

M E M O R A N D U M

TO: Council, SSC and AP Members
FROM: Jim H. Branson
Executive Director
DATE: November 30, 1981
SUBJECT: Herring FMP Revision

ACTION REQUIRED

No action required.

BACKGROUND

E-2(a). In September the Herring PMT suggested that the FMP be withdrawn from Secretarial review so that certain sections could be amended and/or clarified. The team met with members of the original Plan Development Team and has made a series of recommendations. The language has not been finalized at this time but the intent of the PMT/PDT has been clarified. A copy of the FMP summary section is included the team's recommended changes underlined. Basically the PMT majority recommends that:

1. Stocks utilized exclusively for subsistence will not be included in determining exploitation rate and total harvest (OY) by the commercial fisheries. This refers primarily to Nelson Island/Nunivak stocks.
2. When spawning biomass survey data is not available a specified backup system may be used based on the previous year's data.
3. The maximum exploitation rate will not exceed 39%. (This 39% level would occur only when the biomass estimate reaches 470,000 mt).
4. The AIC formula should be replaced with a range. AIC would equal 1,500 - 3,000 mt and would be adjusted using changes in the ground-fish OY and the herring biomass as guidelines rather than specific elements in a formula.

The language in the body of the FMP is being edited to reflect these changes and other minor points of clarification. These should be ready for final Council approval at the January meeting. The Council may wish to ask for public comments at that meeting.

E-2(b). We have included a copy of a letter from Marine Resources Company to Bill Gordon regarding offshore allocation of herring for joint ventures. A lengthy package of reference documents accompanying the letter is available at the Council office.

JG

DEC81/N

PROPOSED CHANGES BY PMT

2.0 SUMMARY

The Magnuson Fishery Conservation and Management Act (Magnuson Act) requires each of eight Regional Fishery Management Councils to prepare Fishery Management Plans for fisheries within its area of jurisdiction in the Fishery Conservation Zone (FCZ) from 3 to 200 miles offshore. The purpose of each plan is to provide for an optimum yield of the resource to the fishermen and to the nation, and to promote fair and equitable allocation of the resource.

The present plan has been developed by the North Pacific Fishery Management Council (Council) with the assistance of the Alaska Department of Fish & Game (ADF&G) and the National Marine Fisheries Service (NMFS) as a framework which will govern management of fisheries for herring conducted beyond the three-mile limit on a multi-year basis.

The domestic inshore fishery within three miles has been managed by the State of Alaska since the fishery developed in 1977. This plan establishes a cooperative management policy of the North Pacific Council, State of Alaska Board of Fisheries (Board) and the NMFS, under which efforts will be made to assure that the Federal offshore and State inshore herring management regimes complement each other. It provides the basis for management measures and regulations for herring resources over a period of several years.

After a long public comment period, the draft fishery management plan has been modified to incorporate decisions on options and alternatives, including the final decision on the implementation of a herring savings area. This plan proposes the following:

2.1 Management Objectives

The plan proposes the following objectives:

- (a) To maintain the herring resource at a spawning biomass level that will provide the maximum production of recruits to the population on an annual basis.
- (b) To maintain the herring resource at a level that will sustain populations of predatory fish, birds and mammals.
- (c) To maintain the herring resource at a level that will enable the traditional subsistence fishery to harvest herring in the amounts necessary for subsistence purposes.

- (d) To promote full utilization of the herring resource by domestic fisheries.
- (e) To encourage development of herring fisheries in Western Alaska.
- (f) To provide, to the extent possible, a unified management regime between Federal and State jurisdictions.

Together, these management objectives suggest that priority should be given to the various herring fisheries in the following order:

- (a) the inshore subsistence fishery;
- (b) the inshore roe fishery;
- (c) the offshore domestic food and bait fishery; and
- (d) the offshore foreign food and bait fishery.

In addition, the incidental harvest of herring in foreign and domestic groundfish trawl fisheries must be limited.

2.2 The Fisheries

The subsistence fishery is conducted within territorial waters from the coast of the Alaska Peninsula to the southern part of the Chukchi Sea, with varying degrees of local dependency on the resource. This is a small spring and summer gillnet fishery (average annual catch from 1975-1980 was approximately 100 metric tons) for herring for personal use.

The domestic commercial herring fishery includes a spawn-on-kelp fishery (1980 catch was 108 mt worth \$168,000) and a developing herring sac roe fishery (1980 catch was 26,782 mt worth \$4.1 million). Both fisheries are conducted in a short early summer season, generally by off-season salmon seiners and gillnetters, within territorial waters. There is also a small bait and food fishery.

Japan and the U.S.S.R. have been the historic participants in the directed distant water herring fishery conducted primarily northeast of the Pribilof Islands. Catches have declined since the peak in the late 1960's and early 1970's (Japanese catch in 1968-1969 was 50,857 mt, Soviet catch in 1969-1970 was 92,228 mt, foreign fleet total in 1968-1969 was 128,230 mt). A Preliminary Fishery Management Plan (PMP) for trawl fisheries and herring gillnet fisheries in the Bering Sea and Aleutian Islands was implemented in 1977, substantially ending the foreign directed food and bait herring fishery,

and limiting foreign vessels to an incidental harvest of herring in groundfish trawl fisheries. Since a court order was issued in February, 1980, herring have been a prohibited species, i.e. the taking of herring must be avoided and any herring caught by the foreign fishery must be thrown back and not retained. This order also terminated plans of United States fishermen for pioneering joint venture operations with Soviet processing vessels for 1980.

2.3 Estimation of Yield

The fishery management plan must assess and specify the Maximum Sustainable Yield (MSY) of the fisheries generated by it over a continuing period of time. MSY is based on an assessment of resource biomass. Biomass of the Bering Sea herring stocks wintering off the Pribilof Islands was estimated using data from Soviet hydroacoustic trawl surveys (1965, 1978) and from ecosystem modelling (1978). MSY was calculated from the average annual foreign fishery catch from 1962 to 1976, which was equal to 48,186 metric tons (mt) from an estimated biomass of 240,930 mt, at an exploitation rate of 20%. This estimate may be conservative and may be revised as additional research and catch information become available. The biomass level that will produce MSY over the long term will fluctuate according to growth, recruitment and mortality factors (see Section 9.6.1).

The annual estimate of the acceptable biological catch (ABC) will be calculated by the formula

$$\text{ABC} = \frac{\text{spawning biomass}}{\text{MSY biomass}} \times .2 \text{ (exploitation rate at MSY)} \times \text{spawning biomass} \\ + 2,000 \text{ mt (Aleutian/Alaska Peninsula stocks)}$$

The best available estimate of spawning biomass or total biomass will be used. It is expected that the primary basis for these annual estimates will be counts of herring schools made during aerial surveys conducted by ADF&G throughout the spawning season. Stocks utilized exclusively for subsistence will be excluded from the spawning biomass estimate before ABC is calculated. At present this primarily concerns stocks spawning at Nelson Island and in the Nunivak area. The greatest amount of available information is from the Bristol Bay/Good News stock grouping, the Kuskokwim/ Yukon River Delta and the Norton Sound stock grouping. These tentative stock groupings are based on

similarities of distribution, behavior, utilization and abundance. Estimates are not available for the Aleutian/Alaska Peninsula stock grouping or the Port Clarence/Kotzebue Sound stock grouping, neither of which has been extensively exploited commercially in the past.

The plan maintenance team (PMT), which will recommend the ABC estimate to the Council each year, may use any other available information to augment the aerial survey counts. It is expected that in some years there may be no reasonable aerial survey data due to weather, ice or other factors. In the absence of spawning survey data the PMT will use the procedure outlined in Section 9.6.2.3.

The Allowable Incidental Catch (AIC) of herring in the groundfish trawl fisheries is established as a range from 1,500-3,000 mt. AIC applies to both foreign and domestic groundfish trawl fisheries for the fishing year beginning April 1. The guidelines for adjustment within this range are specified in Section 9.6.2.4.

The Optimum Yield (OY) is a departure from ABC for socioeconomic reasons. OY will be calculated in two stages (preliminary OY and final OY) based on the formula.

$$\text{OY} = \text{ABC (including 2,000 mt for Aleutian/Alaska Peninsula Stocks)} \\ - \text{AIC}$$

The priorities of allocation, the availability of data, and the sequential occurrence of the fisheries require a system of in-season management for timely allocation based on current stock assessment information. In September of each year the PMT will use the most current data to determine ABC, AIC, and OY. This OY will be the final OY for the current year and be the basis for additional allocation to offshore fisheries during the remainder of the herring fishing year. This is also the preliminary OY for the succeeding year and will be the basis for preliminary allocations to the domestic food and bait fishery and to the inshore fisheries. Final allocations of remaining OY will depend on condition of stocks and performance of the fisheries (see Section 14.2).

2.4 Allocation of OY to the Fisheries

2.4.1 Fishing year. April 1 to March 31

A fishing year commencing April 1 coincides with the migration of herring into coastal waters for spawning and is a natural division between the fisheries occurring on the winter grounds and those on the spawning grounds.

2.4.2 Allocation of preliminary OY

In September, a preliminary estimate of OY will be developed by a herring plan maintenance team (PMT or team) appointed by the Council, for the fishing year beginning the following April. The team will consist of representatives from the NMFS and ADF&G, and other individuals that the Council may wish to appoint.

The PMT will analyze all biological and fisheries data relevant to determination of ABC. Following the determination of ABC, the team will make an estimation of Allowable Incidental Catch (AIC) (for the following fishing year, April 1 to March 31) which is deducted from ABC, (see Section 9.6.2.4).

The team will also evaluate all socio-economic data available to it for determination of a preliminary OY (Section 12.0) for the following fishing year. The preliminary OY will be presented to the Council and the Alaska Board of Fisheries for review. The preliminary OY recommended by the Council will be submitted to the NMFS for its consideration in setting the preliminary OY by regulation.

After the establishment of a preliminary OY, allocations will be made to the individual fisheries in the following order:

(a) Domestic Offshore Food and Bait Fishery

An allocation will be made to the domestic food and bait fishery for the period April 1 to September 30. This allocation is primarily to provide for current domestic food and bait fisheries. For the immediate future, this allocation will be no greater than 2,000 mt.

(b) Domestic Inshore Roe Fishery

The remaining portion of the preliminary OY will be allocated to the inshore domestic roe fishery.

2.4.3 Determination and allocation of final OY

By September 30 of the current fishing year, the herring PMT will evaluate biomass estimates, biological parameters, ecological factors and socio-economic data to formulate a final OY for the current fishing year, which will also be the preliminary OY for the following fishing year. This will be submitted to the Council for review, and the Council will forward a final OY recommendation to NMFS, which will consider it in setting the final OY by regulation.

(a) Domestic Offshore Food and Bait Fisheries

If a harvestable surplus is available to the food and bait fishery following the roe fishery, fishing will be allowed throughout the FCZ until the end of the fishing year, March 31, or until the allocation is harvested.

The amount to be allocated to the domestic food and bait fishery will be determined by an intent to operate filed before the start of the winter season by processors and fishermen.

If there is no surplus, then the food and bait fishery will be allowed to harvest only its initial 2,000 mt allocation.

If, after the roe fishery, there is no surplus OY, or there is only a very small surplus OY that cannot be controlled by the regulation of a large fishing fleet, ie. the fishing effort is such that the OY can be taken within a reporting period, then domestic and foreign fisheries having the potential to take herring will be closed in offshore areas of herring concentrations (see Section 14.3.2.).

(b) Foreign Fisheries

If domestic fisheries utilize all of the OY and the domestic portion of AIC, then only the foreign Allowable Incidental Catch of herring in the groundfish fishery may be taken for the remainder of the fishing year.

Any OY remaining following final domestic food and bait allocation will be allocated to foreign herring food and bait fisheries.

If domestic fisheries are not active in December and there are no indications that domestic herring fisheries will be actively engaged in during the remainder of the fishing year, all or a portion of the remaining domestic food or bait allocation will be released to the foreign fisheries. The Regional Director of the National Marine Fisheries Service, Alaska Region (Regional Director), in consultation with the Council shall make the release from DAH to TALFF by January 30.

2.5 Management Measures for Domestic Fisheries

2.5.1 Inshore commercial fishery

- i. Provisions for allocation. See Section 14.2.2(2).
- ii. Regulations for the orderly conduct of the inshore commercial fishery shall be promulgated by the State of Alaska Board of Fisheries and are not provided for in this plan.
- iii. The FCZ will be closed to directed herring fishing from the beginning of the fishing year, April 1 to July 1, south of 60°N latitude; and to August 1, north of 60°N latitude. However, the Regional Director, in consultation with ADF&G and the Council, may open the FCZ by emergency regulation if ice conditions or other factors preclude full development of the roe fishery within state waters.

Rationale

The roe fishery is currently managed exclusively by the State of Alaska because the entire fishery occurs within State waters. It is expected that the roe fishery will continue inside of three miles in the future since roe quality and recovery rates are greatest in close proximity to the spawning grounds. It is desirable to continue restricting the roe fishery to State waters because product quality will be highest, management and regulation of the fishery will be simplified, aerial biomass surveys will be more easily performed, and fishing on discrete stocks is facilitated. Management of the roe fishery by the State is based on the following considerations:

- (a) the effect of overall fishing effort;
- (b) the catch per unit effort and rate of harvest;
- (c) the relative abundance of herring in comparison with pre-season expectations;
- (d) the performance of the roe fishery;
- (e) the proportion of immature or spawned out herring and the age structure of the populations;
- (f) general information on the condition of herring;
- (g) information pertaining to the optimum yield for herring;
- (h) timeliness and accuracy of catch reporting by buyers to the extent that such timeliness or accuracy may reasonably be expected to affect proper management; and
- (i) any other factors necessary for the conservation and management of the herring resource.

These considerations allow adjustment of harvest levels during the fishery and are also the basis for development of preliminary and final OY's by the Council and NMFS.

The third management measure will prevent a targeted fishery on herring from occurring on stocks immediately prior to spawning in order to allow the inshore fishery the maximum opportunity to harvest the spawning stocks.

2.5.2 Offshore food and bait fishery

- i. Provisions for allocation, see sections 14.2.2.(1) and 14.2.3.(1).
- ii. The FCZ will be closed to directed herring fishing from the beginning of the fishing year, April 1 to July 1, south of 60°N latitude; and to August 1, north of 60°N latitude. However, the Regional Director, in consultation with ADF&G and the Council, may open the FCZ by emergency regulation if ice conditions or other factors preclude full development of the roe fishery within state waters.

Rationale

See the rationale discussed above.

- iii. All or part of the Herring Savings Area as described in Appendix 18.2 will be closed to herring and groundfish trawl fisheries by the Regional Director, in consultation with the Council if:
 - a. There is neither remaining DAH, remaining initial 2000 mt domestic allocation, nor remaining AIC; or
 - b. The amount of remaining DAH, remaining initial domestic allocation, and remaining AIC can be harvested within one reporting period.

Rationale

If it is determined that there is no remaining DAH, initial domestic offshore allocation, or AIC, the Herring Savings Area Closure would be implemented to protect the feeding stocks against further harvesting by the winter fisheries. If there is a small amount of remaining DAH, initial domestic offshore allocation, or AIC outstanding that can be taken in one reporting period, an in-season closure could be implemented by the Regional Director in order to avoid exceeding the OY between reporting periods (see In-season Adjustment of Time and Area, Section 14.5).

2.5.3 Other regulations

Regulations in the Bering Sea/Aleutian Islands Groundfish FMP for time and area closures shall also apply to all herring fisheries.

Rationale

Any herring trawl fishery in the FCZ is conducted in conjunction with both domestic and foreign groundfisheries. The restrictions on groundfishing operations have been developed to protect incidentally caught species and prevent gear conflicts. As herring fishing gear is similar to gear used for groundfish (e.g. pollock), the herring fishery has potentially the same impact. Thus, the Bering Sea Groundfish FMP implementing regulations specifying time and area closures shall also apply to the herring fisheries to minimize adverse impacts and to maintain consistency of regulations.

2.5.4 Statistical reporting requirements

Landings must be reported on a fish ticket as required by the State of Alaska commercial fishing regulations or on an equivalent form. Fishery data compiled for the domestic offshore herring fishery should have the following precision: catch by species, by $\frac{1}{2}$ degree latitude x 1 degree longitude areas, by gear type and vessel class, and by month; effort (e.g., hours towed, number of landings, number of trips) by gear type and vessel class, and by month.

2.5.5 Permit requirements

All U.S. vessels operating in the FCZ portion of the Bering/Chukchi Sea must have on board a permit issued by the Secretary of Commerce or a State of Alaska vessel license.

2.6 Management Measures and Rationale for the Foreign Fishery

2.6.1 Existing area closures

- i. Fishing for herring is not allowed within 12 miles of the baseline used to measure the Territorial Sea, except in certain waters adjacent to the western Aleutian Islands specified in the Bering Sea/Aleutians groundfish FMP.
- ii. No foreign vessel may fish for herring east of 168°W longitude.

Rationale

These measures prevent conflicts with U.S. fixed gear and small, inshore fishery vessels and also prevent the catch of herring and localized inshore species important to U.S. fishermen.

- iii. The Bering Sea/Chukchi Sea management unit will be closed to herring fishing by vessels of a nation for the remainder of the herring fishing year when that nation's allocation of herring OY is reached.

Rationale

This implements the requirement of the Magnuson Act that a foreign nation's fishery be terminated when the nation's allocation of TALFF for that fishery has been reached.

- iv. Time/area closures specified in the implementing regulations of the Bering Sea/Aleutian Islands Groundfish Fishery Management Plan apply to herring fishermen using trawl gear in the Bering Sea/Aleutian Island area.
- v. All or part of the Herring Savings Area, as described in Appendix 18.2 will be closed to herring and groundfish trawl fisheries by the Regional Director, in consultation with the Council if:
 - a. there is no remaining AIC or herring TALFF; or
 - b. the amount of remaining AIC or herring TALFF can be harvested within one reporting period.

Rationale

The purpose of this time/area closure is to minimize the incidental catch of herring by foreign groundfish trawl fisheries. An in-season closure provision is necessary to allow the Regional Director to act within a reasonable amount of time to protect herring stocks from being over harvested during one reporting period (see Section 10.3).

This closure applies to trawl gear only. Longline, pot or other gear types which are not utilized to fish for herring or catch herring above trace amounts (less than 0.001% of total catch) are exempt from this time-area restriction.

2.6.2 Foreign reporting requirements

The operators of all foreign vessels must maintain an accurate log of catch and effort information in accordance with the requirements of the implementing regulations of the Bering Sea/Aleutian Islands Groundfish Fishery Management Plan and other Foreign Fishing Regulations, 50 CFR Part 611.

2.6.3 Permit requirements

All foreign vessels fishing for herring or groundfish in the FCZ must have on board a permit issued by the Secretary of Commerce, as required by the Magnuson Act.

