoidance program without access to current, unaggregated haul-by-haul data from the BS/AI trawl pollock and cod fisheries, including the time, place and depth of each tow, and the associated rate of salmon bycatch. Until recently, NMFS treated all such data as confidential, on the basis that releasing it could have an adverse competitive impact on the company providing it. While this may be true for fisheries targeting small, geographically discreet stocks, it is not the case for the pollock and cod fisheries.

Last November, Foundation organizers provided NMFS with a description of the haul-by-haul data fields necessary to initiate the avoidance program, and at the December Council meeting, a number of industry representatives formally requested that NMFS make those data fields for the pollock and cod fisheries available to the Foundation on an "as received" basis. The request was initially denied by NOAA General Counsel, on the grounds described above. However, after extensive discussions concerning the nature of the affected fisheries and U.S. Department of Commerce confidentiality standards, NMFS agreed to release the data on January 10, 1994 (only 9 days before the opening of the "A" season).

2. Retention and Counting Regulations. Between April and June of 1993, developers of the bycatch initiative determined that to develop reliable data concerning the actual amount of BS/AI trawl salmon bycatch, make it feasible to collect samples for stock identification purposes, to calculate assessments, and to enable the fleet to exercise peer pressure on vessels with inordinately high bycatch rates, two regulatory changes were necessary: (i) regulations requiring immediate discard of all salmon would have to be amended to require that salmon be retained until counted by a NMFS certified observer, and (ii) regulations authorizing NMFS to release to the public each vessel's salmon bycatch amount would have to be adopted.

At its June, 1993 meeting, the Council unanimously adopted the initial bycatch initiative framework, which included a request that NMFS develop the regulations described above. Unfortunately, the proposed rule concerning the changes was not published until January 19, 1994, and final regulations are not expected to be issued until mid-May.

II. Review of the 1994 "A" Season Bycatch Avoidance Program and Recommendations Concerning the 1994 "B" Season

A. The 1994 Bycatch Avoidance Pilot Program. The goal of the bycatch avoidance pilot program is to determine the feasibility and effectiveness of timely exchange of bycatch data for the purpose of reducing bycatch rates. As a first step toward achieving this goal, the Foundation retained Sea State Inc. in late December of 1993 to receive haul-by-haul bycatch data from the NMFS Observer Program, format the data in a fashion that

would make it easy for vessel operators to access and interpret it, and distribute it to the fleet and other interested parties. A chronology which identifies the major events of the "A" season program is attached.

To allow users to access the data electronically, Sea State prepared plotting software that allows users to display the location, tow characteristics and bycatch rates of individual hauls. The Observer Program prepared and supplied tow-by-tow data that included the time, date, location, depth, and rates of salmon, halibut and crab bycatch for reported hauls. Sea State personnel screened the Observer Program data for obvious errors, and then reformatted the NMFS files for the plotter program. Both the plotter software and the reformatted files were placed on a publicly accessible electronic bulletin board system ("BBS"). Bycatch files were updated as new information was received by Sea State.

Sea State personnel also used the same plotting software to make maps of bycatch patterns. The maps were transmitted by fax to processing plants, factory trawl and catcher boat offices, and other interested parties. Copies of weekly summaries of those maps are attached. These maps were constructed after the Observer Program corrected initial errors and restarted data transmission on February 28, but may still contain some inaccuracies.

1. Program Operation. The first step in the bycatch avoidance program as presently designed is transmission of data from the observers on the grounds to the Observer Program's central offices. In the "A" season, there were significant delays in this process.

On factory trawlers, observers sample hauls for bycatch soon after catches come aboard. With few exceptions, factory trawlers are equipped with SatCom Standard A communication capability, and have electronic mail software that allows them to transmit that information directly into NMFS computers in data file form. Therefore, it is theoretically possible for the bycatch rate of a given haul to be received and processed by NMFS within 12 hours of the haul being landed. However, a software problem prevented daily reporting from those vessels until mid-February.

In contrast, catcher boat harvest is typically not sampled until delivered to a processor. At offload, the vessel's observer (when one is aboard) samples the vessel's delivery, which may include several hauls, for bycatch and target species composition. Typically, the vessel's observer collects the catch weight information for that offload during the next delivery, calculates the related bycatch rate while at sea, and is ready to fax the data to the Observer Program on return. This means that bycatch data from catcher vessels is usually sent to the Observer Program two trips (at least 5-6 days) after an offload is made, and as much as 7-8 days after the related haul was taken onboard.

The second step in this process is assembly and reformatting of the bycatch data by the Observer Program, and transmission of that data to Sea State. Problems were encountered at this stage of the process, as well. As noted above, NMFS did not decide to release the haul-by-haul data until 9 days before the opening of the "A" season, and it was not feasible to start up and test the bycatch data transmission and analysis functions until then. As a result, much of the associated debugging took place in-season. In addition, the Observer Program was in the process of shifting from one processing

platform to another during the same period. Specific data errors included creation of multiple records for the same haul and construction of incorrect bycatch rates for basket sampled hauls. The latter problem was recognized on February 16, at which time NMFS ceased transmitting data until the problem was rectified on February 28. It should be noted that the Observer Program was highly cooperative in all stages of development and implementation of the pilot program, and diligently sought to correct problems in the portions of the program within their control as they were identified.

The third step in the process is appropriation of NMFS data files by Sea State. That process worked smoothly.

The fourth step is distribution of data to the fleet. The ability of vessels to receive daily updates varies widely. There are approximately 30 vessels that have the SatCom Standard A capability to receive bycatch information as data files. Because it was not clear until January 10 that data would be available to support it, the plotter software was not distributed until then. Consequently, most vessels left port without it. No vessels connected with the BBS while at sea. Several shore plants and factory trawl offices did, but were discouraged by the complexity of the system.