2.6.4 Prohibited species

The retention of salmonids, Pacific halibut, Tanner crab, king crab, coral, snails, scallops, shrimp, surf clams, horsehair crab, lyre crab, or Dungeness crab, or other continental shelf fishery resources is prohibited. This prevents covert targeting on species of importance to U.S. fishermen.

2.7 In-season Adjustment of Time and Area

The Regional Director of the National Marine Fisheries Service, Alaska Region, or his designee, may issue field orders adjusting time and area restrictions.

William Gordon
November 24, 1981
Page 2.

for Alaskans. As you know, the Magnuson Act's directive transcends the interest of a single state and must be applied for the common good of the United States fishing industry. It is this basic principal which we feel is being subordinated in the regional decisions of NMFS.

As evidence of this discrimination against the high seas fishery in Alaska, one need look no further than the proposed Fishery Management Plan which has recently been withdrawn from the Secretary for reasons unrelated to this issue. That plan establishes an allocation scheme which subordinates the high seas interest to the inshore commercial fishery. The allocation scheme would allow no high seas fishery except to the extent that the optimum yield is not utilized by the inshore fishery. Further, it overlooks the tremendous wastes of protein caused by this fishery in that only the roe of fish is utilized and that only the female of the species contains roe. We refer you to the Magnuson Act's definition of optimum yield which requires management toward "the greatest overall benefit to the Nation, with particular reference to food production". For purpose of further discussion, the North Pacific Council's allocation scheme which subordinates the high seas fishery will be referenced. We cannot, however, accept this as a premise for future discussions as it is an allocation without justification and we feel violative of several national standards.

From our point of view we are seeing faulty logic at several decision points with regard to this herring fishery. We would further like to comment on specific issues related to this fishery.

The Preliminary Management Plan

In late 1979 and early 1980 the National Marine Fisheries Service accommodated our request for a high seas herring fishery by issuing a permit to our leased processor to take a specified amount of available herring. The Bering Sea Preliminary Management Plan was amended at that time to reflect an optimum yield and JVP which permitted such a fishery. (Please refer to Reference 3). Unfortunately for ourselves and the fishermen who had geared up at considerable expense to participate in this new fishery, the fishery was terminated due to an order of the Alaska Federal District Court, finding that the regulations to implement the Preliminary Management Plan were ~~improperly~~ issued under the Administrative Procedures Act. The fault found by the court was with an inadequate notice and comment period - not with the merits of the fishery. The court ordered NMFS to promulgate the regulations in the manner prescribed by the Administrative Procedures Act. Yet this was not done by NMFS in 1980, nor in 1981, nor is it presumably going to be done for 1982. We find this lack of action on the part of NMFS difficult to accept, as I'm sure you can appreciate.

The Preliminary Management Plan has been unaltered with regard to herring since 1980. As a consequence, the optimum yield, and JVP allocations, determined therein for herring remain as established. Thus conceivably, a permit application for herring could be acted upon as the requisite numbers of the PMP have been established. However, since the biomass of herring is subject to considerable annual variation, permission to foreign fishing vessels to fish pursuant to the 1980 values in the existing PMP would be highly vulnerable to attack by those opposing our joint venture fishery.

William Gordon
November 24, 1981
Page 3.

The more appropriate course is to establish an annual PMP amendment cycle which reflects the appropriate management analysis. Such amendment should be well in advance of the high seas fishery in order to accommodate business planning decisions of this and other fishing operations. Instead, for the fishing years 1981 and 1982, NMFS decisions regarding the herring fishery have been ad hoc denials, without the review process contemplated by the drafters of the Magnuson Act.

Fairness

Marine Resources has suffered the loss of this valuable fishery in 1980, due to a court order voiding NMFS regulations on technical irregularity; in 1981, due to a finding of low biomass (after accommodating the inshore fishery without limitation); and in 1982, due to a sudden unjustifiable shift in management policies after the existing biological rules indicated adequate supply of fish for a high seas fishery. It is little wonder that we find ourselves suspect of a system which offers prospect of a fishery and then changes the rules to foreclose the fishery which would otherwise have been allowed in the prior three years. National Standard 4 applies. With no fishery, 5000 MT of the optimum yield goes unutilized. National Standard 1 applies.

Economics of the Fishery

Marine Resources Company has previously advised the Council of the economic benefits of an offshore herring fishery. We have pointed out that the inclusion of a limited herring harvest in the pollock/cod fishery may be critical to the economics of the fishery as a whole. Without herring, there is significantly less incentive toward the development of the underutilized multi-species ground-fish fishery of the Bering Sea. The comments of Reference 2 applies. Furthermore, the justification for favoring the inshore fishery, an implied higher economic value, seems to have dissipated with the changing markets. Moreover, the managers cannot lose sight of the key element of optimum yield - food production.

Biological Factors Surplus

The so-called "surplus" available for high seas fishing in the Bering Sea has been the subject of considerable scrutiny in recent weeks. Confusion has arisen about the application of the formula set forth in the fishery management plan for the determination of the acceptable biological catch (ABC). Some concern has been expressed about the method of calculating the allowable incidental catch (AIC) within that formula. It should be noted that much of the confusion and concern arose from unclear explanation in the Plan about procedures and inputs, rather than disagreement over the merits of the formula. While some concern may be legitimate, impact of AIC on the determination of ABC is relatively insignificant. 1,900 tons were deducted from the ABC to make the determination of the OY and the allocable surplus of 5,018 tons. Recent conversations with ADF&G indicate actual surplus may be raised to 7,472 tons. Thus, regardless of the outcome of the AIC question, the "surplus" is there and available for the high seas fishery.

Failure to make this allocation violates the Magnuson Act's directive to assure the achievement or utilization of the optimum yield. As an added note, the

William Gordon
November 24, 1981
Page 4.

considerable conservatism already adopted in the ABC formula should be taken into account when weighing the risk of a high seas fishery. The exploitation rate is quite low as compared with other world herring fisheries. Further, the biomass estimates don't consider abundance of pre-recruits to total biomass or the likely prospect of Asian herring stocks mixing with the Alaskan stocks in the high seas fishing grounds.

Fishing on Mixed Stocks

Concerns expressed by National Marine Fisheries Service officials in denying an offshore fishery include the perceived potential for overfishing of discrete stocks of herring which may mix in offshore wintering grounds. The general consensus of scientists however is that such fishery is not likely to be detrimental to the stocks. The North Pacific Council's Scientific and Statistical Committee, which is the recognized independent reviewer of such scientific matters, did approve, together with the Council itself, an FMP which gives some access rights to the domestic offshore fishermen. Although those access rights may be severely limited, the offshore fishery is provided for automatically if a surplus can be shown to exist over and above the harvest levels from the inshore fisheries. The Council's decision to "pull-back" the plan is not related to these rights of access questions. Consequently, in September following consultations with the PMT, the SSC did determine that a surplus exists, which therefore leads to the conclusion that it should be made available to offshore domestic fishermen. Additional arguments which address the concern of an offshore mixed stock fishery are made in Appendix No. 1 to this letter.


Some have also suggested that the burden of proof is on the proponents of the fishery to demonstrate the "safety" of the mixed stock fishery. To the contrary, MRC feels that an adequate basis in science has been established by scientists of the National Marine Fisheries Service, the North Pacific Management Council's Scientific and Statistical Committee, The Alaska Herring Symposium and by the historical evidence of herring management across the Northwest and Northeast Atlantic Ocean.

A volume of attachments are enclosed, including a chronology which demonstrates that Marine Resources Company has communicated in good faith with the National Marine Fisheries Service about its herring fishing plans and cannot be faulted for failing to properly coordinate with the agency. As the joint venture is one of the most regulated of all of the fisheries occurring within the fishery conservation zone we are taking this opportunity to again inform NMFS of the merits of the fishery. We also seek to persuade NMFS to return to a Preliminary Management Plan amendment cycle pending the implementation of the Fishery Management Plan for herring so that the decisions made pursuant to the Magnuson Act's management authority be subject to an orderly, timely and non-discriminatory analysis; and to the public scrutiny of a planning document rather than the ad hoc denials which we now find ourselves subject to. It is unfortunate that the fishery is still subject to a PMP rather than a more comprehensive FMP, but since that is the situation in which we find ourselves we must ask for the appropriate procedures to be followed.

William Gordon
November 24, 1981
Page 5.

We hope that your analysis of this issue will proceed expeditiously and we look forward to hearing word of your determinations in the very near future. Please contact me if we may provide any further information to aid in your decision.

Sincerely,


Walter T. Pereyra
Vice-President and General Manager

WTP/kr

Attachments:

Chronology
Reference documents
An Analysis of Eastern Bering Sea Herring Resource

cc with attachments:

Robert McVey
Dr. Richard Marasco
NPFMC, Attn: Tillion
Congressman Pritchard
Senator Gorton
Congressman Breaux
Congressman Aucoin
Secretary Baldrige

APPENDIX NO 1

Question of Offshore Fishery for Herring and its Impact on Discrete Stocks

- A. It is clearly recognized by researchers and managers alike that much remains unknown about relationships of discrete herring stocks to each other in the Eastern Bering Sea. Actual abundance, age class structure, behavior and migration patterns are presently speculative at best and rely almost solely on data generated inshore. Virtually nothing is known about how much, if any, actual mixing of stocks offshore actually occurs. The FMP in section 9.2 even feels it necessary to indicate that some stocks, particularly from Norton Sound, may not migrate offshore at all during the winter. Of course, if a stock does not venture offshore then it could not be impacted by an offshore fishery.
- B. During the Alaska Herring Symposium sponsored by the University of Alaska and held in Anchorage February 19-21, 1980, a management workshop was held on mixed stock fisheries. Participants concluded that:

"The general consensus among the biologists present was that mixed stock fishing per se could not be viewed as detrimental to individual stocks or the well-being of a group of stocks. In the Atlantic Ocean, herring are generally fished when stocks are mixed. Atlanto-Scandia herring are composed of Icelandic and Norwegian spawning stocks which are fished together. When stocks declined, the decline was equal in all stocks and independent of stock size. Canadian and U.S. herring stocks in the northwest Atlantic mix as adults off Nova Scotia and Maine and as juveniles mix along the New Brunswick coast. Year-classes in the different stocks fluctuate similarly, indicating that a mixed stock fishery does not affect stocks differentially.

In the northeastern Pacific Ocean, stock relationships are not clearly understood. Tagging studies of the herring reduction fishery in Southeast Alaska showed that fishing occurred on mixed stocks and that fishing mortality was often disproportionate among the stocks, but no indications of stock decline were evident. In British Columbia, scientists are uncertain of stock discreteness, since evidence indicates that 25 percent of the herring population strays between stocks annually. The greatest amount of mixing is between stocks spawning within the same general area, but large stock composition changes have been documented. They feel that if small stocks are overexploited, an accretion may occur from other stocks.

Conditions under which mixed stock fishing could have deleterious impacts were discussed. The primary conditions appear to be when small local stocks are available in conjunction with a larger migratory stock. Overfishing of the smaller stock can occur if fishing commences prior to the arrival of the larger stock. Also, it was noted that for migrating stocks, fishing rates are more evenly distributed at greater distance from spawning grounds, and that the likelihood of exceeding the desired level of harvest in small stocks increases as herring migrate to the spawning grounds. However, studies of Atlantic stocks have indicated that migrational distance varies with stock size, that small stocks migrate less than larger stocks, and that migrational patterns can alter.

The general consensus of the workshop was that in a mixed stock fishery, the percentage removal is related to the percentage of mixing of the stocks, and that if management objectives are for a general level of exploitation, then underfishing of the smaller stocks is as likely as overfishing."

- C. The draft FMP itself briefly addresses the question of mixed stock fishing and reports in Section 14.1 on objectives of the proposed management regime that, "most of the world's major herring fisheries are on mixed spawning stocks and studies carried out on these stocks have indicated no adverse impacts from this practice."
- D. Scientific arguments in support of high seas fishery were proffered by NMFS in its court brief in the Napoleon litigation:

"That such a possibility (overfishing), however slight, exists was frankly acknowledged by the agency employees involved in the decision on the 1980 herring regulations, and it figured significantly in their deliberations. See Administrative Record, Item 11, at 2. It was ultimately, however, concluded to be insignificant at the offshore harvest levels that were under consideration. (approximately 12000 MT) Id. at 3. Firm evidence supporting this conclusion appears in the very draft FMP that is so heavily relied upon by the plaintiffs. Administrative Record, Item 4, at 31, 85. A comparison of table 7, presenting the high seas catch figures for each year, and table 13b, presenting relative yearly abundance indices for four of the eastern Bering Sea herring stocks based on ADF&G aerial biomass surveys, shows that there are three years - 1975, 1976, and 1977, for which there were both adequate abundance survey data for three of the stocks and recorded offshore harvests in excess of the maximum 14,000 metric ton harvest that could be allowed under the 1980 herring regulations. In 1976, the offshore harvest was 23,240 metric tons, almost two-thirds more than the maximum allowable under the 1980 regulations. Yet, from 1976 to 1977 the Nelson Island stock remained stable, the Bristol Bay stock more than doubled, and the Goodnews Bay/Security Cove stock increased twenty-fold. In 1977, the offshore harvest was 18,737 metric tons, but from 1977 to 1978, the Goodnews Bay/Security Cove stock almost tripled (with an abundance sixty times that of 1976), the Nelson Island stock tripled, and the Bristol Bay stock increased tenfold. Just as dramatic is the recuperative capacity demonstrated by the Goodnews/Security stock between 1975 and 1977. From 1975 to 1976, a time when the stocks were still impacted by the 88,000 metric ton average annual harvests of the 1968-1972 period, and with an offshore harvest of 16,015 metric tons, the Goodnews/Security stock apparently dropped by almost nine-tenths. Yet, as was noted above, the very next year, with an offshore harvest of 23,240 metric tons, the Goodnews/Security stock increased twenty times to an amount double its 1975 abundance, and it tripled yet again the following year. The Nelson Island stock doubled between 1975 and 1976 at the 16,015 metric ton harvest level. Id.

Thus, there is solid evidence in the Administrative Record that management of eastern Bering Sea herring by the agency as a single unit at the offshore harvest levels provided for in the 1980 herring regulations will not jeopardize the value of each individual stock to the subsistence users and commercial harvesters who intercept it inshore on the spawning grounds. The evidence shows this multistock unit plainly to be capable of management on a rational and timely basis within the meaning of the agency's guidelines, and thus to be an appropriate management unit for eastern Bering Sea herring."

E. Finally, in comments given by Marine Resources Company on March 5, 1980, during the Council's preparation of the herring FMP, it is noted that:

"One of the principal arguments raised against allowing a high seas fishery is that it is a mixed stock fishery and would have the potential of over-harvesting certain stocks. Considering (1) that any permitted high-seas fishery would be operating at levels substantially below those experienced in past years and (2) that the Goodnews/Bristol Bay stock makes up the vast majority of the exploitable biomass in this mixed stock fishery, it is hard to imagine how stocks could be segregated and aggregated in such a way on the wintering grounds that one of the minor inshore stocks could be heavily depleted by a midwater trawl fishery. Fishermen are mobile so they will seek out and fish on the heaviest aggregations. This will tend to work against any excessive depletion of segregated concentrations, should they exist.

Another point in support of a mixed fishery, which is alluded to in the FMP, is the possibility that estimates of herring abundance on the high seas might be generated which could be used to more accurately predict the strength of spawning runs the following spring. Once stock interrelationships are better understood it should be possible to index run strengths using observer data gathered in this fishery."

Mr. Jim Branson
Page 2
November 19, 1981

In my letter last year, I mentioned that the gillnetters, as a specific user group, should be protected by the establishment of a quota. Over recent years, the Nushagak Fish and Game Advisory Committee, the Naknek Fish and Game Advisory Committee, and in the recent meeting of a Bristol Regional Fish and Game Advisory meeting, a gillnet harvest quota has been recommended to the Alaska Board of Fisheries, but it has always been denied.

In the San Francisco herring fishery, a harvest quota is given to the gillnetters, purse seiners, and lampera gear user groups, and I don't see any reason why a quota could be established in the Togiak herring fishery for gillnetters. The gillnetters are very capable of harvesting at least 30% of the total harvest, and I would say up to 50% of the total harvest.

I wish the Secretary of Commerce, or its staff members could examine the situation. At least, discuss the situation with directors of the Bristol Bay Herring Marketing Co-op, who know what's going in the fishery. I myself am a herring gillnetter who has participated in the herring fishery for the last two seasons, and I know it has been useless for us to try and deal with the Alaska Board of Fisheries.

If there is anything you can do, or get the Council to check into the situation, and perhaps provide for a recommendation for something to be done to protect the gillnetters in the fishery, I am sure the 200 resident Bristol Bay gillnetters will be most appreciative of your work.

I am concerned that gillnetters will not make any money in the fishery again next year, and many local people have made investments in the fishery. If no protective measure is provided for the gillnetters, such as a gillnet harvest quota, the gillnetters will not be receiving equitable treatment in the fishery.

If you have any questions, please don't hesitate to call.

Sincerely yours,

BRISTOL BAY NATIVE ASSOCIATION

Andrew Golia

Andrew Golia, Program Director
Fisheries

North Pacific Fishery Management Council

Clement V. Tillion, Chairman
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December 1, 1981

Andrew Golia
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Bristol Bay Native Association
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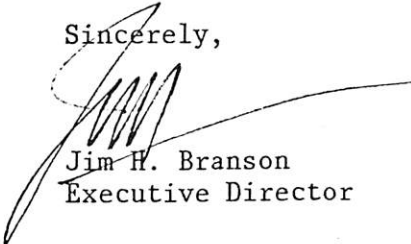
Dear Andy:

I reviewed your 1980 letter after I received your letter of November 19, 1981, both reviewing the problem the gillnetters are having in the herring fishery at Togiak. We have kept up with that fishery, of course, so I have been aware of the problem and its many ramifications.

The inshore fishery is managed by the Alaska Board of Fisheries and the Council has generally been reluctant to interfere in their management efforts as long as they have complied with the general framework of a fishery management plan. The Council's fishery management plan is not yet in place for the Bering Sea herring fishery, but the Board's actions with respect to the spring roe fishery have complied with that plan as developed by the Council. It doesn't specify how the inshore fishery is to be conducted.

I will bring your letter to the attention of the Council at its meeting next week so they can again consider their role in this problem.

Sincerely,



Jim H. Branson
Executive Director

SECURITY COVE, ETOLIN STRAIT AREA
HERRING

①

5 AAC 27.020 (a) (3) (4) (5) REGISTRATION. (regulations page 95). Establish an exclusive registration area in the Security Cove and Goodnews Bay districts.

The proposed regulation reads as follows:

5 AAC 27.020. REGISTRATION. (a) All registration areas are nonexclusive registration areas except as specified in (a) (2) and (3) of this section. A vessel may be registered for any or all of the registration areas during a registration year, except as follows:

(3) Vessels registered for statistical areas A, D, E, H, K, L, M, N, T, or Q at any time between February 1 through June 30 may not be used to take herring in statistical area W during that period; vessels registered for statistical area W during the period February 1 through June 30 may not be used to take herring in statistical areas K, E, H, K, L, M, N, T, or Q; vessels must register for statistical area W before May 1.