Because so few vessels and offices had the ability to access the BBS, Sea State was asked to distribute bycatch reports by fax. Factory trawlers received this data from their home offices as verbal recaps of the daily plots, or by having the faxes re-transmitted to the vessels. Three shore plants posted the plots for vessel operators to look at when they delivered. One shore plant copied the plots and distributed them to skippers. These methods of distribution delayed delivery of bycatch data to vessel operators.

2. Program Review. As noted above, data transmission from observers to the Observer Program, and the Observer Program to Sea State, was sporadic. In addition, there were substantial discrepancies between the bycatch rates associated with basket sampled hauls and those associated with whole-haul sampled hauls, and the errors associated with Observer Program data processing problems were significant in magnitude and frequency. As a result, the value of the reports for bycatch avoidance purposes was questionable. To complete the "A" season pilot program, the reports were distributed until the close of the offshore pollock fishery. However, because there were concerns regarding their value, the Foundation did not strongly promote their use.

To measure the fleet's perception of the "A" season program's effectiveness, Sea State distributed a questionnaire to all parties that received faxes, and did fourteen follow-up interviews. Vessel operators indicated that two day old data is probably current enough to influence where they would fish. They found one week old reports interesting, but no operator stated a willingness to change fishing location on the basis of that data alone. One individual said that reports needed to be not more than 12-24 hours old in order to influence his fishing moves.

All individuals, from both catcher boats and factory trawlers, said the most important salmon bycatch information they received during the 1994 "A" season came from tow by tow communication within the fleet. However, it is not clear that this data is exchanged beyond small groups. Inter-vessel communications may have been perceived as being more valuable than the Sea

State reports because the reports were distributed sporadically, and the program was not strongly promoted.

Most vessel operators reported that salmon bycatch appeared patchy, with wide variations in bycatch rates between successive hauls, even in the worst areas. Therefore, they were often reluctant to relocate when target species harvests were good, even if the associated bycatch rates were occasionally high. Regular distribution of reliable reports differentiating between areas of clean fishing and areas of significant bycatch could make vessel operators more willing to react upon encountering significant numbers of salmon.

3. B Season Recommendations. The following section identifies some of the problems encountered during the pilot program, and proposes possible solutions to them.

Problem: Vessels are reluctant to relocate from areas of high bycatch incidence.

Solutions: Increase confidence in reports by providing more timely and complete data concerning areas of relatively high and low salmon bycatch incidence. A significant proportion of the data must be less than 48 hours old, and reports must be widely and predictably distributed to vessel operators in a timely fashion.

Problem: Catcher boat data gathering is delayed.

Solutions: Have observers on motherships and at shoreplants generate bycatch data for catcher vessel deliveries. Additional observer coverage may be necessary to achieve this goal. In addition, have motherships transmit data files by SatCom and shore plants transmit data files by modem to the Observer Program within a specified period of time.

Problem: Vessels without SatCom A capabilities do not receive daily bycatch information.

Solution: Distribute summary bycatch reports by radio.

Problem: The Observer Program office has difficulty processing the data it receives in a timely fashion.

Solutions: Explore hiring a graduate student to assist with data processing. Arrange to have shoreplant and mothership bycatch information transferred as data files. Consider permitting observers to transmit salmon counts and haul weights separate from the balance of their reports.

Problem: The BBS and plotter system are complex and intimidating.

Solutions: Simplify the plotter program and improve its ease of use. Conduct properly timed training for personnel who will be using the software.

III. Projected Activities

A. Program Development. The Foundation board plans to undertake the following actions in the near term to further develop its ability to implement the bycatch initiative. These actions are within the 1994 budget.

1. Establish a Scientific Advisory Panel. The Foundation board has initiated the process of recruiting a panel with recognized expertise in areas that relate to the Foundation's major activities. Dr.

Mundy is directing this process. When established, the panel will be asked to immediately undertake two tasks. One will be an objective, scientific review of the effectiveness of the bycatch avoidance program. The other will be development and release of a request for proposals ("RFP") concerning bycatch stock identification. The Foundation has received a stock identification proposal from the Fisheries Research Institute at the University of Washington, in response to informal discussions between Foundation organizers and the Institute. However, the board believes that it is important to issue a broadly circulated RFP to identify existing stock identification research resources, and to assist in developing a project that efficiently complements existing capabilities and activities.

2. Conduct the "B" Season Bycatch Avoidance Program. The board plans to conduct a bycatch avoidance program during the "B" season that takes into account the review of the "A" season program provided above, and the comments it receives from its scientific advisors.

3. Develop a Critical Mass Measurement and an Assessment Collection Procedure. Under the current groundfish licensing regime, it is not possible to identify in advance vessels participating in the pollock and cod groundfish fisheries. As a result, it is only possible to determine in retrospect whether vessels representing a "critical mass" (i.e., 70%) of the harvesting effort in those fisheries are participating in the initiative. Also, as noted above, until the salmon retention regulations become effective, it will be very difficult to accurately estimate assessment income and calculate the obligations of individual vessels. The Foundation board will be conducting a comprehensive review of these issues during the month of May, and will bring to the Council its recommendations concerning these matters at the upcoming June meeting.

SALMON RESEARCH FOUNDATION

1994 "A" Season Bycatch Avoidance Pilot Project Chronology

December 27, 1993	Sea State Inc. is retained to provide bycatch reports.
January 5, 1994	Meeting of Sea State, Foundation representatives, skippers and vessel operations managers to introduce the pilot program.
January 10	NMFS agrees to release current haul-by-haul bycatch data to Sea State.
January 16-20	Brent Paine of United Catcher Boats installs Foundation plotter software on vessels and at shore facilities in Dutch Harbor.
January 20	"A" Season opens.
January 24	First bycatch data from vessels reaches the Observer Program.
January 25	First bycatch data transfer from Observer Program to Sea State.
January 31	Format and procedure for transfer of data from Observer Program to Sea State is formalized.
February 10	Transmission of bycatch plots by fax is initiated.
February 12	SatCom communications software problems are corrected; number of vessels sending daily bycatch reports increases substantially.
February 16	Basket sample bycatch rate error is discovered. Observer Program ceases providing data pending correction of the related data processing problem.
February 21	Offshore "A" pollock season closes. Pilot program is suspended.

January 20 - 24

Salmon bycatch: 8/mt

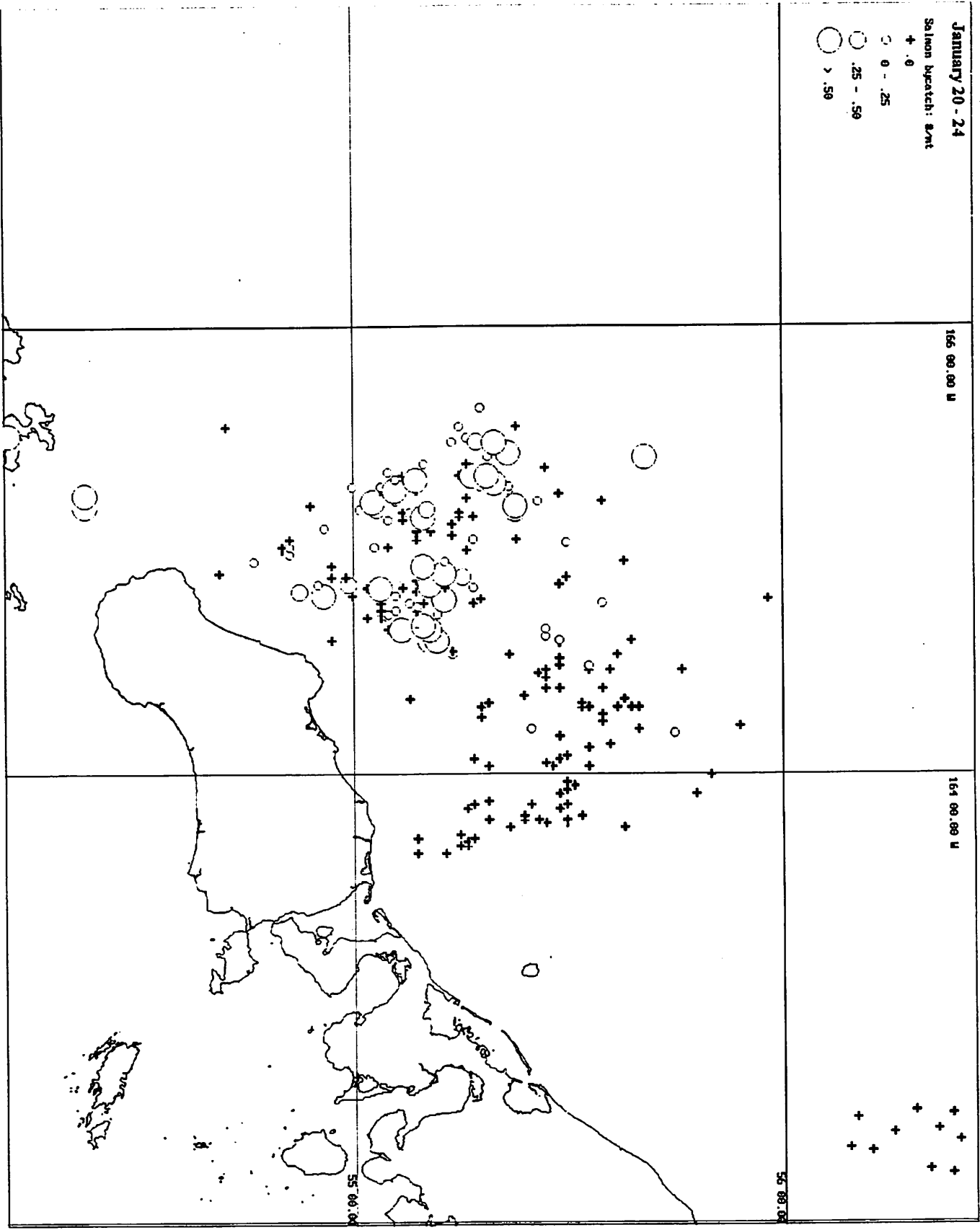
- + 0
- 0 - .25
- .25 - .59
- > .59

166 00.00 W

164 00.00 W

55 00.00 N

55 00.00 N



January 25 - 29

Salmon bycatch: #/wt

+ 0

○ 0 - .25

○ .25 - .50

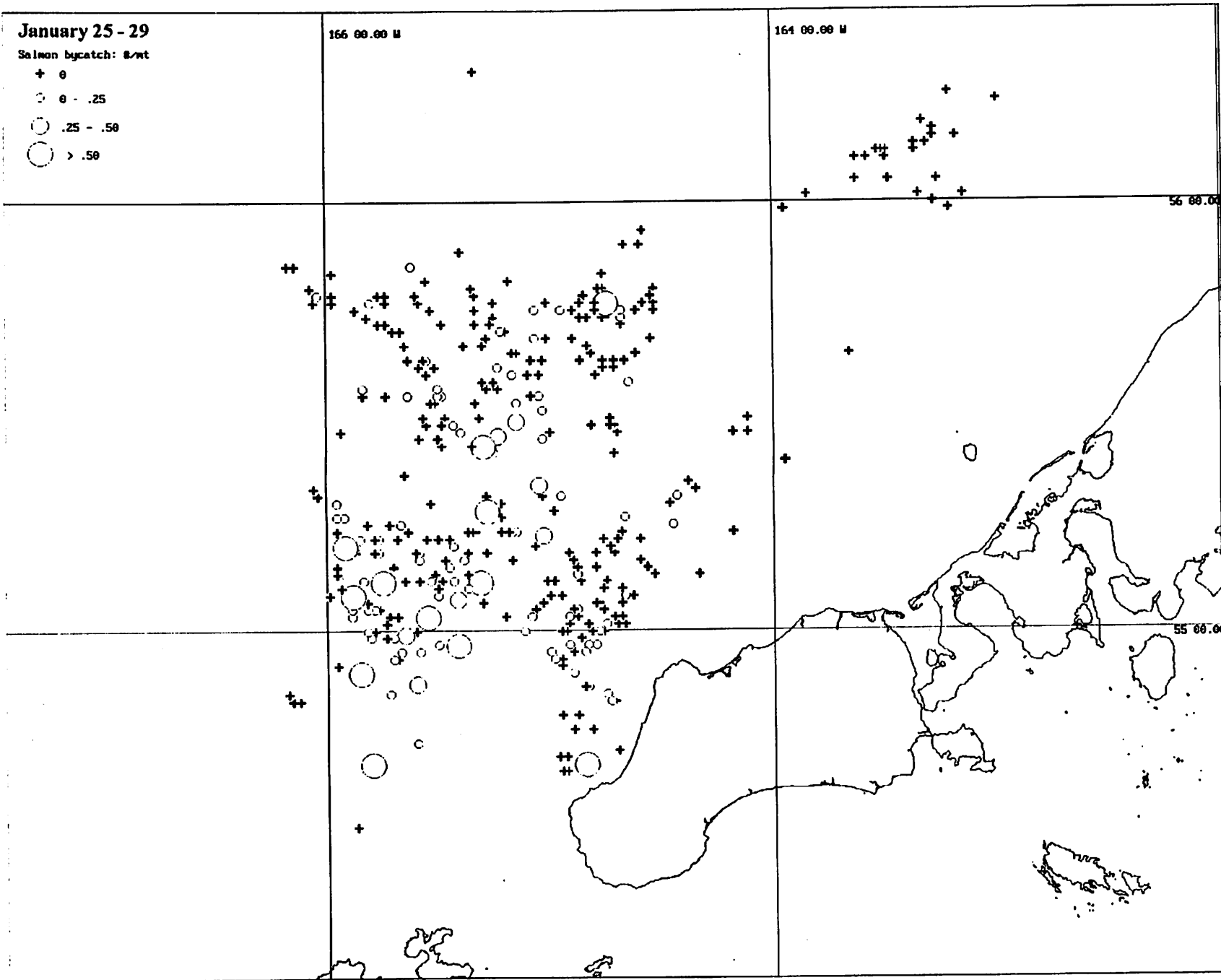
○ > .50

166 00.00 W

164 00.00 W

56 00.00

55 00.00



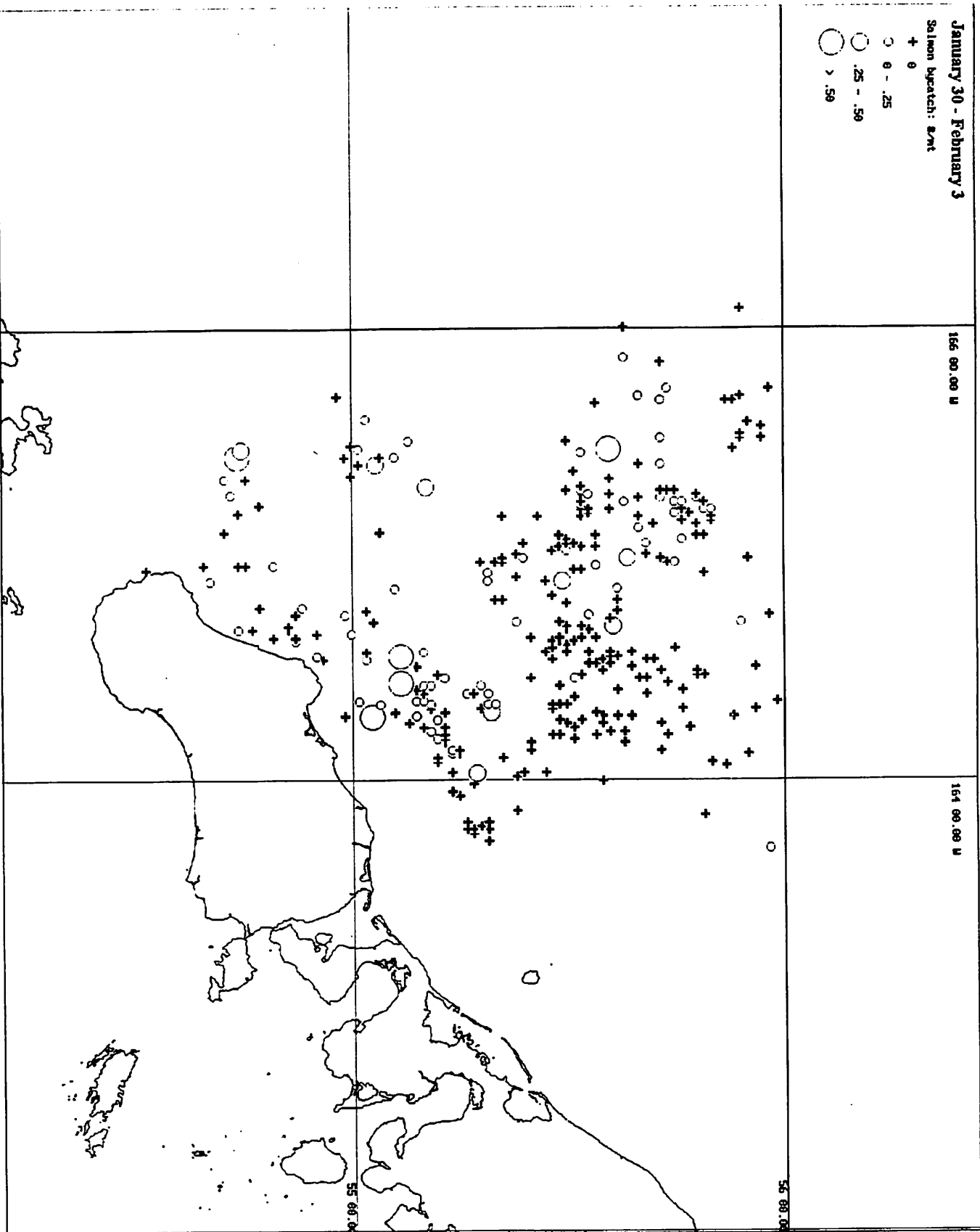
January 30 - February 3

Salmon bycatch: 8/mt

- + 0
- 0 - .25
- .25 - .50
- > .50

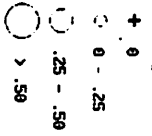
166 00.00 W

164 00.00 W



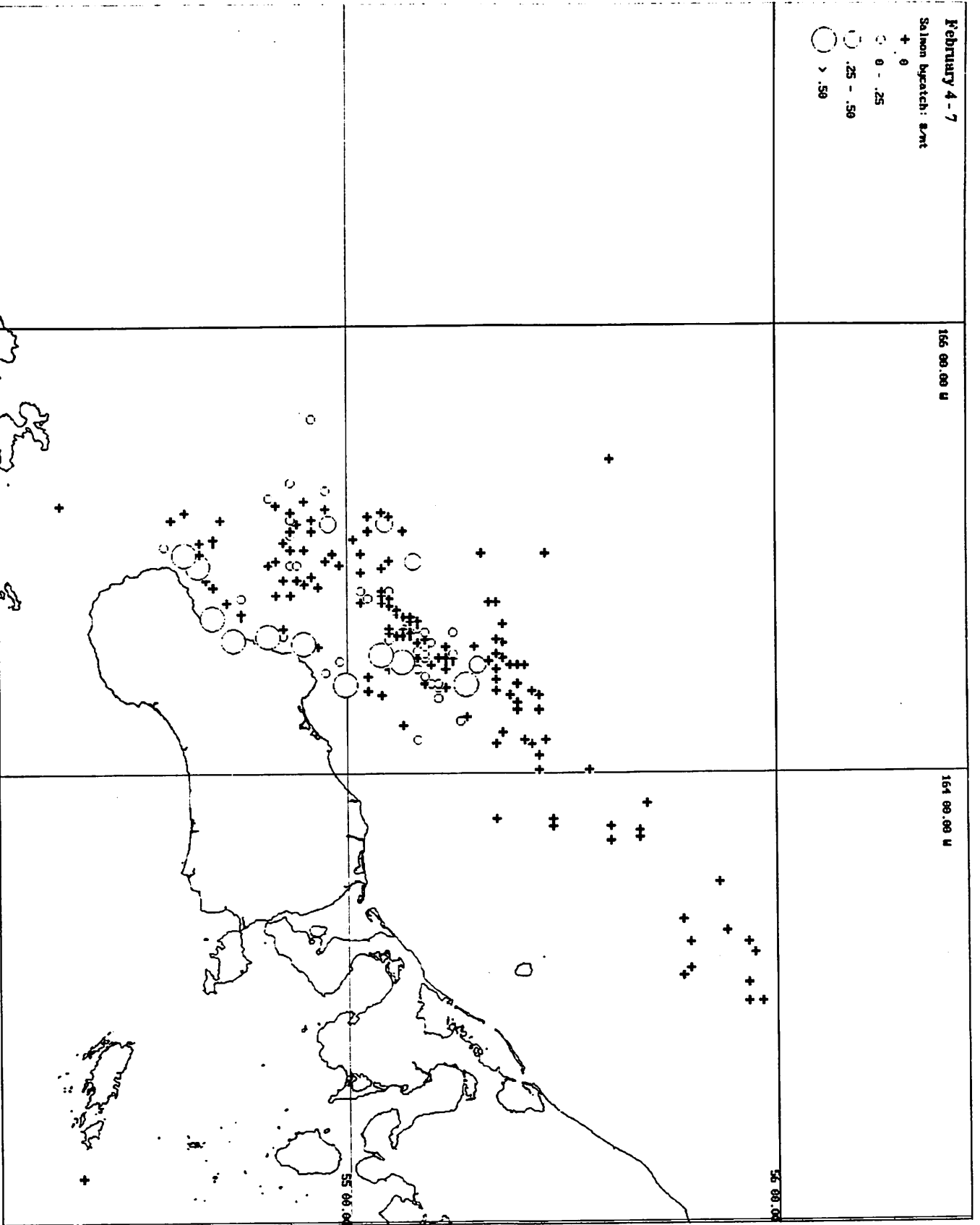
February 4 - 7

Salmon bycatch: 8/mt



165 00.00 U

164 00.00 U



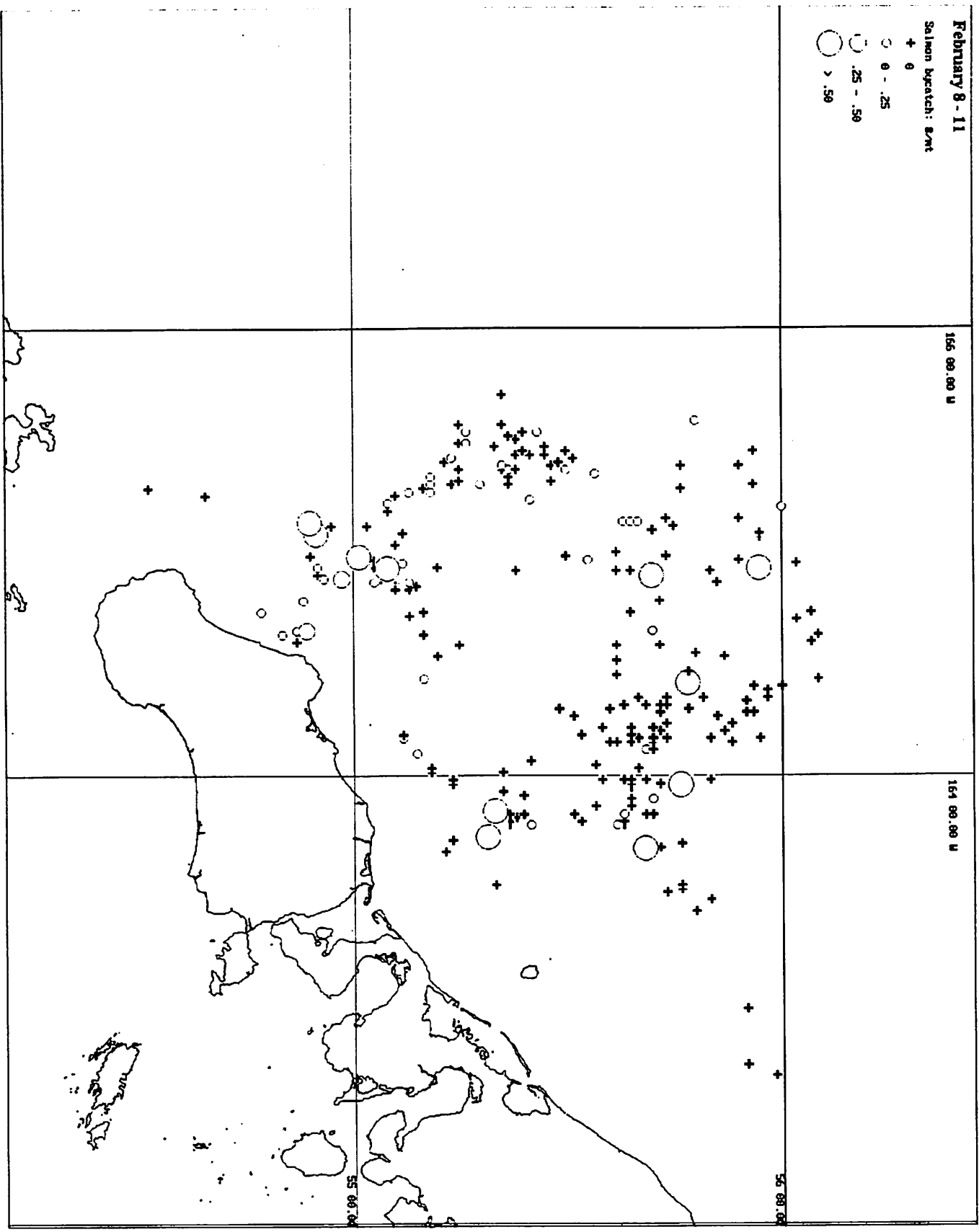
February 8 - 11

Salmon bycatch: 8/mt