(4) Any herring interim-use or entry permit holder who commercially fishes for herring in statistical areas A, D, E, H, K, L, M, N, T, or Q at any time during the period February 1 through June 30 may not commercially fish for herring in statistical area W at any time during that period, and any herring interim use or entry permit holder who commercially fishes for herring in statistical area W at any time during the period February 1 through June 30 may not commercially fish for herring in statistical areas A, D, E, H, K, L, M, N, T, or Q at any time during that period.

(5) Any herring interim-use or entry permit holder who participates on any herring fishing vessel as defined in A.S. 16.05.475 in statistical areas A, D, E, H, K, L, M, N, T, or Q during the period February 1 through June 30 may not participate on any herring fishing vessel as defined in A.S. 16.05.475 in statistical area W during the period February 1 through June 30, and any herring interim-use or entry permit holder who participates on any herring fishing vessel as defined in A.S. 16.05.475 in statistical area W during the period February 1 through June 30 may not participate on any herring fishing vessel as defined in A.S. 16.05.475 in statistical areas A, D, E, H, K, L, M, N, T, or Q during the period February 1 through June 30.

Justification:

Last year the Security Cove/Goodnews Bay fishery looked like a city. The numerous outside boats forced the smaller local boats out of the fishery. Exclusive registration should give the local fishermen a greater chance to participate in the fishery. Also, due to the large numbers of boats in the fishery last year much illegal fishing occurred (especially violating the maximum number of shackles allowed) and enforcement was nearly impossible.

SECURITY COVE
HERRING

Exclusive registration should decrease the number of fishermen in the area, make enforcement easier, and thereby decrease illegal fishing. Decreasing the number of fishermen would also be beneficial for the resource as the guideline harvest level should be caught over a larger period of time instead of concentrating on just a few runs.

Proposed by: Central Bering Sea Advisory Committee (12)
People of Goodnews Bay (16).

②

5 AAC 27.875(c). DESCRIPTION OF DISTRICTS AND 885. GEAR. (Regulation page 123). Open the Nunivak Island area and allow the use of seines.

The proposed regulation reads as follows:

5 AAC 27.875. DESCRIPTION OF DISTRICTS.

(c) The Nunivak Island district includes all waters with three miles of Nunivak Island.

5 AAC 27.885. GEAR. Herring may be taken with set gill nets in all districts. Herring may be taken with purse seines only in the Nunivak Island district.

Justification: Nunivak has been surveyed for the past two years and harvestable amounts of herring have been observed each year. We feel there should be some commercial utilization of this particular resource.

Proposed by: Lloyd Cannon. (197)

BERING SEA, KOTZEBUE AREA
HERRING

③

5AAC 27.020. (a) (3) (4) (5) REGISTRATION. (Regulation page 95) Establish an exclusive registration area in the Cape Romanzof district.

The proposed regulation reads as follows:

5 AAC 27.020. REGISTRATION (a) All registration areas are non-exclusive registration area except as specified in (a) (2) and (a) (3) of this section. A vessel may be registered for any or all of the registration areas during a registration year, except as follows:

(3) During the period February 1 through June 30, the registration area in the Cape Romanzof district, as defined in 5 AAC 27.905(a), is an exclusive registration area. Vessels registered for the Cape Romanzof district between February 1 and June 30 may not be used to take herring in any other statistical area as described in 5 AAC 27.005; vessels registered for any of the statistical areas described in 5 AAC 27.005 other than the Cape Romanzof district may not be used to take herring in the Cape Romanzof district.

(4) Any herring interim-use or entry permit holder who commercially fishes for herring in a statistical area other than the Cape Romanzof district at any time during the period February 1 through June 30 may not

BERING SEA, KOTZEBUE AREA
HERRING

commercially fish for herring in the Cape Romanzof district, and any herring interim-use or entry permit holder who commercially fishes for herring in the Cape Romanzof district may not commercially fish for herring in any other statistical area.

(5) Any herring interim-use or entry permit holder who participates on any herring fishing vessel as defined in A.S. 16.05.475 in statistical areas other than the Cape Romanzof district during the period February 1 through June 30 may not participate on herring fishing vessel as defined in A.S. 16.05.475 in the Cape Romanzof district during the period February 1 through June 30, any herring interim-use or entry permit holder who participates on any herring fishing vessel as defined in A.S. 16.05.475 in the Cape Romanzof district during the period February 1 through June 30 may not participate in any herring fishing vessel as defined in A.S. 16.05.475 in any other statistical area during the period February 1 through June 30.

Justification:

(1) Fishermen of Stoknavik Cooperative (residents of Chevak, Hooper Bay, and Scammon Bay) have proven that they are capable of taking the entire guideline harvest level in the Cape Romanzof herring fishery. In 1981 local fishermen took 392 metric tons (the guideline harvest is 350). Also, passage of this proposal should decrease the number of fishermen in the district, making enforcement of regulatory restrictions, such as limits on shackles, easier.

Proposed by: Lower Yukon Advisory and G.A.S.H. Advisory Committee (21)

④

5 AAC 27.905.(a) DESCRIPTION OF DISTRICTS AND SUBDISTRICTS. (Regulation page 125). Redescribe the boundaries of the Cape Romanzof district.

The proposed regulation reads as follows:

5 AAC 27.905. DESCRIPTION OF DISTRICTS AND SUBDISTRICTS.

(a) the Cape Romanzof district consists of all waters of Alaska in Kokechik Bay, consisting of the area to the east of Panowat Spit and Aniktun Island. [BETWEEN THE LATITUDE OF DAL $\frac{1}{4}$ POINT AND 62° N. LAT.]

Justification: During the 1980 season boats outside of Kokechik Bay were fishing more than the maximum shackles permitted. ADF&G personnel were unable to enforce the shackle regulations outside the bay because their boats were too small. Forcing everyone to fish inside the bay will make enforcement easier.

Proposed by: Lower Yukon and GASH Advisory Committees (20,177)

⑤

5 AAC 27.910. (a)(1) FISHING SEASONS. (Regulation page 125) Establish weekly fishing period openings and closures by emergency order in the Cape Romanzof district.

BERING SEA, KOTZEBUE AREA
HERRING

The proposed regulation reads as follows:

5 AAC 27.910. FISHING SEASONS AND WEEKLY FISHING PERIODS.

(a) In the Cape Romanzof and Norton Sound districts, herring may be taken only from April 15 through July 31.

(1) In the Cape Romanzof district, herring may be taken only during periods established by emergency order.

Justification: The Cape Romanzof district is a comparatively small area with a relatively small herring population (350 m.t. guideline harvest level). The large and expanding fishery has the capability to take the allowable harvest in a relatively short time. Emergency order openings and closures of fishing periods will afford greater management control and allow for stock assessment. This proposal will promote the conservation and development of the herring resource by allowing for a more orderly harvest and to insure adequate spawning which should result in a more stable fishery in the long term. This proposal does not affect the subsistence fishery.

Proposed by: Staff (III-)

⑥

5 AAC 27.931.(a) GILL NET SPECIFICATIONS AND OPERATION. (Regulation page 126). Specify that not more than 100 fathoms of herring gill net may be operated from any licensed fishing vessel in the Cape Romanzof district.

The proposed regulation reads as follows:

5 AAC 27.931. GILL NET SPECIFICATIONS AND OPERATION.

(a) No more than 150 fathoms of herring gill net may be operated from any commercially licensed herring fishing vessel and no single herring gill net may exceed 150 fathoms in length. The aggregate length of gill net in use by a herring interim-use or permit holder may not exceed 150 fathoms except that in the Cape Romanzof district not more than 100 fathoms may be operated from any licensed vessel.

Justification: When the herring are running strong 150 fathoms are too much net. The nets are too heavy with fish. Reduce the number of shackles to two should decrease the waste.

Proposed by: Lower Yukon and GASH Advisory Committee (19,179)

⑦

5 AAC 27.020. (a) (3) REGISTRATION. (Regulation page 94) Establish an exclusive registration area in the Norton Sound district.

The proposed regulation reads as follows:

5 AAC 27.020. REGISTRATION.

(a) All registration areas are non-exclusive registration areas except as specified in (a) (2) and (3) of this section. A vessel may be registered for any or all of the registration areas during a registration year, except as follows:

BERING SEA, KOTZEBUE AREA
HERRING

(3) During the period April 15 through July 31, the Registration area in statistical area Q, specifically the Norton Sound District, is an exclusive registration area. Vessels, captains, and helpers registered for the Norton Sound District may not fish for herring in any other registration area during that period and vessels, captains, and helpers fishing for herring in other registration area during April 15 through July 31 may not fish herring in the Norton Sound District exclusive registration area during that period.

Justification:

(1) New fishery with little experience - ADF&G staff will manage the resource more closely in view of emergency openings and closures. Avoid clustering of vessels and therefore guarantee a higher roe content. This will enable fishermen to seek and gather high roe content fish more efficiently during the entire season.

Proposed by: Southern Norton Sound Advisory Committee (34)

⑧

5 AAC 27.941 (new section) VESSEL SPECIFICATIONS AND OPERATION. (Regulation page 126). Establish a maximum length of 30 feet for herring gill net vessels in the Norton Sound district.

The proposed regulation reads as follows:

5 AAC 27.941. VESSEL SPECIFICATIONS AND OPERATION. No vessel registered for herring gill net fishing in the Norton Sound district may be more than 30 feet in overall length.

Justification: The herring fisheries are realistically only two years old in Norton Sound, so most herring fishermen do not have the five years required fishing experience to apply for most fishing loans.

Proposed by: Southern Norton Sound Advisory Committee (35)

⑨

5 AAC 27.950.(g) WATERS CLOSED TO HERRING FISHING. (Regulation page 127). Extend the area closed to the taking of herring spawn on kelp from Wood Point to Golsovia River in the Norton Sound district.

The proposed regulation reads as follows:

5 AAC 27.950. WATERS CLOSED TO HERRING FISHING.

(g) In the Norton Sound district, the area from the northernmost tip of Wood Point to the terminus of Golsovia River [WAGON BOX CREEK] extending 500 yards seaward from mean [HIGHER] high tide is closed to the taking of herring spawn on kelp.

Justification: In 1981, 7 tons of herring spawn on kelp were harvested from the Black Point area. Department field biologists monitoring the kelp fishery noted that even this small harvest practically denuded the area of vegetation. Any additional harvest, in this already heavily harvested area, would eliminate valuable spawning substrate. Therefore the area around Black Point should be closed to the commercial taking of spawn on kelp to provide for the conservation of the herring stocks. This proposal does not affect the subsistence fishery and will not adversely affect the development of the commercial fishery.

Proposed by: Staff (III-)

BERING SEA, KOTZEBUE AREA
HERRING

⑩

5 AAC 27.960.(b) GUIDELINE HARVEST LEVELS. (Regulation page 127)
Increase the herring guideline harvest range to 3,000 metric tons in the Norton Sound district.

The proposed regulation reads as follows:

5 AAC 27.960. GUIDELINE HARVEST LEVELS.

(b) The guideline harvest level for taking herring in the Norton Sound district is 3,000 [1,000] metric tons.

Justification: Aerial survey data compiled since 1978 has shown a steady increase in herring abundance in the Norton Sound District, with last year's biomass estimated at 22,000 metric tons on the fishing grounds. Scale analysis of commercial catch and Department test net samples shows that 4, 5, 6 and 8 year old age classes will be present in the 1982 commercial fishery, with the 5 year old class being dominate. Considering the projected age class structure of the 1982 herring population no major change in biomass is expected. A harvest guideline of 3,000 metric tons is the best available estimate of what can be expected to be harvested in the Norton Sound district. This proposal will not adversely affect the subsistence fishery, the conservation of herring resource, or the development of the commercial fishery.

Proposed by: Staff (III-)

⑪

5 AAC 27.960.(f) GUIDELINE HARVEST LEVELS. (Regulation page 127) Establish a 30 metric ton guideline harvest level for taking herring spawn on kelp in the area from Canal Point Light to Wood Point in the Norton Sound district.

The proposed regulation reads as follows:

5 AAC 27.960. GUIDELINE HARVEST LEVELS.

(f) In The Norton Sound district, the guideline harvest level for taking herring spawn on kelp in the area from Canal Point Light to Wood Point is 30 metric tons.

Justification: During the 1981 season, Department biologists monitored the harvest of 30 metric tons of spawn on kelp in the open waters between Wood Point and Canal Point Light. It was observed that this harvest was not concentrated in any one specific area and no area was denuded of vegetation. An additional harvest of 30 metric tons of spawn on kelp during the 1982 season would not lead to the denuding of spawning substrate, as long as the effort does not concentrate in one area. This proposal would provide for the conservation of the resource by preventing excessive removal of spawning substrate and would not adversely affect subsistence users or the development of the commercial fishery.

Proposed by: Staff (III-)

(43)

BRISTOL BAY
SUBSISTENCE

5 AAC 01.330(e). SUBSISTENCE FISHING PERMITS. (New subsection) (Regulation page 26). Restrict the issuance of Iliamna-Lake Clark subsistence salmon fishing permit to only those persons domiciled in the area.

The proposed regulation reads as follows:

5 AAC 01.330. SUBSISTENCE FISHING PERMITS. (e) Subsistence salmon fishing permits for the Iliamna - Lake Clark drainages will be issued only to those persons domiciled in the Iliamna - Lake Clark drainages.

Justification: In 1981 over 60% of the permits issued for the Iliamna - Lake Clark drainage were to persons domiciled outside the area. Individual spawning areas in this system do not always receive large amounts of spawners. Limiting subsistence use to customary and traditional users would allow adequate chance for harvest and help protect those areas that may have low escapements. If and when allocation problems occur and/or permits are limited in any way, local residents should have priority over others, as they are directly dependent on these resources.

Proposed by: Iliamna Adv Cmte (110, 127)

(44)

HERRING

5 AAC 27.052. BERING SEA TRAWL FISHERY. (New Section) (Regulation page 97). Allow a high seas trawl fishery in the Bering Sea.

The proposed regulation reads as follows:

5 AAC 27.052. BERING SEA TRAWL FISHERY. Notwithstanding the provisions of 5 AAC 27.710, 730, 810, 830, 880, 885, 910 and 930, herring may be taken with trawls from January 1 through March 31 in waters of the Bering Sea bound on the north by 62° N. lat., on the south by 54° N. lat, on the east by 162° w. long. and on the east by the International Date Line.

Justification:

The Alaska Department of Fish and Game (ADF&G) in its preliminary report for 1981 on Pacific herring in the eastern Bering Sea recognizes that the abundance of herring in all areas appears to be much greater in 1981 than in the previous year. When data generated by ADF&G abundance estimates for 1981 and the 1981 sac roe fishery are used in the formula set out in the North Pacific Council's Bering-Chukchi Sea Herring Management Plan (a plan developed in cooperation with ADF&G and the Board), a 14% exploitation rate is appropriate for these stocks. Consequently, about 5,000 tons of herring are biologically available for harvest before the 1982 sac roe fishery begins.

Domestic fishermen believe that a viable offshore fishery for herring--which will offer economic alternatives to the very intensive, single-market sac roe fishery--can be developed. The Board's endorsement of this fishery will facilitate its development and provide resource managers with more (and much needed) information on herring behavior, abundance and interactions with other fishery resources.

Proposed by: North Pacific Fishing Vessel Owners Assoc. (181)

BRISTOL BAY
HERRING

(45)

5 AAC 27.831.(b). GEAR SPECIFICATIONS AND OPERATION. (Regulation page 121).
Reduce the length of gillnet that can be operated from a vessel.

The proposed regulation reads as follows:

5 AAC 27.831. GEAR SPECIFICATIONS AND OPERATION.

(b) No more than 150 [300] fathoms of herring gill net may be operated from any commercially licensed herring fishery vessel.

Justification: Presently, the legal limit of gear for Bristol Bay is double all of the other areas of the State and with the emergency order openings, a 32 ft. vessel cannot handle that much gear during heavy fishing. By reducing the amount of net per vessel, it will minimize the chances of waste due to lost gear during bad weather, and eliminate the large enforcement problem that developed during the 1981 season.

Proposed by: Nushagak Adv. Cmte. (33)

(46)

5 AAC 27.865(b)(1),(2),(3) and (4). BRISTOL BAY HERRING MANAGEMENT PLAN. (New Subsections)(Regulation page 122). Divide the harvest between gillnetters and seiners, set a gillnet test fishery and allow longer fishing periods for gillnetters.

The proposed regulations reads as follows:

5 ACC 27.865. BRISTOL BAY HERRING MANAGEMENT PLAN.

(b)(1) When the total reported harvest reaches 5,000 [20,000] metric tons and at intervals of 5,000 metric ton up to the total guideline harvest level, the department shall determine the reported tonnage for gillnet and seine (purse and hand purse) gear;

(2) If the harvest for gillnetters [EITHER GEAR] has not reached 30% or 50% of the total catch per interval of 5,000 metric tons [EITHER GEAR], the fishery for the gear with the higher reported catch shall be closed for 24 hours.

(3) If aerial observation cannot substantiate herring biomass movement due to bad weather, herring gillnetters will be allowed to test fish for six to 12 hours to assess herring stocks, spawning activity, maturity and other biological parameters.

(4) For opening of the herring fishery, gillnetters will be allowed to fish six hours longer than the seiners.

Justification:

The gillnetters are capable of harvesting 30% of the total harvest. The gillnetters need to be protected to make an economic entry into the fishery. Most of the Bristol Bay residents participating in the fishery are gillnetters.

Poor Weather conditions will continue to hamper survey coverage for a substantial part of the herring season. To offset this, gillnetters should be allowed to test fish on a limited basis. Gillnetters will not harvest huge quantities of herring in a short time endangering the

BRISTOL BAY
HERRING

stocks. Economically this will help the gillnetters, and at the same time help the Department of Fish and Game keep continual stock assessment studies going.

An additional six hours will help offset the economic disadvantage gillnetters face in competition with the seiner gear users. Gillnetters will be able to make at least one more delivery per boat. This should not be detrimental to the ability of seiners to harvest fish, but put gillnetters to a more equal advantage.

Proposed by: Bristol Bay Herring Marketing Co-op. (168,169,171)

(For 50%) The short eight to 12 hour periods imposed by the emergency order system of management allows purse seines: to harvest over 80% of the total herring caught in a short period of time while gillnetters have a hard time setting, locating, shaking and pulling nets within the specified time period. The present system is discriminatory against gillnetters.

Proposed by: Naknek-Kvichak Advisory Committee. (108)

(47)

5 AAC 39.198(e). COMMERCIAL FISHING AND RELATED OPERATIONS BY ALIENS NOT LAWFULLY ADMITTED TO THE UNITED STATES. (Regulation page 171). Provide for constructive ports for the Bristol Bay herring fishery.

The proposed regulation reads as follows:

5 AAC 39.198. COMMERCIAL FISHING AND RELATED OPERATIONS BY ALIENS NOT LAWFULLY ADMITTED TO THE UNITED STATES.

(e) Constructive ports for the Bristol Bay herring fishery are Kulukak, Nunavarchak and Togiak Bays and Hagemister Strait. With respect to paragraph (d) on this section, the commissioner may recognize and designate constructive ports provided:

Justification:

Additional constructive ports would allow greater mobility for the Alaska Herring Corporation to effectively provide tendering service to gillnetters of the Bristol Bay Herring Marketing Co-op.

Proposed by: Bristol Bay Herring Marketing Co-op. (170)

(48)

SALMON

5 AAC 06.200(a),(b) and (c). FISHING DISTRICTS, SUBDISTRICTS AND SECTIONS. (Regulation pages 27 and 28). Change the district, subdistrict and section boundaries.

The proposed regulation reads as follows:

5 AAC 06.200. FISHING DISTRICTS, SUBDISTRICTS AND SECTIONS. (a) Nushagak district: all waters of Nushagak Bay north of a line from an ADF&G marker at Protection Point (58° 29' 36" N. lat., 158° 41' 42" W. long.) to the bellbouy located off Etolin Point in the entrance of Nushagak Bay (58° 33' 42" N. lat., 158° 24' 12" W. long., Loran C position 45452 and 32563) to a marker located near Etolin Point (58° 39' 24" N. lat., 158° 19' 12" W. long);

Pacific Herring Stocks and Fisheries in the
Eastern Bering Sea, Alaska, 1981.

A Report to the Alaska Board of Fisheries
December 1981

Submitted by:

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TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	iii
INTRODUCTION.....	1
SEASON SUMMARY.....	2
Stock Status.....	2
Assessment Methods.....	2
Spawning Populations.....	3
Togiak District.....	3
Security Cove District.....	4
Goodnews Bay District.....	5
Nelson & Nunivak Island Area.....	6
Cape Romanzof District.....	6
Norton Sound District.....	7
SUBSISTENCE FISHERY.....	8
COMMERCIAL FISHERY.....	8
Togiak District.....	8
Security Cove District.....	11
Goodnews Bay District.....	12
Cape Romanzof District.....	13
Norton Sound District.....	14
OUTLOOK AND MANAGEMENT STRATEGY FOR 1982.....	16
Togiak District.....	16
Security Cove District.....	17
Goodnews Bay District.....	18
Cape Romanzof District.....	18
Norton Sound District.....	19

LIST OF TABLES

	<u>Page</u>
1. Herring and herring spawn on kelp harvests in metric tons by U.S. commercial fishermen in the eastern Bering Sea, Alaska, 1909-1981.....	20
2. Estimated biomass and commercial harvest of Pacific herring in eastern Bering Sea fishing districts, Alaska, 1978-1981.....	21
3. Numbers of buyers and fishermen participation in eastern Bering Sea Pacific herring fisheries, Alaska, 1978-1981.....	22
4. Subsistence herring catch (in metric tons) and effort data by selected areas, eastern Bering Sea, Alaska, 1975-1981.....	23
5. Relative abundance index (RAI) and estimated biomass of eastern Bering Sea herring, Alaska, 1978-1981.....	24
6. Conversion estimates (metric tons of Pacific herring per 50m ² school surface area) obtained from test purse seine fishing, Togiak District, Alaska, 1978-1981.....	25

LIST OF FIGURES

1. Commercial herring fishing districts and applicable gear, eastern Bering Sea, Alaska, 1981.....	26
2. Age composition of Pacific herring in spawning populations and commercial harvests in the eastern Bering Sea, Alaska, 1981....	27-28

ABSTRACT

A total of 17,652 m.t. of Pacific herring and 207.1 m.t. of spawn on kelp were harvested in eastern Bering Sea Commercial Fishing Districts during 1981. This was the second highest Pacific herring harvest and the highest spawn on kelp harvest recorded since these fisheries began in the 1960's. Estimated total value of harvests to fishermen was \$6.2 million. Subsistence fishermen representing 138 families from Yukon-Kuskokwim delta villages harvested an estimated 70 m.t. of herring. Average roe recovery from commercially harvested herring was 8.9%. (Approximately 10% of the total estimated herring biomass of 182,500 m.t. was harvested) Age 4 herring (1977 year class) comprised 50% of the total run and 46% of the total catch. Season openings in Togiak, Security Cove and Goodnews Bay Districts were regulated through Emergency Orders during 1981. This provided for an orderly fishery, high roe content recovery, and minimal wastage. It also ensured a normal onshore migration of herring, resulting in extensive spawn deposition, and allowed the Department to make periodic reassessments of the resource. Due to the large recruitment of young herring, the Department anticipates harvestable surpluses of herring to be available in all Districts in 1982. Management strategies for 1982 will be similar to those followed in 1981. However, the Department is requesting that Cape Romanzof District also be opened through Emergency Order.

INTRODUCTION

A total of 17,652 m.t. of Pacific herring and 207.1 m.t. of spawn on kelp were harvested in eastern Bering Sea commercial fishing districts during 1981 (Table 1, Figure 1). This was the second highest Pacific herring harvest and the highest spawn on kelp harvest recorded since these fisheries began in the 1960's. Estimated value of total harvests to fishermen was \$6.2 million (Table 2). Wastage of herring was low; only 50 m.t. were estimated to have been lost or dumped during the season. Spawn on kelp wastage was estimated to have been 5 m.t. Numbers of buyers increased slightly in most areas (Table 3). Numbers of fishing vessels decreased in Togiak and Security Cove, but increased in all other districts. Average roe recovery from harvested herring ranged from 7.7 in Goodnews Bay to 9.1 in Togiak District (Table 2). Percent harvest of estimated herring biomass ranged from 7.9 in Togiak to 17.3 in Norton Sound District. Subsistence fishermen representing 138 families from Yukon-Kuskokwim delta villages harvested an estimated 70 m.t. of herring (Table 4). An overall increase in herring abundance was documented in all Districts (182,500 m.t. total biomass) due to recruitment of large numbers of age four herring (Table 5, Figure 2).

The purpose of this report is to provide results from 1981 stock assessment programs, review and evaluate 1981 harvests and management strategies for all commercial fishing districts and the Yukon-Kuskokwim delta subsistence fishery, and present management strategies for the 1982 herring fishing season.

SEASON SUMMARY

Stock Status

Assessment Methods

Aerial surveys were flown throughout the herring spawning season in all fishing districts, except Cape Romanzof, to determine relative abundance, distribution and biomass of herring schools. Occurrence and extent of milt, numbers of fishing vessels, and visibility factors affecting survey quality were also recorded. Data collection methods were similar to those used since 1978. A total of 204 hr was spent in aerial surveys: 107 hr in Togiak (including 11 hr of helicopter flying time), 32 hr in Security Cove/Goodnews Bay, 5 hr in Nelson/Nunivak Island area, and 60 hr in Norton Sound. This represented the most intensive aerial coverage ever achieved. Weather and sea conditions were generally better than in past years. However, storms and turbid water did hamper survey coverage during portions of the season in most districts.

Contracted purse seine vessels have provided data on tonnage per unit surface area for 12 herring schools within Togiak District (Table 6). This information provided further support to the hypothesis that herring school biomass (m.t./unit surface area) decreases as water depth decreases. Conversion factors of 1.2 (water depth 3m or less), 2.2 (water depth greater than 3m) and 3.1 m.t./50 m² (water depth greater than 8m) were used for post-season analysis of Togiak District data. Conversion factors of 2.4 or

3.4 m.t./50 m² were used for all other districts.

Test fishing with variable mesh gillnets and sampling of commercial landings were conducted in all fishing districts to determine age, size and sexual maturity of herring and to estimate occurrence and abundance of other schooling fishes. This information was used during post-season analyses to interpret and modify aerial survey data. A limited number of ground surveys were conducted in most districts to obtain information on the extent and density of herring spawn on kelp. Studies on growth, mortality and revegetation rates of Fucus sp. (rockweed) were initiated by investigators from University of Alaska, Juneau, under a contract with ADF&G. These studies, being conducted at sites within Togiak District, will also provide information to develop better methods for assessment of kelp standing crop and herring spawn deposition.

Spawning Populations

Togiak District

A total of 42 aerial surveys were flown on 30 days during the 1981 season, from 20 April to 3 June. Twenty-four of these surveys were made under fair to excellent conditions. Storm conditions during the period 28 April to 3 May prevented accurate assessment of herring arriving on the spawning grounds until most older herring had already spawned.

Test fishing with variable mesh gillnets was conducted from 21 April to 8

June. A total of 3,700 herring were sampled from these catches. Herring comprised 94% of the total catch of pelagic schooling fishes.

During the season, herring biomass was estimated to be between 134,400 and 160,300 m.t. Analysis of data from test fishing and contracted purse seine catches resulted in a post-season herring biomass estimate of 143,900 m.t. Approximately 48% of the total biomass was composed of age 4 herring (1977 year class) (Figure 2). Age 7 and 8 herring (1974 and 1973 year classes) accounted for most of the remaining biomass, 25 and 15%, respectively. Temporal changes in age composition of test fishing herring catches showed that older herring (age 5 and greater) arrived on the spawning grounds in peak numbers earlier in the season (3 May) than younger (age 4 and less), newly recruited, herring (15 May). This pattern had previously been documented in 1979 and 1980. Spawn deposition appeared to be extensive. A total of 64 linear km. of milt was recorded during aerial surveys. Two occurrences of subtidal spawning were documented for the first time.

Security Cove District

A total of 25 aerial surveys were flown on 22 days during the 1981 season, from 20 April until 2 June. Only five surveys were made under fair to good conditions. Poor weather and water turbidity in this Fishing District, as well as more northerly ones, continue to make herring biomass assessment difficult.

Test fishing was conducted from 28 April until 4 June. A total of 1,509

herring were sampled from these catches. Herring comprised 84% of the total catch of schooling fishes. However, most other schooling species were caught after herring had reached peak abundance.

During the season, herring biomass was estimated to be 7,100 mt. Post-season analyses resulted in a revised estimate of 7,500 m.t. Approximately 70% of the total biomass was composed of age 4 herring (Figure 2). No other strong age classes were evident. Peak abundance of herring occurred 14 May. A total of 16 linear km. of milt were recorded during aerial and ground surveys.

Goodnews Bay District

A total of 16 aerial surveys were flown on 16 days during the 1981 season, from 20 April to 2 June. Only five surveys were made under fair to good conditions.

Test fishing was conducted from 2 to 30 May. A total of 957 herring were sampled from these catches. Herring comprised 85% of the total catch of schooling fishes. Boreal smelt comprised 20% of the total catch during the time herring were reaching peak abundance.

During the season, herring biomass was estimated to be 4,000 m.t. Post-season analyses resulted in a revised estimate of 3,900 m.t. Approximately 62% of the total biomass was composed of age 4 herring (Figure 2). No other strong age classes were evident. Peak abundance of herring occurred 14 May. Two small milt patches were observed during aerial surveys, the first recorded

occurrence since surveying began in 1978.

Nelson and Munivak Island Area

Aerial surveys were flown on three days during the 1981 season, from 7 to 17 May. Survey conditions were generally fair.

Test fishing was conducted from 10 to 23 May in the Nelson Island area. A total of 876 herring were sampled from these catches. Herring comprised over 99% of the total catch of schooling fishes.

During the season, herring biomass was estimated to be 3,600 and 17 m.t. in Nelson Island and Munivak Island areas, respectively. No post-season adjustments were made to these figures. Age 4 and 7 herring comprised 27 and 29% of the biomass, respectively, occurring in the Nelson Island area (Figure 2). Age 9 and older herring together comprised 21% of the total biomass. A total of 2.4 linear km. of milt was recorded during the final aerial survey of Nelson Island. Small milt patches were observed during both Munivak Island surveys.

Cape Romanzof District

Aerial surveys were not flown in this district due to poor water visibility.

Test fishing was conducted from 13 May to 7 June. A total of 701 herring were sampled from these catches. Herring comprised 93% of the total catch of

schooling fishes.

Although no aerial surveys were made, test fishing and spawn deposition study results indicated that herring were more abundant than during previous years. Therefore, a biomass estimate of 4,400 m.t. was adopted, based upon the assumption that the commercial harvest represented 15% of total available biomass. Age 4 herring comprised 45% of the sampled population (Figure 2). Age 5 and 7 herring comprised 13 and 15% of the population, respectively. In general, spawn deposition appeared more extensive and heavier than in past years.

Norton Sound District

A total of 22 aerial surveys were flown on 17 days during the 1981 season, from 8 May to 8 June. Survey conditions were better than those experienced during 1980. However, water visibility in Subdistrict 2 was generally unsatisfactory to poor all season.

Test fishing was conducted from 10 May to 15 June. A total of 3,594 herring were sampled from these catches. Herring comprised 97% of the total catch of schooling fishes.

During the season herring biomass was estimated to be 22,000 m.t. Post-season analyses resulted in a revised estimate of 22,800 m.t. Approximately 57% of the total biomass was composed of age 4 herring (Figure 2). Age 5 and 7 herring comprised 15 and 16% of the total biomass, respectively. Peak

abundance of herring occurred 26 May. A total of 21 linear km. of milt was recorded during aerial surveys.

SUBSISTENCE FISHERY

Subsistence fishing for herring is generally most important in villages on the Yukon-Kuskokwim River delta. Annual subsistence harvests in the eastern Bering Sea average approximately 100 m.t. (Table 4). About 75% of the total annual harvest is taken in the Nelson Island area at the villages of Tununak, Toksook Bay and Umkumiut (Nightmute). In 1981 a total of 58 m.t. of herring were harvested by 93 families in these villages. Catches at Toksook Bay were below average, due to an earlier than average herring spawning run. Three other villages on the Yukon-Kuskokwim delta, Scammon Bay, Hooper Bay and Chevak, were also surveyed in 1981. Total harvest was 12 m.t. by 45 families. Subsistence fishing effort in these three villages decreased in 1981 since several fishermen entered the commercial fishery in Cape Romanzof District. Although subsistence survey results are believed to accurately reflect harvest trends, reported catches represent minimum figures since all fishermen cannot be contacted.

COMMERCIAL FISHERY

Togiak District

Commercial herring fishing was regulated by Emergency Orders in 1981 to eliminate wastage problems and achieve exploitation rate objectives. Six

commercial openings were allowed during 2 to 12 May (total fishing time 101 hrs), resulting in a total harvest of 11,374 m.t. (Table 2). Most of the harvest was taken for sac roe; 16 m.t. were taken for food or bait. Purse seine vessels accounted for 82% of the total harvest; gillnet vessels accounted for 18%. Average roe recovery for the season was 9.1%. Average roe recovery from purse seine catches was 10.1%; average recovery from gillnet catches was 6.7%. Several processors commented that roe quality and recovery was higher than in previous seasons. The 1981 herring harvest was the second highest in the history of Togiak District and the second highest reported in the State for 1981. Wastage of herring was estimated at less than 30 tons, far below that which occurred in 1980 (5,200 m.t.). Value of harvested herring to fishermen was estimated to have been \$4.0 million. Average price was \$350 per s.t. for 10% roe recovery, with an increase or decrease of \$35 per s.t. for each percentage point above or below 10%. Numbers of processors increased slightly over 1980 with 30 companies registering and 28 actually purchasing herring (Table 3). Numbers of fishing vessels decreased markedly. Only 83 purse seine and 106 gillnet vessels participated in 1981, a decrease of 70% and 40%, respectively, from 1980.

Spawn on kelp harvests were also regulated by Emergency Order, in accordance with a plan adopted by the Board of Fisheries in 1979. Nine commercial openings were allowed, resulting in a total harvest of 171.9 m.t. Harvests in individual kelp management areas were allowed to reach 10% of the estimated total aquatic plant standing crop. Seven commercial processors purchased spawn on kelp from 108 fishermen. Value of the total harvest to fishermen was estimated to be \$0.3 million. Average price was \$0.66 per lb. The 1981 spawn

on kelp harvest was the second highest in the history of Togiak District. Less than 0.5 m.t. of spawn on kelp was lost during the 1981 season harvest.

Overall herring exploitation rate was 8% of estimated available biomass (Table 2). Harvest of younger, newly recruited, herring (age 4 and less) was 7%; harvest of older herring (age 5 and greater) was 9% (Figure 2). Older herring could have been harvested at a higher level, but storms and resulting water turbidity prevented accurate assessment of herring biomass arriving on the spawning grounds during 28 April to 3 May. The peak daily biomass estimate prior to 3 May was 7,000 m.t., well below the 20,000 m.t. threshold value set for allowing harvest of older herring. However, due to the extent and distribution of spawn, ADF&G staff felt that 13-18,000 m.t. of herring may have been present by 2 May. A 10 hr commercial test opening from 2 to 3 May resulted in a harvest of only 338 m.t. of herring. On the afternoon of 3 May a huge aggregation of herring (estimated biomass 58,300 m.t.) was observed in Togiak Section. Although a commercial fishing period was opened immediately that evening, these herring proved to be spawned out, old fish. Soon after this date young herring began arriving on the spawning grounds; most old herring had already spawned. Good visibility conditions generally persisted until just after the peak of young herring abundance was reached on 15 May. This allowed accurate assessments to be made so that harvests of these young herring were kept within Board of Fisheries guideline levels.

In general management of the 1981 commercial herring fishery greatly benefited by adoption of Emergency Order regulation procedures and Board of Fisheries harvest directives. Wastage was minimized, sac roe recovery and quality was

maximized, and catch reporting was timely and accurate. By channeling fishing effort into discrete periods a more normal onshore migration of herring was allowed, which resulted in more extensive, undisturbed spawning and enhanced ADF&G stock assessment capabilities. Increased mobility provided by a chartered helicopter and the ADF&G vessel R/V Sundance aided greatly in efforts to monitor and manage the fishery. This was particularly important since 49% of the harvest was taken in Hagemeister Section, the most westerly and remote area within Togiak District. Unavailability of a Fish and Wildlife Protection vessel limited the effectiveness of efforts to enforce regulations. Major concerns were gillnets remaining in the water and kelp harvests being made after period closures. Numerous oil slicks, due to bilge pumping by vessels within the large fleet, were sighted. This could have affected herring spawning success. Periods of bad weather, although generally limited during the 1981 season, continued to pose difficulties to stock assessments efforts.

Security Cove District

Commercial herring fishing was regulated by Emergency Order in 1981 to provide for a more orderly fishery and allow for periodic reassessment of herring biomass. Five commercial openings were allowed during 5 to 20 May (total fishing time 90 hrs), resulting in a total harvest of 1,064 m.t. (Table 2). Most of the harvest was taken for sac roe; 17 m.t. were taken for food or bait. Average roe recovery for the season was 8.1%. The 1981 herring harvest was the highest ever taken in this District. Value of harvested herring to fishermen was estimated to be \$0.4 million. Average price was \$400 per s.t.

for 10% roe recovery, with an increase or decrease of \$50 per s.t. for each percentage point above or below 10%. Numbers of processors was similar to 1980; with 7 purchasing herring (Table 3). A total of 113 fishermen in 76 gillnet vessels participated in 1981, a decrease of 35% from 1980.