- + 0
- 0 - .25
- .25 - .50
- > .50

165 00 00 U

164 00 00 U



February 12 - 15

Salmon bycatch: S/mt

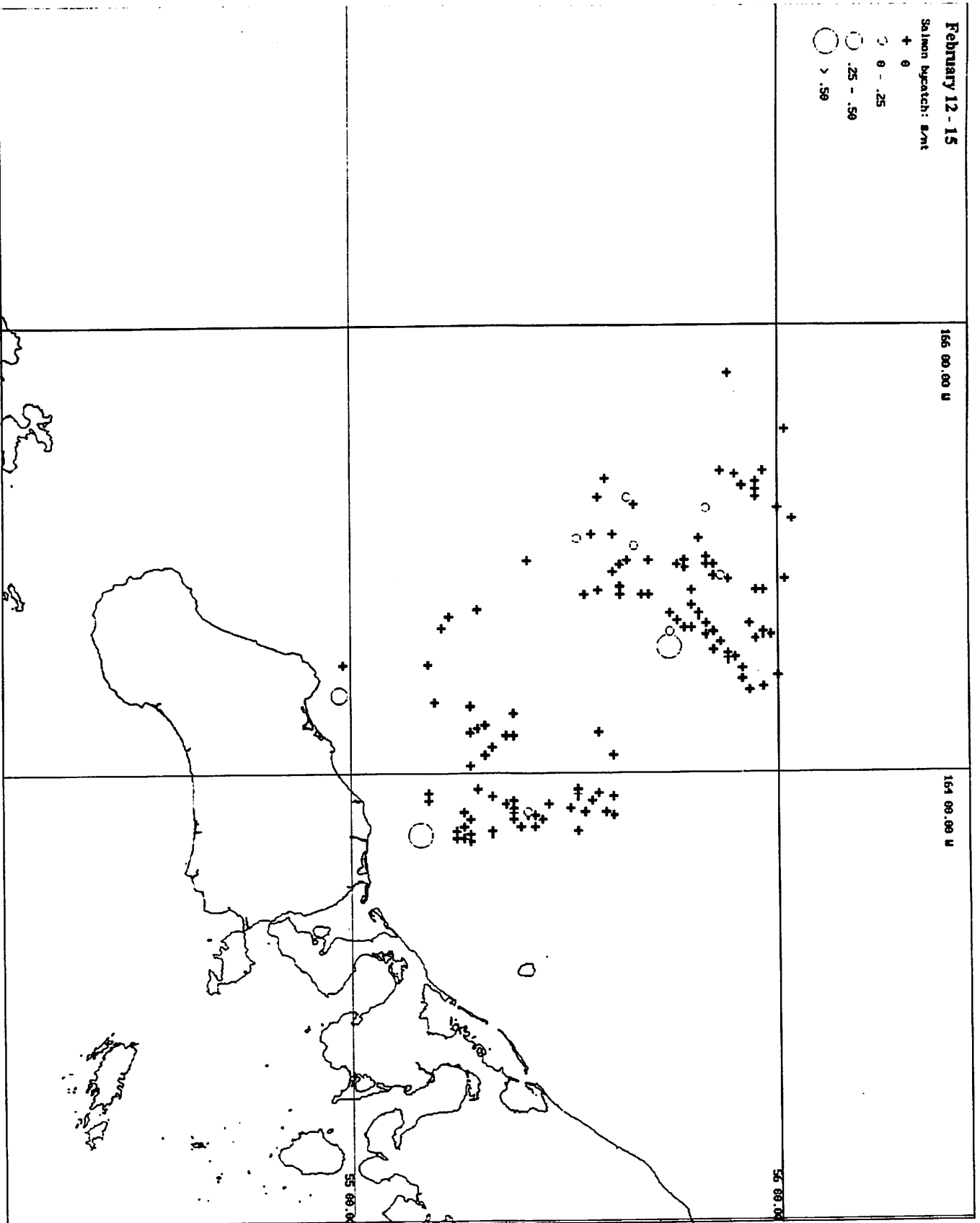
- + 0
- 0 - .25
- .25 - .50
- > .50

166 00.00 U

164 00.00 U

56 00.00

55 00.00



February 19-26

Salmon bycatch: smt

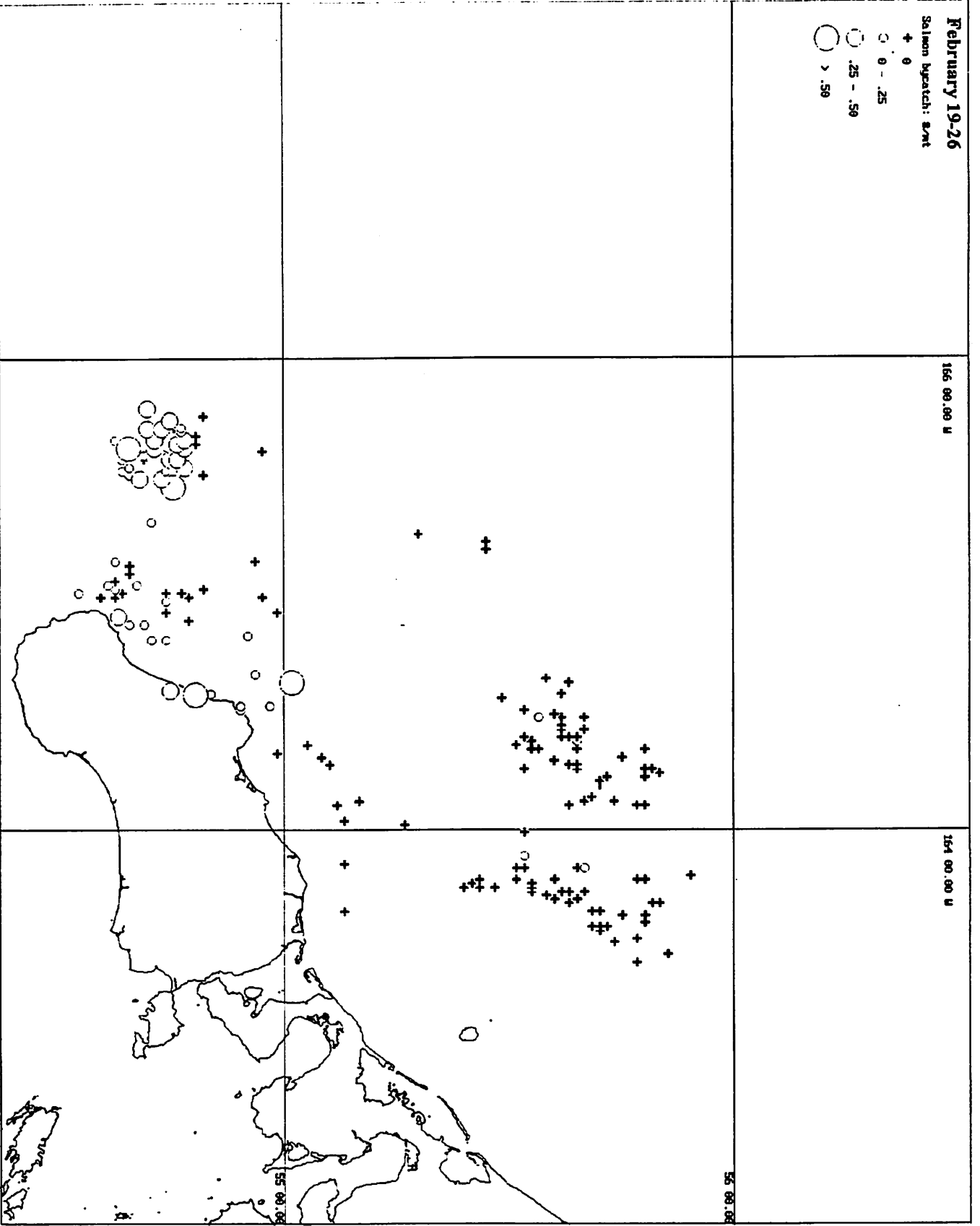
- + 0
- 0 - .25
- .25 - .50
- > .50

165 00.00 U

164 00.00 U

55 00.00

55 00.00



February 19 - 26

Salmon bycatch: EWT

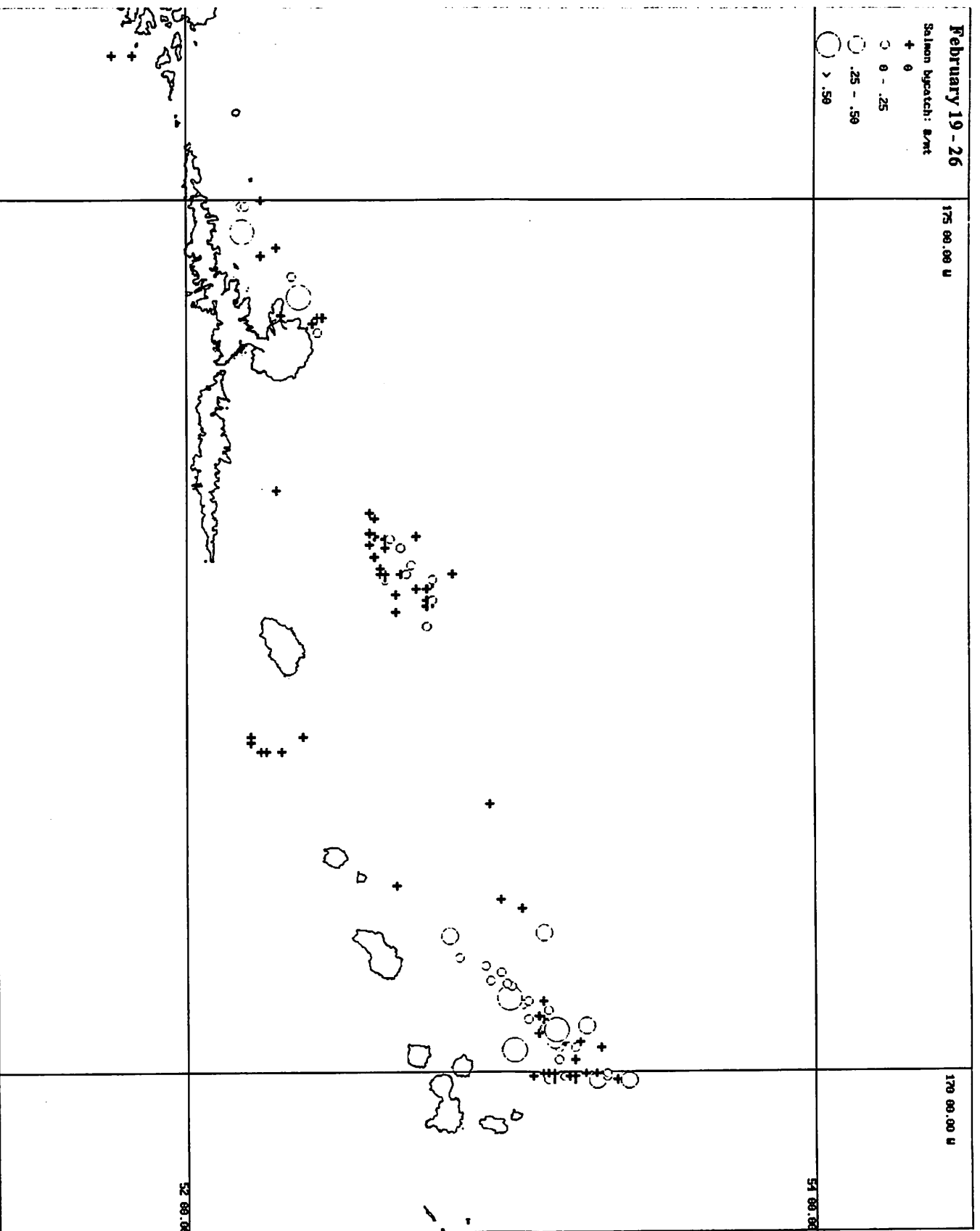
- + 0
- 0 - .25
- .25 - .50
- > .50

175 00.00 U

170 00.00 U

54 00.00

52 00.00



Fax Transmittal Memo 7672

To KAREN SAMUELSON
 Company
 Location
 Fax # 277-5975 Telephone #
 Comments

No. of Pages: 1 Today's Date Time