Overall exploitation rate of herring was 14% of estimated available biomass (Table 2). About 63% of the total commercial harvest were age 4 herring (Figure 2). Age 5 and 7 herring comprised 14 and 15% of the total harvest, respectively.

Management of the 1981 commercial herring fishery benefited by adoption of Emergency Order regulation procedures. However, violation of regulations was a problem. Major problems encountered were fishing after closures, fishing excessive gear, fishing in closed waters, fishing unmarked (or improperly marked) gear, fishing prior to the opening of periods, and failing to turn in fish tickets prior to leaving the District.

Goodnews Bay District

Commercial herring fishing was regulated by Emergency Order in 1981 to provide for a more orderly fishery and to better assess the herring stock. Nine commercial openings were allowed during 5 to 27 May (total fishing time 133 hrs), resulting in a total herring harvest of 596 m.t. (Table 2). Most of the harvest was taken for sac roe; 89 m.t. were taken for food or bait. Average roe recovery was 7.7%. The 1981 harvest was the highest ever taken in this District. Value of harvested herring to fishermen was estimated to be \$0.2

million. Average price was \$400 per s.t. for 10% roe recovery, with an increase or decrease of \$50 per s.t. for every percentage point above or below 10%. Five processors purchased herring, one more than in 1980 (Table 3). A total of 175 fishermen in 104 gillnet vessels participated in 1981, a 6% increase from 1980.

Overall exploitation rate of herring was 15% of estimated available biomass (Table 2). About 76% of the total commercial harvest were age 4 herring (Figure 2). Age 5 herring comprised 12% of the total harvest.

Management of the 1981 commercial herring fishery benefitted by adoption of Emergency Order regulation procedures. Violations of various regulations occurred during the season, but were easy to observe due to the small size of this District. Common violations were fishing after a closure and fishing excessive fishing gear.

Cape Romanzof District

Commercial herring fishing opened by regulation 15 April, but fishing did not begin until 14 May when the first processor arrived. A temporary season closure occurred during 18 to 21 May to reassess herring stock condition and abundance. Occurrence of additional spawning and large ADF&G test fishing catches of maturing herring resulted in a short 6 hr commercial test fishing opening on 22 May. A final 24 hr period was allowed 25 to 26 May, since ADF&G test fishing catches during the previous May closure indicated a high abundance of herring. Total harvest for the season was 653 m.t. This was

higher than the harvest taken in 1980, the first year commercial fishing was allowed in this District. Value of harvested herring to fishermen was estimated to be \$0.2 million. Average price was \$400 per s.t. for 10% rce recovery with an increase or decrease of \$50 per s.t. for each percentage point above or below 10%. Four processors purchased herring, double the number in 1980 (Table 3). A total of 111 fishermen in 82 gillnet vessels participated, an increase of 62% from 1980.

Overall exploitation rate of herring was estimated to be 15% of available biomass (Table 2). About 41% of the total commercial harvest were age 4 herring (Figure 2). Age 5 and 7 herring comprised 25 and 18% of the total harvest, respectively.

Management of the 1981 commercial herring fishery went smoothly and without serious incident. However, fishing with excessive amounts of gear, fishing during closures and under-reporting of catches were reported to have occurred in District outer waters. A large vessel and FWP staff are needed to prevent such violations in the future.

Norton Sound District

The commercial herring fishery opened by regulation on 15 April, but fishing did not begin until 18 May. Fishing was terminated under Emergency Order on 26 May in Subdistrict 1 (St. Michaels area), on 28 May in Subdistrict 2 (Unalakleet area) and on 28 May in Subdistrict 3 (Cape Denbigh area). Remaining Subdistricts were allowed to remain open until closed by regulation

31 July, since effort was low and harvest was less than 1 m.t. Total harvest for the District was 3,965 m.t., the highest ever taken (Table 2). Wastage was estimated to be about 20 m.t. Average sac roe recovery for the season was 8.8%. Value of harvested herring to the fishermen was \$1.5 million. Average price was \$400 per s.t. for 10% roe recovery, with an increase or decrease of \$40 per s.t. for each percentage point above or below 10%. A total of 13 companies purchased herring from 332 fishermen (Table 3).

Spawn on kelp harvests were monitored to ensure that areas were not completely stripped of aquatic plants. The fishery opened by regulation on 15 April; the Black Point area was closed 27 May and the remainder of Norton Sound District was closed 29 May. A total of 42 m.t. of spawn on kelp was harvested. Four companies bought spawn on kelp from 22 fishermen. Value of the total harvest to fishermen was estimated to be \$45,000. Average price was \$0.58 per lb. Although the 1981 spawn on kelp harvest was the largest ever recorded in this District, 68% of the harvest was lost when a tender was swamped. Another 5 m.t. of the harvest was dumped since it was of poor quality and no buyers could be found.

Overall exploitation of herring was 17% of estimated available biomass (Table 2). About 38% of the total harvest was age 4 herring (Figure 2). Age 5 and 7 herring comprised 32 and 21% of the total harvest, respectively.

Management of the 1981 commercial herring fishery was without major problems. Initially, however, fishing effort was concentrated in Subdistrict 2 where turbid water made biomass assessment impossible. Therefore, this Subdistrict

was closed from 23 to 25 May to redistribute effort to Subdistricts with known harvestable amounts of herring, and to allow reassessment of Subdistrict 2 herring biomass. Several other closures and openings were needed in Subdistricts 1, 2 and 3 to ensure that harvests remained within directed levels. Presence of the ADF&G vessel M/V Sundance helped efforts to collect commercial catch samples. However, the M/V Sundance was unable to operate in the shallow waters of Stuart Island, in Subdistrict 1, where an estimated illegal catch of 150 m.t. of herring was reportedly taken. Fishing after closures and fishing excessive amounts of gear were commonly reported regulation infractions. Presence of a FWP plane along with a 6 m. Boston Whaler would be an effective means of enforcing regulations.

OUTLOOK AND MANAGEMENT STRATEGY FOR 1982

Togiak District

Eased on the large recruitment of age 4 herring and significant returns of age 7 and 8 herring during 1981, the Department anticipates a harvestable surplus of herring will be available in 1982. However, since no methods are available to forecast actual returns (or to estimate recruitment) harvest levels will be adjusted during the season according to observed herring biomass. As was done last year, different management strategies will be applied to early run, older herring (age 5 and above) and late run, younger herring (age 4 and below). Magnitude and age composition of the run will be monitored during the spawning season through aerial surveys, test fishing, and commercial catch sampling. Emergency Order regulation authority will be used to adjust the occurrence and

length of fishing periods in relation to stock strength and spawning. No fishing will be allowed until older age herring reach a total daily observed biomass of 5,000 m.t. and spawning has started. This will allow a normal onshore migration, assure commencement of spawning, increase roe quality and content, and minimize waste. If it is not possible to determine herring abundance by using aerial surveys, stock condition will be assessed using commercial catch rates, roe recovery percentages, pre to post spawner ratios from test net and commercial catches, spawn deposition observations and 1980 aerial survey data. Harvest of these older herring will be 10 to 20% of estimated biomass. Spawn on kelp harvests will also be allowed in areas judged to have sufficient spawn deposition and adequate kelp standing crop. A more conservative approach will be taken in managing harvests of younger herring, as was done in 1980, since these herring are newly recruited to the spawning population and will contribute to future harvests and provide future spawning stock. A total daily observed biomass of 20,000 m.t. of younger age herring must be present before fishing is allowed. A graduated harvest rate of up to 20% of the biomass of these younger age herring will be harvested at that time. Additional spawn on kelp harvests may also be permitted during this period.

Security Cove District

Based on the 1981 herring spawning return and harvest, the Department anticipates a harvestable surplus of herring will be available in 1982. Since actual returns for 1982 cannot be estimated, harvest levels will be adjusted during the season according to results of aerial and ground surveys along with

Emergency Order authority. A minimum total daily biomass estimate of 800-1000 m.t. of herring will be required before fishing can begin. Attempts will be made to maintain an overall harvest of 10-20% of the available biomass. No major change in management strategy from 1981 is anticipated.

Goodnews Bay District

Management strategy for this district will be similar to that used for Security Cove: 1) Emergency Order regulation of season and periods, 2) minimum total daily biomass of 800-1000 m.t. prior to the season opening, and 3) 10-20% harvest of available biomass.

Cape Romanzof District

Although overall stock condition may be more favorable in this District than in those further south, since three age classes of herring were well represented (ages 4, 5 and 7), the herring population is comparatively small and the expanding fishery may be capable of taking the allowable harvest in a relatively short time. Therefore, the staff is proposing that fishing periods be regulated through Emergency Order to allow greater management control, better stock assessment, a more orderly fishery and adequate spawning.

Norton Sound District

As was found for Cape Romanzof herring, ages 4, 5 and 7 were well represented in 1981 test and commercial fishing catches. Furthermore, aerial survey data

compiled since 1978 has indicated a steady increase in herring abundance in Norton Sound District. Therefore, the 1982 herring harvest is expected to be similar to that in 1981. Major changes in management strategy are not anticipated. However, if effort significantly increases, frequent season closures may be required to maintain the harvest level at 10-20% of available biomass. Greater effort will be placed in monitoring the spawn on kelp harvest to avoid wastage problems and spread effort levels more evenly.

Table 1. Herring and herring spawn on kelp harvests in metric tons by U.S. commercial fishermen in the eastern Bering Sea, Alaska 1909 - 1981.

Year	Herring 1/					Herring spawn on kelp			
	Unalaska Island	Bristol Bay	Security Cove/ Goodnews Bay	Cape Romanzof	Norton Sound	Total	Bristol Bay	Norton Sound	Total
1909-1916					2/	2/			
1916-1920					1,705.6	1,705.6			3/
1929	1,141.9				151.3	1,293.2			
1930	1,738.2				399.7	2,137.9			
1931	957.9				78.2	1,036.1			
1932	2,276.9				480.0	2,756.9			
1933	1,438.2				27.8	1,466.0			
1934	1,390.9				3.5	1,394.4			
1935	2,188.0				14.1	2,202.1			
1936	1,251.1					1,251.1			
1937	525.4				5.0	530.4			
1938	465.5				9.0	474.5			
1939					5.0	5.0			
1940					12.7	12.7			
1941					3.4	3.4			
1942-1944									
1945	68.0					68.0			
1946									
1947-1963									
1964					18.1	18.1			
1965									
1966					10.8	10.8			
1967		122.0				122.0			
1968		82.4				82.4	24.8		24.8
1969		42.8			2.0	44.8	4.6		4.6
1970		25.0			7.3	32.3	17.6		17.6
1971					17.7	17.7	23.5		23.5
1972		73.7			15.3	89.0	29.1		29.1
1973		46.3			32.3	78.6	5.3		5.3
1974		111.7			2.4	114.1	57.0		57.0
1975		50.4				50.4	50.4		50.4
1976					7.7	7.7	134.1		134.1
1977		2,534.9			9.5	2,545.4	125.1		125.1
1978		7,030.4	259.0		13.6	7,303.0	149.6	trace	153.0
1979		10,115.3	466.0			11,754.3	188.0	11.8	199.8
1980 5/		17,774.0 4/	1,039.0	554.0		2,215.4	86.0	22.2	108.2
1981 5/		11,374.3	1,660.2	653.2		3,964.5	171.9	37.2 6/	209.1

1/ Prior to 1964 majority of herring catch was taken in summer and fall for food market; since 1964 majority of herring catch was taken in spring primarily for marketing of roe.

2/ Fishery occurred some years, but harvests unavailable.

3/ Total catch for all years.

4/ There was an additional estimated 5,200 m.t. of wastage.

5/ Preliminary data.

6/ Does not include 5 m.t. dumped (unmarketable or no market when harvested).

Table 2. Estimated biomass and commercial harvest of Pacific herring in eastern Bering Sea fishing districts, Alaska, 1978-1981.

District	Biomass (m.t.)	Harvest (m.t.)	Roe %	Estimated Value (dollars)	% Biomass Harvested
<u>1981</u>					
Togiak	143,900	11,374	9.1	3,988,000	7.9
Security Cove	7,500	1,064	8.1	347,070	14.2
Goodnews Bay	3,900	596	7.7	196,170	15.3
Cape Romanzof	4,400	653	8.0	211,260	15.0
Norton Sound	22,800	3,965	8.8	1,500,000	17.3
Totals	182,500	17,652	8.9	6,242,500	9.7
<u>1980</u>					
Togiak	62,300	17,774 ^{1/}	9.2	3,205,000	28.5 ^{1/}
Security Cove	1,100	632	8.2	151,000	57.4
Goodnews Bay	1,100	406	9.5	97,000	36.9
Cape Romanzof	2,700	554	9.8	132,000	20.5
Norton Sound	7,600	2,224	8.1	500,500	29.3
Totals	74,800	21,590	8.8	4,085,500	28.9
<u>1979</u>					
Togiak	216,800	10,115	8.6	6,700,000	4.7
Security Cove	19,500	385	8.5	327,000	2.0
Goodnews Bay	6,700	82	4.7	38,500	1.2
Cape Romanzof	2,700	0	-	-	0
Norton Sound	7,000	1,172	7.0	628,200	16.7
Totals	252,700	12,406	8.0	7,694,000	4.9
<u>1978</u>					
Togiak	172,600	7,033	8.2	2,300,000	4.1
Security Cove	1,200	259	-	-	21.6
Goodnews Bay	400	0	-	-	0.0
Cape Romanzof	2,700	0	-	-	0.0
Norton Sound	4,800	13	-	-	0.3
Totals	181,700	7,305	8.2	2,300,000	4.0

^{1/} Does not include an estimated 5,200 m.t. of waste.

Table 3. Numbers of buyers and fishermen participating in eastern Bering Sea Pacific herring fisheries, Alaska, 1978-1981.

District	Number of Buyers	Number of Fishermen ^{1/}	
		Gillnet	Purse Seine
<u>1981</u>			
Togiak	28	106	83
Security Cove	7	113	**
Goodnews Bay	5	175	**
Cape Romanzof	4	111	**
Norton Sound	13	332	**
<u>1980</u>			
Togiak	27	363	140
Security Cove	8	175	**
Goodnews Bay	4	165	**
Cape Romanzof	2	69	**
Norton Sound	8	294	**
<u>1979</u>			
Togiak	33	350	175
Security Cove	2	61	**
Goodnews Bay	1	41	**
Cape Romanzof	No Fishery Conducted		
Norton Sound	7	50	17
<u>1978</u>			
Togiak	16	40	25
Security Cove	3	-	-

** Purse seine gear prohibited

^{1/} Refers to # of vessels in Togiak District

Table 4. Subsistence herring catch (in metric tons) and effort data by selected areas, eastern Bering Sea, Alaska, 1975-1981. ^{1/}

Village	1975	1976	1977	1978	1979	1980	1981
Nelson Island							
Tununak	19.8	13.9	51.9	34.6	31.0	59.2	36.0
Umkumiut	30.0	8.5	2.8	10.4	7.5	3.1	9.0
Toksook Bay	31.0	31.8	19.3	33.5	46.5	26.6	13.0
Total	80.8	61.2	74.0	78.5	85.0	88.9	58.0
Number of fishing families	109	42	90	83	54	70	93
Yukon-Kuskokwim Delta							
Scammon Bay	-	0.6	-	0.6	5.4	2.8	6.9
Chevak	-	0.6	0.1	-	2.1	3.2	1.7
Hooper Bay	2.5	2.7	2.1	3.5	2.8	3.3	3.6
Kwigillingok	-	9.6	0.9	-	7.2	12.0	-
Total	2.5	13.5	3.1	4.1	17.5	21.3	12.2
Number of fishing families	34	49	39	29	106	80	45
Areas Combined							
Total Catch	83.3	74.7	77.1	82.6	102.5	110.2	70.2
Number of fishing families	143	91	129	112	160	150	138

^{1/} Other areas with small catches have been surveyed irregularly (1975-1978 estimated total coastal yearly subsistence catch averaged 100 m.t.).

Table 5. Relative abundance index (RAI) and estimated biomass of eastern Bering Sea herring, Alaska, 1978-1981.

District	Relative abundance index (RAI) ^{1/}			
	1978	1979	1980	1981
Togiak	43,050	137,630	15,249	79,352
Security Cove	246	2,912	435	2,228
Goodnews Bay	241	3,729	<u>3/</u>	1,593
Nelson Island	1,079	<u>3/</u>	<u>3/</u>	1,072
Cape Romanzof	539	<u>3/</u>	<u>3/</u>	<u>4/</u>
Norton Sound	<u>1,277</u>	<u>1,860</u>	<u>2,242</u>	<u>6,516</u>
Totals	46,432	146,131+	17,926+	90,761+

District	Estimated biomass in mt ^{2/}			
	1978	1979	1980	1981
Togiak	172,600	216,800	62,300	143,900
Security Cove	1,200	19,500	1,100	7,500
Goodnews Bay	400	6,700 <u>3/</u>	1,100 <u>3/</u>	3,900
Nelson Island	5,400	5,400 <u>3/</u>	5,400 <u>3/</u>	3,600
Cape Romanzof	2,700	2,700 <u>3/</u>	2,700 <u>3/</u>	4,400 <u>4/</u>
Norton Sound	<u>4,800</u>	<u>7,000</u>	<u>7,600</u>	<u>20,800</u>
Totals	187,100	258,100	80,200	186,100

^{1/} Number of fish schools equivalent to 50 m² surface area, unadjusted for presence of non-herring pelagic species.

^{2/} Adjusted for presence of non-herring pelagic species. Estimates for 1978 and 1979 represent low end of estimate range's from Barton and Steinhoff (1980), 1980 estimates from Kingsbury (1980).

^{3/} Incomplete data due to inclement weather and/or turbid waters, biomass estimates are questionable and are based on 1978 and/or 1979 data.

^{4/} No aerial surveys made, estimate based upon assumption that commercial harvest represented 15 percent of total biomass.

Table 6. Conversion estimates (metric tons of Pacific herring per 50 m² school surface area) obtained from test purse seine fishing, Togiak District, Alaska, 1978-1981.

Year	Water Depth (m)	Biomass per RAI unit (m.t./50 m ²)	
1981	2	1.1	Catch landed
1980	3	1.2	Catch landed
1980	5	1.1	Catch landed
1980	5	1.2	Catch estimated in net
1979	6	2.4	Catch landed
1980	6	3.0	Catch estimated in net
1980	6	2.6	Catch estimated in net
1981	6	1.7	Catch landed
1980	8	1.6	Catch estimated in net
1981	8	4.0	Catch landed
1978	?	6.7	Catch estimated in net
1978	?	11.0	Catch estimated in net

Mean all estimates = 3.1

Mean estimates at 2-3 m = 1.2

Mean estimates at 5-8 m = 2.2

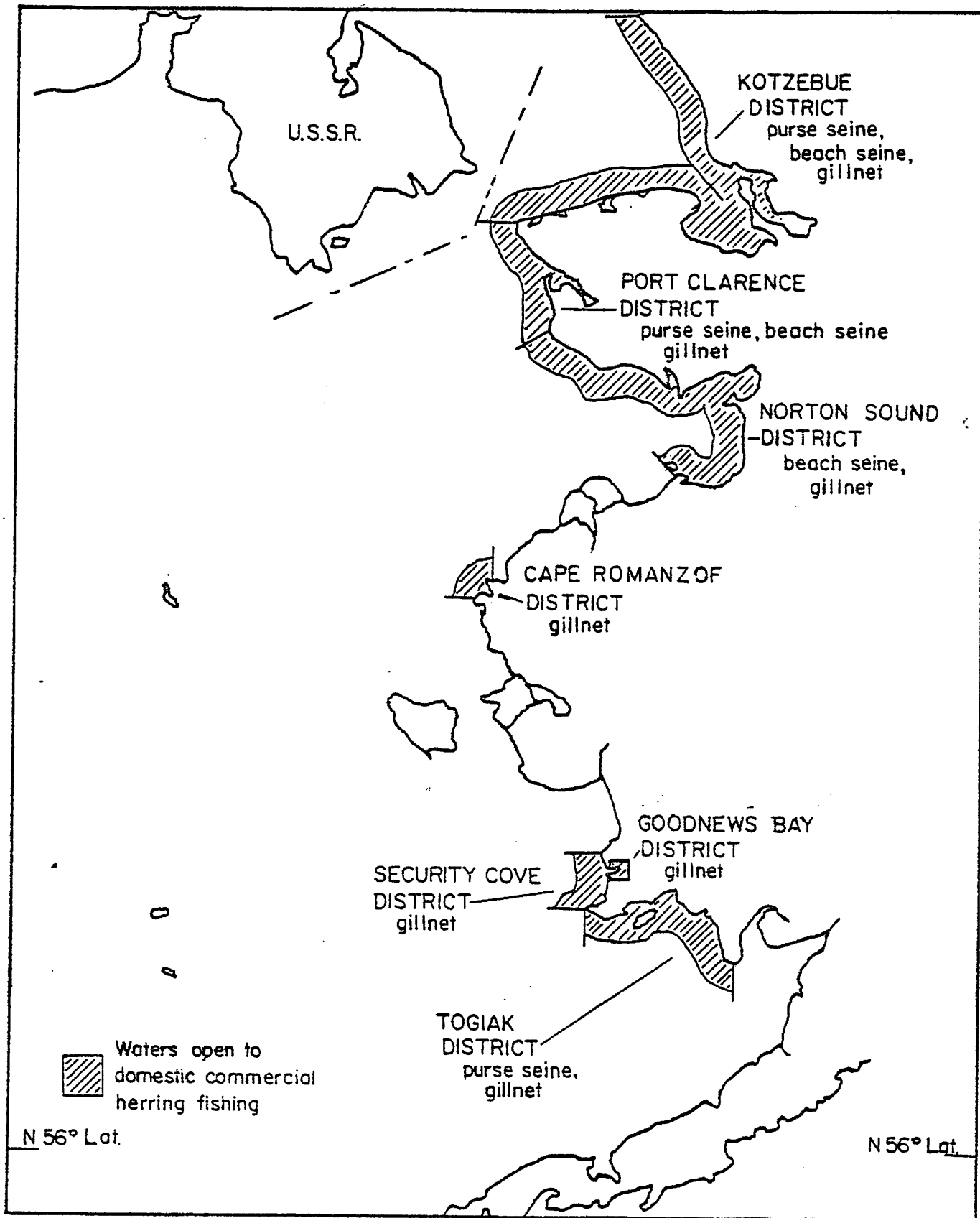


Figure 1. Commercial herring fishing districts and applicable gear, eastern Bering Sea Alaska, 1981.

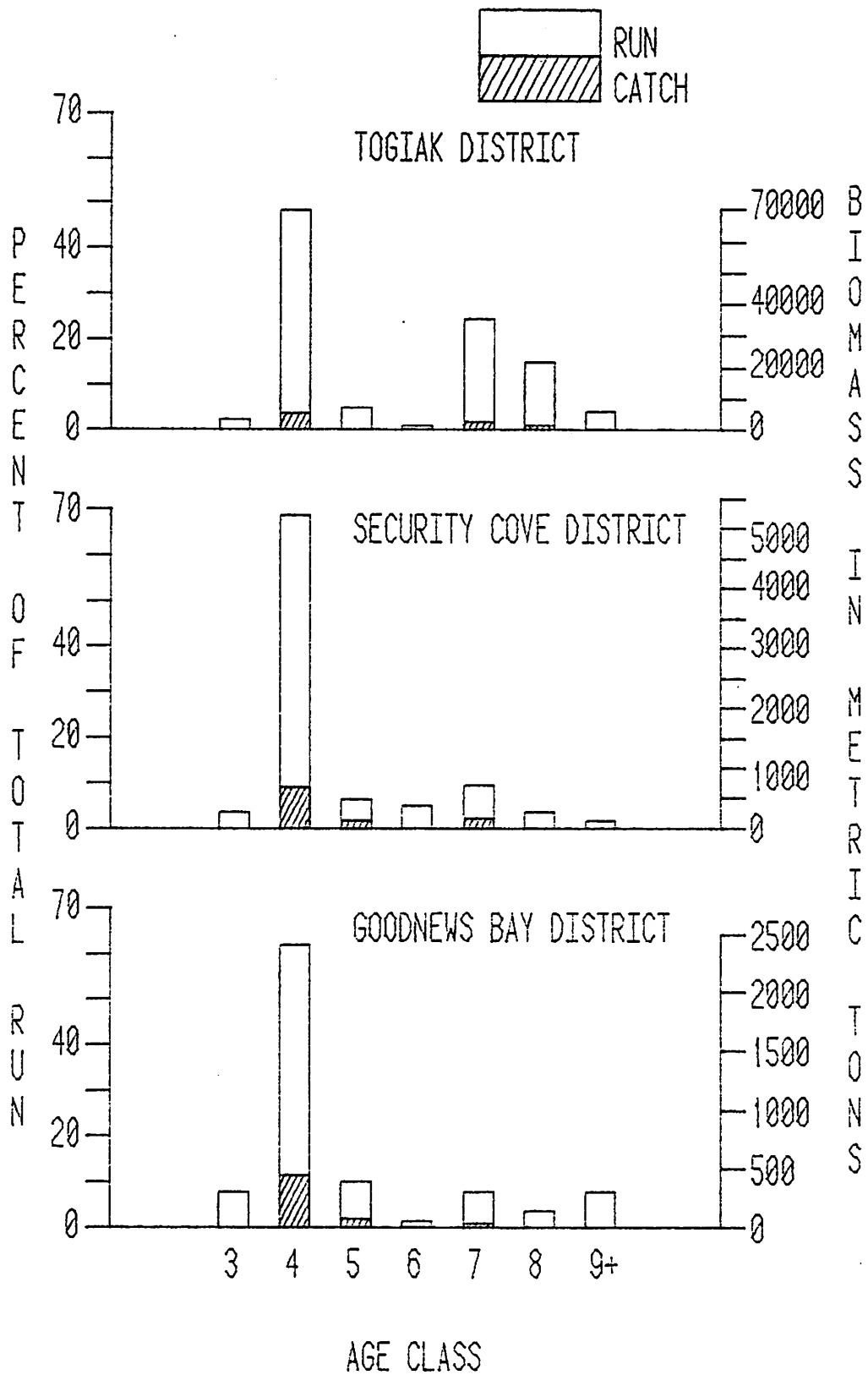


Figure 2. Age Composition of Pacific herring in spawning populations and commercial harvests in eastern Bering Sea, Alaska, 1981.

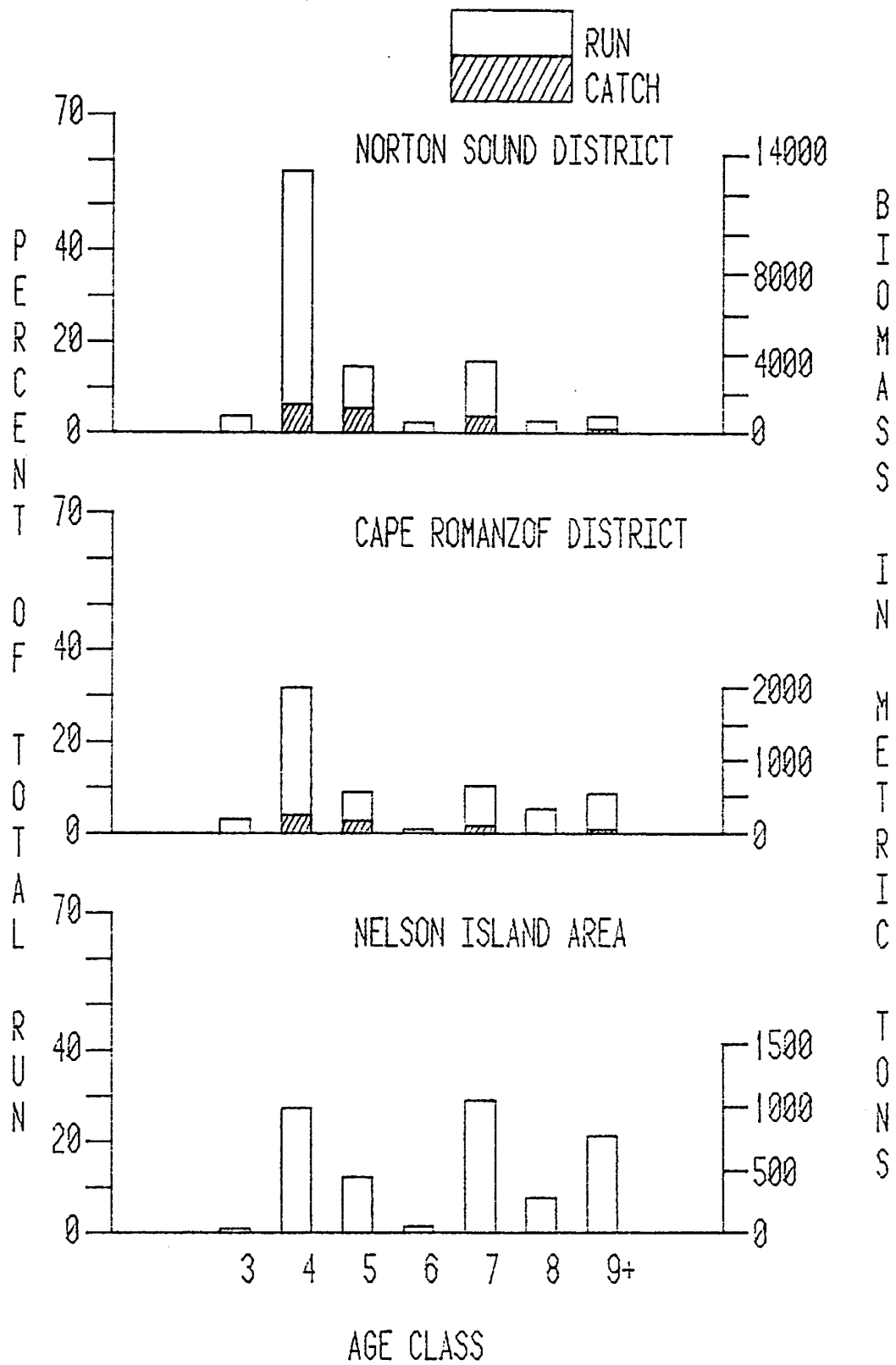
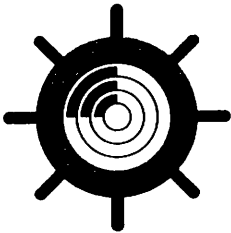


Figure 2. Continued.



**North Pacific
Fishing Vessel
Owners' Association**

*See Council
made
Pub Hearing*

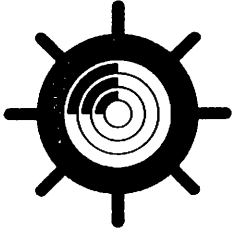
Proposal 1

Establish an exclusive registration area in
the Security Cove and Goodnews Bay districts

The Association opposes this proposal. The staff of the Board of Fisheries has declared that

"The department no longer needs the registration system to provide it with pre- and in season assessment of effort levels. The adoption of this proposal [to repeal the herring vessel and gear registration requirements] will not have a negative effect on the conservation or development of the resource or affect the subsistence fishery." Justification for Finfish Proposal 154

Given this statement, there can be no conservation or management reason to make the Security Cove and Goodnews Bay districts into an exclusive registration area; if Proposal 1 were to be adopted, it would be only for the purpose of protecting the local fishery. The Association believes that all fishermen, regardless of residence, should have equal access to the herring resource.



**North Pacific
Fishing Vessel
Owners' Association**

Proposal 3

Establish an exclusive registration area in the Cape Romanzof district.

The Association opposes this proposal. The staff of the Board of Fisheries has declared that

"The department no longer needs the registration system to provide it with pre- and in season assessment of effort levels. The adoption of this proposal [to repeal the herring vessel and gear registration requirements] will not have a negative effect on the conservation or development of the resource or affect the subsistence fishery." Justification for Finfish Proposal 154

Given this statement, there can be no conservation or management reason to make Cape Romanzof into an exclusive registration area; if Proposal 3 were to be adopted, it would be only for the purpose of protecting the local fishery. The Association believes that all fishermen, regardless of residence, should have equal access to the herring resource.



**North Pacific
Fishing Vessel
Owners' Association**

Proposal 7

Establish an exclusive registration area in the Norton Sound district

The Association opposes this proposal. The staff of the Board of Fisheries has declared that

"The department no longer needs the registration system to provide it with pre- and in season assessment of effort levels. The adoption of this proposal [to repeal the herring vessel and gear registration requirements] will not have a negative effect on the conservation or development of the resource or affect the subsistence fishery." Justification for Finfish Proposal 154

Given this statement, there can be no conservation or management reason to make the Norton Sound district into an exclusive registration area; if Proposal 7 were to be adopted, it would be only for the purpose of protecting the local fishery. The Association believes that all fishermen, regardless of residence, should have equal access to the herring resource.



**North Pacific
Fishing Vessel
Owners' Association**

Proposal 44

Allow a high seas trawl fishery
in the Bering Sea

The Association is the maker of this proposal, and therefore, urges its adoption by the Board.

The Association believes that management of this resource by the North Pacific Fishery Management Council and the State of Alaska should be coordinated. The North Pacific Council has prepared a fishery management plan for herring in the Bering and Chukchi Seas (FMP). The Alaska Department of Fish and Game (ADF&G) had the lead role in the development of this plan. Five of the eight members of the Council's Plan Development Team (PDT) were ADF&G personnel; one of these was the PDT's leader. Three of the FMP's objectives which are pertinent to proposal 44 are:

- (1) "To promote full utilization of the herring resource by domestic fisheries;"
- (2) "To encourage development of herring fisheries in Western Alaska;" and
- (3) "To provide, to the extent possible, a unified management regime between federal and State jurisdictions."

It is the Council's intent that there be an offshore domestic food and bait fishery if herring are still available in the "quota" set aside for domestic fishermen (the domestic allowable harvest or DAH) after the inshore subsistence and roe fisheries have been completed. According to computations by the National Marine Fisheries Service, there is a surplus of herring which can be made available to a domestic offshore trawl fishery from January 1 through March 31, 1982.

Admittedly, the Council's FMP has not been approved by the Secretary of Commerce as being consistent with the provisions of the Magnuson Fishery Conservation and Management Act. In fact, the Council voted to withdraw the plan from the Secretarial review process to make technical changes in the use of the AIC formula, the formula used to determine the amount of herring which can be incidentally caught by foreign fishing vessels. But the Council's Scientific and Statistical Committee believed that the problem was probably not in the AIC

Proposal 44

formula itself, but was a misunderstanding about the formula's use.
In its October 2, 1981 newsletter which reported the FMP withdrawal,
the Council said

"It is important to note that the suggested changes
to the FMP will not in any way alter the current
direction or objectives of the Plan" (emphasis added)

Attached is a memorandum prepared by Vidar Wespestad, fisheries research biologist with Northwest and Alaska Fisheries Center, National Marine Fisheries Service (NMFS). He was a member of the PDT and now is a scientific advisor to the Council's Plan Maintenance Team. Using data gathered by ADF&G and NMFS in the FMP formula for determining if herring is surplus to the inshore domestic fisheries, he has calculated that until March 31, 1982, a total of 5,018 metric tons is available for harvest by a domestic offshore trawl fishery. It should be noted that at the time these calculations were made, it was estimated that the Togiak herring biomass was 134,000 metric tons; this figure was later revised to 143,850 metric tons. Thus, the amount of herring available for a domestic offshore trawl fishery should be even greater than that specified in the memorandum.

Allowing a domestic offshore trawl fishery will meet the Council's objectives set out above: there will be full utilization of the herring resource by domestic fishermen; the development of the fisheries in Western Alaska will be encouraged, and the Board will have unified its management regime with that of the Council. Fishing opportunities for Alaskans and non-Alaskans alike will be opened up. In addition an offshore trawl fishery will provide much needed information on herring behavior and abundance, herring's interactions with other fish, and the origins and distributions of herring stocks in offshore waters. This information will enable fisheries managers to make better decisions in managing this valuable resource.