 From GREG KOZICKA
 Company AVCP INC.
 Location Bethel Dept. Charge
 Fax # 543-3596 Telephone # 543-3521
 Original Disposition: Destroy Return Call for pickup

AVCP

Association of Village Council Presidents
 P.O. Box 219 • Bethel, Alaska 99559 • Phone 543-3521

30th Annual Convention
 Toksook Bay, Alaska *** March 8-10, 1994
 Resolution 94-12

TITLE: A resolution supporting alternative management strategies in the North Pacific fisheries.

WHEREAS, The Association of Village Council Presidents, Inc. (AVCP) is the recognized tribal organization and non-profit Alaska Native regional corporation for the fifty-five tribal member villages of the Yukon-Kuskokwim Delta Region of Southwestern Alaska; and

WHEREAS, More fish were discarded dead in federally managed fisheries in the North Pacific than were landed in the U.S. North Atlantic in 1992; and

WHEREAS, Over 500,000,000 pounds of marine life were dumped overboard in the Bering Sea and Gulf of Alaska, including 20,000,000 pounds of halibut, 1,000,000 pounds of herring and over 20,000,000 crab; and over 360,000 salmon were intercepted by the trawl fishery in 1993; and

WHEREAS, Those herring, crab and salmon intercepted in offshore federal waters are State of Alaska managed resources; and

WHEREAS, These resources are the cultural and economic sustenance for many Alaskans who depend on the sea's resource for their subsistence lifestyle and livelihood; and

WHEREAS, This continued wanton waste undermines any long term management strategy of sustained subsistence and commercial fisheries, and places rural lifestyle at risk; and

WHEREAS, Alaska marine waters face declining wildlife populations and potential endangered species listings of several marine species that depend on fish for food; and

WHEREAS, Minimizing the catch of undersized species and reducing wanton waste will conserve fisheries resources for present and future generations of subsistence users, commercial fishers, seafood industries, coastal communities, consumers, and the nation;

NOW THEREFORE BE IT RESOLVED that the wanton waste now occurring in federal fisheries of the Bering Sea and the Gulf of Alaska is of utmost importance culturally, economically, and ecologically; and

BE IT FURTHER RESOLVED that the Association of Village Council of Presidents urge Congress to amend the Magnuson Act to enact a broad range of measures to reduce wanton waste in the North Pacific fisheries, including Harvest Priority incentives for clean fishing practices and other management tools.

ADOPTED by the Association of Village Council Presidents, meeting in its Thirtieth Annual Convention in Toksook Bay, Alaska on March 8-10, 1994, with a duly constituted quorum of members present.

CERTIFICATION:

Willie Kasayulie
 Willie Kasayulie, Chairman

Myron P. Naneng
 Myron P. Naneng, President