Northwest & Alaska Fisheries Center
Resource Ecology and Fisheries Management

F/NWC2 - Rich Marasco

October 20, 1981

F/NWC2 - Vidar Weststad

Calculation of values for Herring FMP formulas

Per your request, I have calculated values for ABC, OY, and AIC using the formulas contained in the Herring FMP. To start, I would like to diagram the process as envisioned by the PDT which does not come across clearly in the final version of the plan. In essence, two OY's are calculated at the same time: a final OY for the current fishing year and one for the coming fishing year. The plan calls for these to be presented to the Council in September of each year. The two sets of calculations should have looked like this:

$$\text{Final OY (for Apr. 1980-Mar. '81)} = 1981 \text{ Biomass} \times \text{Exploitation Rate} - \text{ABC for Nelson Island} - 1980 \text{ AIC}$$

$$\text{Allocatable Surplus} = \text{Final OY} - (\text{Roe Harvest} + \text{Food \& Bait Harvest})$$

$$\text{Preliminary OY (for Apr. '81-Mar. '82)} = 1980 \text{ ABC} - 1981 \text{ AIC} - \text{Nelson Island ABC}$$

$$\text{DAH roe} = \text{Preliminary OY} - 2000 \text{ t DAH Food \& Bait}$$

Following the above procedures using the appropriate formulas and data, I obtained the following:

Final OY (April 1980-Mar. 1981)

$$\text{ABC} = \frac{1981 \text{ Biomass}}{\text{MSY Biomass}} \times \text{MSY Exploitation Rate} \times 1981 \text{ Biomass} + 2000 \text{ t (Aleutian stocks)}$$

$$= \frac{167,600}{240,930} \times .20 = 0.13913 \times 167,600 + 2,000$$

$$= 25,318 \text{ t}$$

$$\text{ABC for Nelson Island} = 0$$

$$\text{AIC} = \text{Groundfish OY} \times 1980 \text{ Incidence Rate} \times \frac{\text{ABC}_1}{\text{ABC}_{1-1}}$$

$$= 1900 \text{ t (see Sept. 1980 Council Document)}$$

$$\text{Final OY (1980-'81)} = 25,318 - 1,900 - 0 = 23,418 \text{ t.}$$

$$\text{Allocatable Surplus} = 23,418 - (17,600 + 800) = 5,018 \text{ t}$$

Preliminary OY (Apr. '81-Mar. '82)

$$1980^1-81^2 \text{ ABC} = 25,318 \text{ t}$$

$$\text{Nelson Island ABC} = 0$$

$$1981 \text{ AIC} = 521 \text{ or } 2,549 \text{ t (see following text)}$$

$$\text{Preliminary OY} = 25,318 - 521 - 0 = 24,797 \text{ t}$$

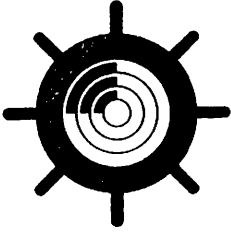
$$25,318 - 2,549 - 0 = 22,769 \text{ t}$$

$$\text{DAH}_{\text{roe}} = 22,769 - 2,000 = 20,769 \text{ t}$$

$$24,797 - 2,000 = 22,797 \text{ t}$$

AIC was calculated using the formula contained in the plan. The groundfish OY (1,470,226 t) was the same one used by the PMT. An incidence rate of 0.00045 was used in the formula which is the grand mean of observer estimates for Area's I and II between April 1980 and March 1981. The grand mean was used rather than the incidence rate of a particular vessel class because of the similarity in rates (Table 1). For the ABC ratios, 25,318 t (the current year estimate) was used for the numerator. For the denominator, two values are available because the 1980 ABC estimate was expressed as a range of 6,572 to 32,240 t using ABC = 6,572, AIC = 2,549 t, and using ABC = 32,240, AIC = 521 t.

To summarize, OY until March 31, 1982, equals 23,418 t with 5,018 t available for harvest. In the following fishing year, it is estimated that 23-25 thousand t are available for harvest with 21-23 thousand t available for the roe fishery. To cover the incidental catch of herring in the 1981 groundfish fishery, between 521 to 2,549 t should be allocated to AIC. This may or may not be explicit in the plan, but it is the process that was developed by the PDT.



**North Pacific
Fishing Vessel
Owners' Association**

Proposal 72

Prohibit the use of trawls in the Alaska Peninsula
bottomfish fishery

The Association opposes this proposal. The makers of this proposal have not provided any data that would indicate the use of trawl gear poses any threat to the bottomfish resources in the area between Kupreanof Point and Scotch Cap Light.



**North Pacific
Fishing Vessel
Owners' Association**

Proposal 139

Prohibit the use of Sablefish pots in all or parts of S.E. Alaska

The Association opposes this proposal. The makers of this proposal have failed to present any data to substantiate their claims that lost gear has caused grounds preemption and management difficulties. Nor have they demonstrated that gear conflicts between longline and pot fishermen are so significant that a banning of pots is warranted. If such gear conflicts do exist, why should pots be prohibited in these areas? Why not longlines?

The Association views adoption of this proposal as setting a dangerous precedent. Domestic fishermen should try to resolve gear conflict and grounds preemption problems among themselves before bringing such issues to the attention of the Board. If the Board were needed to mediate among fishermen, then it should first try less drastic solutions than imposing a ban on a gear type, the harshest measure which the Board could adopt.



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

E-2
Signed
R. J. J.

Mr. Chairman,

The intent of this statement and associated attachments is to provide the Board of Fisheries with information concerning the possible establishment of a commercial herring fishery in Nunivak Island waters as proposed by proposals 5AAC 27.875 and 5AAC 27.885.

The Office of the Regional Solicitor, Alaska Region, for the Interior Department has reviewed the situation and, in summation, determined that commercial fishing cannot be permitted in the Nunivak Wilderness Area (see 50 CFR Sect. 35.5) but may be permitted outside the Wilderness area without the necessity of a federal permit. In addition, the solicitor has determined the boundaries of the Nunivak Wilderness Area as that area depicted on a map referred to in ANILCA dated July 1980. Basically, the Wilderness area extends to one mile offshore and adjacent to the land area that is also designated as Wilderness. This includes the area on the south and west side of Nunivak Island. A copy of the memo from the Attorney-Advisor, Office of the Regional Solicitor, Alaska Region to the Fish and Wildlife Service is attached and provides details in regard to the Service's responsibilities.

Section 304(d) of ANILCA states clearly that the Secretary shall permit within units of the National Wildlife Refuge System designated, established or enlarged by ANILCA the exercise of valid commercial fishing rights or privileges obtained pursuant to existing law, provided that the Secretary is not required to permit the exercise of rights or privileges or uses of the Federal lands directly incident to such exercise, which he determines, after conducting a public hearing in the affected locality, to be inconsistent with the purposes of a unit of the National Wildlife Refuge System, which includes subsistence purposes, and to be a significant expansion of commercial fishing activities within such unit beyond the level of such activities during 1979.

There are two other sections of ANILCA which bear on this and probably should have been included in the solicitor's memo to clarify the issue. These are Sections 1314 and 1315 and are included in part below.

Sec. 1314 (a): Nothing in this Act is intended to enlarge or diminish the responsibility and authority of the State of Alaska for management of fish and wildlife on the public lands except as may be provided in Title VIII of this Act, or to amend the Alaska constitution.

.....(c) The taking of fish and wildlife in all conservation system units, and in national conservation areas, national recreation areas, and national forests, shall be carried out in accordance with the provisions of this Act and other applicable State and Federal law. Those areas designated as national parks or national park system monuments in the State shall be closed to the taking of fish and wildlife, except that---

.....(2) fishing shall be permitted by the Secretary in accordance with the provisions of this Act and other applicable State and Federal law.

Sec. 1315 (a): (This section is titled Wilderness Management) APPLICATION ONLY TO ALASKA.--The provisions of this section are enacted in recognition of the unique conditions in Alaska. Nothing in this section shall be construed to expand, diminish or modify the provisions with respect to alnds outside of Alaska.....

The purpose for including part of this Section is to point out that there are unique provisions ruling wilderness areas in Alaska as indicated by the inclusion in that Section of provisions for aquaculture, existing cabins, new cabins, timber contracts and beach log salvage. The specific exclusion of a provision for commercial fishing in this Section emphasizes the intent of the Act to not allow that particular activity within wilderness lands or waters.

In view of the above determinations by our Solicitor, the Fish and Wildlife Service requests that, should the Board of Fisheries decide to establish this proposed herring fishery within the boundaries of the Nunivak Island Commercial Fisheries Management District, it should adjust the boundary of the open fishery to exclude those waters included in the Nunivak Wilderness Area, i.e., to an area outside of one mile where the Wilderness extends offshore.

If that is not done, the Service will need to take special measures to close that portion within the Wilderness designation and enforce the stipulations of the Wilderness Act in those waters. This may cause confusion among some of the fishermen using the area. It would be much preferred to have the State's regulation consistent with the Federal statutes that apply in this case.

Your consideration of this recommendation is appreciated.

Statement presented to the Alaska Board of Fisheries by:

Wilbur N. Ladd, Jr.
U.S. Fish and Wildlife Service
Anchorage, Alaska
December, 1981



Hand Delivered 12-4-81
ms

United States Department of the Interior

OFFICE OF THE SOLICITOR
ALASKA REGION
510 L Street, Suite 100
Anchorage, Alaska 99501

IN REPLY REFER TO:

December 4, 1981

Memorandum

To: Area Director, Alaska, Fish & Wildlife Service

From: Bruce Landon, Attorney-Adviser, Office of the Regional Solicitor, Alaska Region

Subject: Management responsibilities in marine portions of the Nunivak Island District, Yukon Delta Wildlife Refuge

This is in response to your letter dated November 18, 1981, posing a number of questions regarding your management responsibilities in the marine portions of the Nunivak District of the Yukon Delta National Wildlife Refuge. These questions arise out of the proposal by the Alaska Board of Fisheries to permit the commercial taking of herring in the waters within three miles of Nunivak Island. Your questions relate to your own responsibilities over the area covered by the proposal. The Nunivak District of the Refuge extends from 12 to 18 miles from the shoreline of Nunivak Island. A portion of those submerged lands has been designated wilderness in ANILCA.

Nunivak Island was reserved by Executive Order No. 5095, dated April 15, 1929. The reserve was enlarged by Executive Order No. 5470, dated October 22, 1930 (hereafter Enlargement Order). The enlargement included:

Triangle Island and all small unnamed islands and rocks lying adjacent to Nunivak Island, Alaska, and all lands under water appurtenant thereto, located approximately in latitude 60°N., longitude, 166°W. from Greenwich, in Bering Sea, and lying within the boundary indicated by the border line upon the diagram attached hereto....

By opinion dated July 21, 1972 (attached) the Associate Solicitor, Territories, Wildlife and Claims advised that the Enlargement Order had reserved the tidelands surrounding Nunivak and the other islands and that the tidelands had therefore not passed to the State at statehood.

By opinion dated May 23, 1975 (attached), the Associate Solicitor, Conservation and Wildlife advised that by virtue of President Truman's Proclamation of September 28, 1945, (which claimed United States jurisdiction

Area Director, FWS
December 4, 1981
Page 2

over the seabed of the continental shelf) all of the submerged lands within the border line on the map attached to the Enlargement Order became part of the reserve.

Section 303(7) of ANILCA added the existing Nunivak National Wildlife Refuge to the Yukon Delta National Wildlife Refuge "including lands, waters, interests, and whatever submerged lands, if any were retained in Federal ownership at the time of statehood..." (emphasis added). Section 702(9) of ANILCA designated a portion of both the upland and submerged portions of the Nunivak District as wilderness.

Having determined that the zone which the Board's proposal would open to commercial herring fishing is within the exterior boundaries of the wildlife refuge and that a portion is in wilderness status, we must examine the jurisdiction of the FWS to allow, prohibit, or regulate those activities.

The implications of the Board's proposal are most serious within the wilderness area. The Nunivak Wilderness Area established by Section 702(9) of ANILCA includes approximately 600,000 acres "as generally depicted on a map entitled 'Yukon Delta National Wildlife Refuge', dated July 1980." That map basically shows the southern half of Nunivak Island as wilderness. It also shows a band of waters adjacent to the wilderness upland as part of the wilderness area. Despite any suggestion at page 10544 of the Congressional Record that the marine wilderness surrounds the entire island with the exception of those portions selected by Mekoryuk Village Corporation, ANILCA makes the map dispositive on the boundaries of the wilderness area. My understanding is that the boundaries of the Nunivak Wilderness Area underwent changes in the various bills leading up to ANILCA. The excerpt from the Congressional Record probably refers to an earlier bill. It is likely that the 3750-foot width of the marine wilderness boundary mentioned in your letter likewise originates from an earlier bill. The wilderness area on the map extends a full mile from shore. The FWS Washington Office has determined that a marine wilderness band 7437.5 feet from mean high tide when added to the upland portions of the wilderness area would yield the 600,000 acres of wilderness specified in the Act. However, according to Senate Report 96-413, the area depicted on the map and not the acreage is dispositive. S. Rept. No. 413, 96th Cong., 1st Sess., 175 (1979). My measurement of the wilderness band yields precisely one mile. 7437.5 feet would have resulted in a perceptibly wider band. I therefore believe the wilderness area extends one mile from mean high tide.

I believe that the marine portions of the wilderness are subject to the same statutes and regulations as the upland portions. The Wilderness Act, 16 U.S.C. § 1133 sets up a management scheme for the entire wilderness area system and provides no basis for distinction between waters and

Area Director, FWS
December 4, 1981
Page 3

uplands. Indeed, the provisions in 16 U.S.C. § 1133 relating to the use of motorboats indicate that Congress foresaw the control of wilderness uses both on land and water. No distinction is made between waters and uplands in federal regulations. It is therefore my opinion that 50 CFR § 35.5 does apply to the offshore portion of Nunivak Wilderness. The prohibitions against motorboat use and commercial activities would appear to preclude the opening of this wilderness area to commercial herring fishing.

The wilderness area occupies only a small portion of the marine portion of the Nunivak District of the Refuge. I will limit this memo to a discussion of your responsibilities with regard to fishing within three miles of Nunivak Island for two reasons. First, the Board's proposal involves only waters within the three-mile limit. Indeed, 16 U.S.C. § 1856 prohibits the exercise of state regulation of fishing outside the three-mile limit (except when the vessel being regulated is registered in the state). Second, the United States itself claims only limited jurisdiction beyond the three-mile limit. See 43 U.S.C. § 1331, et seq., and 16 U.S.C. § 1801, et seq. I would therefore prefer to discuss the more distant waters in relation to specific problems as they arise.

The three-mile band is within the exterior boundaries of the refuge and ownership of the submerged lands did not pass to Alaska on statehood. Nonetheless the band is within the territorial limits of the State and the State's police power extends to the band to the extent not preempted by federal law. Congress has been reluctant to preempt state fish and game laws within wildlife refuges. Under the interim final regulations sport and commercial fishing on Alaska refuges are essentially regulated by state law. 50 CFR § 36.32 provides:

- (2) Sport and Commercial Fishing
 - (i) Each person shall secure and possess all required State licenses and shall comply with the applicable provisions of State law unless further restricted by Federal law.
 - (ii) Each person shall comply with applicable provisions of Federal law.

The explanation of this subsection in the preamble to the interim final regulations states specifically that the subsection "authorizes the taking of fish and wildlife on Alaska National Wildlife Refuges in accordance with applicable State and Federal law A permit for these activities need not be obtained from the Refuge Manager." 46 Fed. Reg. 31826. However, the preamble recognizes that the Secretary retains the discretion to regulate commercial fishing activities covered by Section 304(d) of ANILCA. Id. Any regulation under Section 304(d),

Area Director, FWS
December 4, 1981
Page 4

however, requires a hearing and a determination that the commercial fishing activity is an expansion over 1979 levels and inconsistent with the purposes of the refuge. Earlier the preamble stated in relation to subsistence:

The Service expects the State to continue to regulate seasons and bag limits in refuge areas.

Thus despite the fact the three-mile band is within the wildlife refuge, the State retains wide regulatory authority over fishing and federal permits are not required.

Although the subsistence provisions of ANILCA limit the State's regulations authority to some extent, the Board's proposal contains a justification stating that Nunivak has been surveyed for the last two years and harvestable amounts of herring have been observed each year. From my conversations with your staff, it does not appear that the United States has any evidence at this time that the Board's proposal violates the subsistence provisions of ANILCA. If it later appears that the subsistence or the animal conservation purposes of the refuge were being impaired by the commercial fishing, there may be grounds for federal regulation pursuant to Section 304(d).

In conclusion, commercial fishing cannot be permitted in the wilderness area, but is permitted outside the wilderness area without the necessity of a federal permit. However, ANILCA does provide mechanisms for federal regulation of the fisheries in appropriate instances covered by Section 304.

If you have any additional questions please don't hesitate to contact the undersigned.



Bruce M. Landon

Enclosures (2)

cc:

Sharon Allender



United States Department of the Interior

OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

23 MAY 1975

MAY 20 1975

ANCHORAGE, ALASKA

By D
Standardization
5/30
10-13-78 Mailed
Extra copy to
B. Matrice
FWS

IN REPLY REFER TO:

Memorandum

To: Regional Solicitor, Anchorage

From: Associate Solicitor, Conservation and Wildlife

Subject: Nunivak National Wildlife Refuge; Extent of Jurisdiction over Submerged Lands

This memorandum responds to your memorandum of February 13, 1975, requesting an opinion regarding the Nunivak National Wildlife Refuge and the extent of the submerged lands within it.

The Nunivak Island Reservation was created by Executive Order 5095, April 15, 1929 (copy attached). 1/ The territory included in the Reservation originally consisted of "...Nunivak Island...off the coast of Alaska...located within the area segregated by the broken line upon the diagram hereto attached and made a part of this order..." The broken line referred to in the Order appears to be an attempt to limit the Reservation to only the territory of Nunivak Island itself.

The Nunivak Island Reservation was enlarged by Executive Order 5470, October 22, 1930 (copy attached). The additional territory reserved

1/The Reservation originally was administered by the Department of Agriculture. That function was transferred to the Interior Department by 1939 Reorg. Plan No. II, §4(f), eff. July 1, 1939, 4 F.R. 2731, 53 Stat. 1433-34.



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and set apart by that Order consisted of "...Triangle Island and all small unnamed^{2/} islands and rocks lying adjacent to Nunivak Island, Alaska, and all lands under the water appurtenant thereto...and lying within the boundary indicated by the broken line upon the diagram attached hereto and made part of this order..."^{3/}. The broken line referred to in the Order is an inexact demarcation, but the diagram is superimposed on coordinates of longitude and latitude and a fairly accurate approximation of it can be made. Such an approximation indicates that the demarcation varies from approximately 10 to 25 miles seaward from Nunivak Island or Triangle Island or the other small islands and rocks lying adjacent to Nunivak Island.^{4/}

At the time of Executive Order 5470 the United States claimed sovereign title over "[t]he territorial sea [which] begins at the low-water line and the seaward limits of inland waters and extends...for a distance of 3 nautical miles." II A.L. SHALOWITZ, SHORE AND SEA BOUNDARIES 378 (1964). This sovereignty...applies to the bed and subsoil of the territorial sea." Id., n.43.

Even though the broken line in the diagram attached to Executive Order 5470 is more than 3 nautical miles from the low-water line and seaward limits of inland waters of Nunivak Island, Triangle Island, and all

^{2/} In addition to Triangle Island, there are a number of small islands and rocks lying adjacent to Nunivak Island which are named (i.e., not unnamed). These include Nooravloaksmiut Island, Kikartik Rock, Arwirnuk Rock, Oronikowaktalik Rock, Ahnowiksat Rocks, Kikoojit Rocks, Kikiktalik Rock, Nabangoyak Rock, and Kaksajookalik Island. It is our opinion that these islands and rocks were not excluded from the Reservation by the word "unnamed."

^{3/} This order further states, "These islands are hereby added to and made part of the Nunivak Island Reservation, Alaska..." (emphasis added). It is our opinion that the word "islands" in this sentence includes the rocks and submerged lands reserved and set apart by the Order as well as the islands so reserved and set apart.

^{4/} It appears from an approximation that all the small islands and rocks within the broken line lie approximately 1 1/2 miles or less from ("adjacent to") Nunivak Island. A portion of Nelson Island including Uluruk Point also lies within the broken line approximately 17-18 miles northeast of Triangle Island. As this portion of Nelson Island was not indicated in the diagram in the Order, it has not been and should not be considered part of the refuge.

other small islands and rocks lying adjacent to Nunivak Island, it is our opinion that at the time the Executive Order was issued the only submerged lands included in the reservation were those under the territorial sea surrounding Nunivak Island, Triangle Island, and all other small islands and rocks lying adjacent to Nunivak Island.

It is also our opinion, however, that President Truman's Proclamation of September 28, 1945, ⁵/which changed the position of the United States with respect to its jurisdiction and control of the subsoil and seabed of the continental shelf, ⁶/when read together with Executive Order 5470,

⁵/ The Proclamation in pertinent part reads: ...[S]ince the continental shelf may be regarded as an extension of the land mass of the coastal nation and thus naturally appurtenant to it...
...The Government of the United States regards the natural resources of the subsoil and seabed of the continental shelf beneath the high seas but contiguous to the coasts of the United States as appertaining to the United States, subject to its jurisdiction and control.
Executive Proclamation No. 2667, 59 Stat. 884.

⁶/ This position was subsequently confirmed by legislation and international agreement.

Section 9 of the Submerged Lands Act (effective May 23, 1953) reads:
Nothing in this Act shall be deemed to affect in any wise the rights of the United States to the natural resources of that portion of the subsoil and seabed of the Continental Shelf lying seaward and outside of [the territorial sea] all of which natural resources appertain to the United States, and the jurisdiction and control of which by the United States is hereby confirmed. 67 Stat. 32-33. 43 U.S.C. § 1302 (1970).

Subsection 3(a) of the Outer Continental Shelf Lands Act (effective August 7, 1953) reads:

It is hereby declared to be the policy of the United States that the subsoil and seabed of the outer Continental Shelf appertain to the United States and are subject to its jurisdiction, control, and power of disposition...67 Stat. 462. 43 U.S.C. § 1332(a)(1970).

Article 2 of the Geneva Convention on the Continental Shelf (executed in 1958 and effective in 1964) reads:

1. The coastal State [Nation] exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.
15 U.S.T. 473.

caused the submerged lands within the broken line in the diagram attached to that order to be reserved and set apart for inclusion within the refuge to the extent that the United States exercised jurisdiction and control over them. 7/

It should be noted, however, that portions of the submerged lands within the Nunivak National Wildlife Refuge are subject to withdrawal under the Alaska Native Claims Settlement Act: 85 Stat. 688. 43 U.S.C. § 1601, et seq. (1973 Supp. III).

Please contact Mr. Ronald E. Lambertson in our office if you have any further questions regarding this matter.

7/ At the time Executive Order 5470 was issued, the United States claimed sovereign title over the territorial sea off Nelson Island. Part of that territorial sea lies within the broken line in the diagram attached to the Executive Order. It is our opinion that, even though the submerged lands under that portion of the territorial sea were then owned by the United States, they were not then included in the reservation as that would have resulted in the inclusion of submerged lands that were not contiguous which would not have been useful in meeting the purposes for which the reservation was made.

It is also our opinion, however, that those submerged lands were brought within the refuge by President Truman's Proclamation, even though it only dealt specifically with submerged lands beyond the territorial sea. Our reasoning is that since the Proclamation caused the outer continental shelf lands to be reserved and set apart for refuge purposes (to the extent that the United States exercises jurisdiction and control over them), the submerged lands under the territorial sea off Nelson Island within the diagram's broken line became contiguous with other refuge lands and by implication were withdrawn also.

As this withdrawal was prior to the admission of the State of Alaska to the Union, title to these submerged lands (as well as those under the territorial sea lying seaward of Nunivak Islands, Triangle Island, and all small islands and rocks lying adjacent to Nunivak Island) is in the United States despite the Submerged Lands Act, 67 Stat. 29, 43 U.S.C. § 1301 et seq. United States v. Alaska, 423 F. 2d 764, 768 (9th Cir.), cert. denied, 400 U.S. 967 (1970); United States v. City of Anchorage, 437 F. 2d 1081, 1083-84 (9th Cir. 1971).



United States Department of the Interior

OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

JUL 21 1972

Memorandum

To: Regional Solicitor, Anchorage

From: Associate Solicitor, Territories, Wildlife & Claims

Subject: Nunivak Refuge and BSF&W Jurisdiction over Surrounding
Tidelands

We have reviewed your memorandum of July 13, 1972, with attached material, and we are in agreement with your opinion that the Nunivak Island Reservations included the tidelands.

There is no question that the United States claimed sovereign title to such lands at the time of Executive Order 5095, dated April 15, 1929. There seems little question of this whether or not the tidelands were specifically reserved. However, Executive Order 5470, dated October 22, 1930, did make such reservation specific by the language:

. . . and all lands under water appurtenant thereto . . . and lying within the boundary indicated by the broken line upon the diagram attached here

The only reason for this language would appear to be to create a unified area, including tidelands, for the refuge purposes stated. As such, it was not affected by the Submerged Lands Act, 43 U.S.C. 1301, which specifically excepted all lands expressly retained by or for the United States when a State entered the Union. . . . the United States had in lands at such time, and were actually occupied by the United States under claim of right. The Statehood Act, 72 Stat. 339, 341, Sec. 6(e), specifically excluded all land and water previously withdrawn. The land here involved had been withdrawn for the refuge, including the tidelands, and still remains a part of the refuge.

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DEPARTMENT OF THE INTERIOR

JUL 21 1972
ANCHORAGE, ALASKA

Our review of United States v. Alaska, 423 F.2d 764,
does not change the foregoing opinion.

C. Brewster Chapman Jr.

C. Brewster Chapman, Jr.
Associate Solicitor
Territories, Wildlife & Claims

267-1218

Mwpd
Schedule
229 on NFI

(P)

DRAFT, DECEMBER 7, 1981

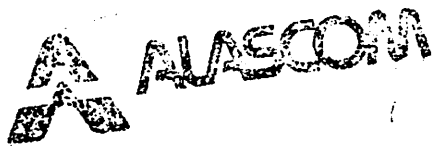
1982 BRISTOL BAY HERRING MANAGEMENT PLAN

THE 1982 BRISTOL BAY HERRING AND HERRING ROE-ON-KELP FISHERY WILL BE MANAGED WITHIN THE FOLLOWING GUIDELINES:

1. A MINIMUM THRESHOLD LEVEL OF BIOMASS FOR CONSERVATION OF THE STOCKS WILL BE MAINTAINED;
2. DIFFERING HARVEST RATES FOR OLDER (5 YRS. OR GREATER) AND YOUNGER AGE CLASS (4 YRS. OR LESS) HERRING WILL BE USED;
3. THE COMMERCIAL HARVEST WILL NOT BEGIN UNTIL THE START OF SPAWNING, THUS INSURING THE OPPORTUNITY FOR THE HIGHEST ROE RECOVERY; AND
4. THE HARVEST MANAGEMENT SHOULD MINIMIZE WASTAGE OF THE RESOURCE.

THEREFORE THE DEPARTMENT STAFF WILL TAKE THE FOLLOWING ACTION GIVEN THE SPECIFIED CIRCUMSTANCES:

1. WHEN THE TOTAL DAILY OBSERVED BIOMASS OF EARLY SEASON OLDER AGE CLASS HERRING EXCEEDS 5,000 METRIC TONS, AND SOME SPAWNING HAS OCCURRED, THE SEASON WILL OPEN AND THE HARVEST RATE WILL BE FROM 10% TO 20% OF THE OBSERVED BIOMASS;
2. WHEN THE TOTAL OBSERVED BIOMASS OF LATER SEASON YOUNGER AGE CLASS HERRING EXCEEDS 20,000 METRIC TONS, A HARVEST RATE OF UP TO 20% WILL BE ALLOWED; AND
3. THE NUMBER OF OPENINGS ALLOWED IN THE HERRING ROE-ON-KELP FISHERY WILL BE BASED ON THE FISHING TIME IN THE HERRING FISHERY, AND DENSITY AND DISTRIBUTION OF OBSERVED SPAWN.



8 DEC 81 5: 19

Telegram

02117 TDA KOTZEBUE ALASKA 84 12-08 0430P AST
FMS BOARD OF FISHERIES DELIVER
ANCHORAGE HILTON 500 W 3RD
ANCHORAGE AK

01369

ATTN: JIM BEATON, CHRIS GOLL, JIMMY HUNTINGTON, NICK SZABO,
GRIFFIN QUINTON, HERMAN SCHROEDER, HARRY SUNDBERG

UNFORTUNATELY, I AM STORMBOUND IN KOTZEBUE AND UNABLE TO ATTEND
THE MEETING IN ANCHORAGE AT THIS TIME. HOWEVER, I URGE YOU AS
THE BOARD OF FISHERIES TO TAKE AFFIRMATIVE ACTION DECLARING THE
NORTH SOUND AREA AN EXCLUSIVE REGISTRATION AREA WITH THE

EMERGENCY OPENINGS AND CLOSURES FOR THE SPRING HERRING FISHERY.
IF THE BOARD IS CONTEMPLATING REJECTING THE EXCLUSIVE REGISTRATION
REQUEST I WOULD LIKE AN OPPORTUNITY TO PRESENT VERBAL AND WRITTEN
TESTIMONY SUPPORTING THE NORTH SOUND ADVISORY COMMITTEE REQUEST.

SINCERELY,

FRANK R FERGUSON
ALASKA STATE SENATOR

9.6.2.1 Spawning biomass estimation

Since 1977, ADF&G has performed aerial surveys along the western Alaska coast during the spawning period. The purpose of these surveys is to count schools of herring which are then recorded according to total surface area. Estimates of the spawning biomass are then obtained by applying a density factor to the total surface area of all schools recorded on the peak day in each spawning area. Using this technique, the spawning biomass in 1978 from Bristol Bay to Norton Sound was estimated to be 187,210 - 334,723 mt and estimates for 1979 were 258,079 - 637,583 mt (Barton and Steinhoff 1980).

Despite the problems with the method, the estimates developed by aerial surveys are the best currently available estimates. Until additional data become available through hydroacoustic surveys, spawn deposition surveys, or other sources (see Section 14.3) the aerial surveys shall be the basis for determining annual spawning biomass.

If it is not possible to determine herring abundance by using aerial surveys, stock condition will be assessed by using commercial catch rates, the percentage of roe recovery, ratios of pre to post spawners from test net and commercial catches (both inshore and offshore), spawn deposition observations and by using the previous year's biomass estimate as the base estimate of abundance.

Stocks utilized exclusively for subsistence purposes will be subtracted from the biomass estimate before the exploitation rate is calculated. Thus, abundance of those stocks will not increase the exploitation rate and total harvest as they would if they were included in the biomass estimate used in those calculations. At present this refers primarily to those stocks spawning at Nelson Island and in the Nunivak area.

9.6.2.2 Exploitation rates

Once an estimate of the spawning biomass has been established, the level at which ABC is set will depend on the exploitation rate that is applied. In other herring fisheries, several methods of determining an appropriate exploitation rate have been used. These are briefly summarized below.

In the northeastern Pacific, herring are generally managed for escapement (egg deposition). The rate of exploitation is set in the range of 10-30 percent. In British Columbia, escapement is set at a level that historically produced the greatest recruitment; herring that are surplus to escapement

requirements are harvested. Using this method, Canadian biologists estimate that the rate of exploitation has averaged 20-30 percent. In Southeastern Alaska, optimum escapement is unknown but stock abundance is known to be low and only 10 percent of the estimated biomass is harvested in order to increase abundance. When a stock is below a determined minimum biomass, no fishing occurs, and if strong year classes are present, 20 percent of the biomass may be harvested.

In Washington, the herring exploitation rate has been determined to be 20 percent based on the assumption that at this rate, fishing mortality approximately equals the rate of natural mortality (Trumble, pers. comm.) ^{1/} Also it is assumed that at this level the stock will be protected from sharp reductions due to recruitment failures and that herring are maintained at a level that provides adequate forage for predators (i.e., salmon).

Exploitation of many Atlantic herring stocks is based on yield-per-recruit analysis (Beverton and Holt 1957). The yield-per-recruit model defines a point of maximum yield-per-recruit for a given age of entry into the fishery and rate of fishing mortality. However, herring do not generally have a maximum, but rather yield increases with increasing fishing mortality (Figure 22). Since the yield-per-recruit/F curve is rather flat, fishing mortality can be reduced from maximum without much loss in yield. At a lower than maximum rate of fishing mortality a larger stock size is maintained and the fishery is more stable since more ages are in the fishery. The conventional lower rate of fishing mortality used is the $F_{0.1}$ level, which is the level at which the increase in yield-per-recruit from an additional unit of fishing mortality is 10 percent of what the yield would have been for a unit of fishing mortality on the virgin stock (ICNAF 1976). The $F_{0.1}$ rate for eastern Bering Sea herring occurs when $F = 0.675$ and the exploitation rate corresponding to this level of fishing mortality is 39 percent.

Thus, the range of exploitation rates which should be considered for the eastern Bering Sea herring fishery is 10-39 percent. There are a number of factors which indicate that a conservative rate within this range should be selected:

1/ Robert Trumble, Washington Dept. of Fisheries, Seattle, WA.

- 1) The fishery in its present form has a very short history so that there is not a lengthy data base to analyze;
- 2) the accuracy of biomass estimates is unknown; and
- 3) biological relationships are little known.

Together, these factors indicate that under average conditions an exploitation rate of 20% would be appropriate in view of currently available data. If abundance indices were low, or if future recruitment was anticipated to be poor, then a rate less than 20% should be applied. Conversely, when stocks are above the level that will produce MSY, a higher rate of exploitation should be utilized. The maximum exploitation rate allowed under this FMP is 39 percent.

A method of determining the appropriate level of exploitation is to assume that MSY is obtained at an exploitation rate of 0.2 (E_{msy}). This means that the biomass level (B_{msy}) that produces MSY is equal to $MSY/.2$ or $48,186/.2 = 240,930$ mt.

When stocks are at a level that will produce MSY, $ABC = MSY$ or $E_{msy} \times B_t$ (biomass at time t) = E_t (exploitation rate at time t) x B_{msy} . However, biomass will not always remain at MSY; rather, it will fluctuate around MSY in response to growth, recruitment and mortality. To adjust exploitation to these changes to maintain stocks near MSY, the exploitation rate will be adjusted by the ratio of current biomass to MSY biomass, or:

$$E_t = \frac{B_t}{B_{msy}} \times E_{msy} \qquad \text{and unadjusted } ABC = E_t \times B_t$$

for example, if $B_t = 200,000$ mt, then

$$E_t = \frac{200,000}{240,930} \times .20 = 0.17$$

and $ABC = 0.17 \times 200,000 = 33,205$ mt

9.6.2.3 Annual determination of ABC

Aerial and ground survey data are compiled after the inshore roe fishery, to establish biomass estimates. Aerial and ground survey data are compiled after the inshore roe fishery to establish biomass estimates. As offshore biomass data become available they will also be considered in establishing this estimate. ABC will be calculated using the formula:

$$\left\{ \begin{aligned}
 & ABC = E_t \times B_t + 2000 \\
 & = \frac{\text{spawning biomass}}{\text{MSY biomass}} \times .2 \times \text{spawning biomass} + 2000 \text{ (Aleutian Island/Alaska Peninsula adjustment)}
 \end{aligned} \right.$$

For example, the 1979 biomass estimate (Barton and Steinhoff, 1980) was 258,079 mt and using an exploitation rate of 21% ($258,079/240,930 \times .20 = 0.21$), ABC was equal to 55,290 mt before adjustment.

This unadjusted ABC does not include a component from the Aleutian Island/Alaska Peninsula stock unit or from the Port Clarence/Kotzebue Sound stock unit. Reliable spawning biomass estimates do not presently exist for either of these stocks, nor are they exploited to any appreciable extent. ABC is adjusted by 2,000 mt to include an estimate of Aleutian Island-Alaska Peninsula harvest, so that adjusted ABC was equal to 57,290 mt. ABC estimates of each stock component are also to be prepared.

If biomass estimates for these stocks become available in the future it is expected that they will be added to the total biomass estimate before the exploitation rate is calculated, and the 2000 mt adjustment would no longer be necessary.

ABC will be estimated in the first instance by a Plan Maintenance Team appointed by the Council. The Team will submit its recommended estimates of ABC, AIC, and OY to the Council (as well as the Board). The Council will then recommend its own estimates for these figures to the Assistant Administrator or the Alaska Regional Director, NMFS, who will specify the final values through normal rule-making procedures.

9.6.2.4 Annual determination of Allowable Incidental Catch (AIC)

A small incidental catch of herring unavoidably occurs each year in the groundfish trawl fishery of the eastern Bering Sea. Because of the great value of this trawl fishery, and the importance that is specifically ascribed to its development in Section 2(a)(7) and (b)(6) of the Magnuson Act, the utilization of this small portion of the herring resource in the Bering Sea groundfish trawl fishery contributes to the "greatest overall benefit to the Nation" within the meaning of Magnuson Act Section 3(18). This unavoidable incidental catch of herring is thus part of the optimum yield of the Bering Sea groundfish fishery. Because the fishery is currently dominated by foreign participants, most of the herring taken in the fishery is currently taken by

foreign vessels. As United States participation in the Bering Sea groundfish trawl fishery increases, a greater and greater percentage of the herring taken in that fishery will be taken by United States fishermen.

The amount of the herring ABC that should thus be assigned to the Bering Sea/Aleutians groundfish OY is referred to in this FMP as the "Allowable Incidental Catch" (AIC). Like other components of the Bering Sea groundfish fishery OY, AIC must be apportioned to domestic annual harvest (DAH) and total allowable level of foreign fishing (TALFF). This apportionment is to be based on the domestic and foreign percentage shares of the rest of the Bering Sea groundfish trawl fishery.

It is the Council's intent that the AIC be the minimum possible that will not disrupt operation of the groundfish trawl fisheries. Differences in the incidental catch rate of herring by different vessels and vessel types (e.g., large Japanese trawlers and small Japanese trawlers -- see Section 10.3) indicate that herring can be avoided, and this FMP requires that efforts be made to minimize the incidental catch. In 1978 and 1979 the Japanese took 2,315 and 1,551 mt of herring incidentally in their groundfish fisheries at an incidence rate of .14% in 1979. Applying this incidence rate to the 1981 groundfish OY would give a total incidental catch of herring of approximately 2,000 mt. This FMP specifies that AIC will be limited to a range of 1,500-3,000 mt.

AIC of herring in the groundfish fishery for the following calendar year (January - December) will fall within the range of 1,500-3,000 mt. The PMT will recommend a specific AIC level each year which will be forwarded to the Council. The PMT recommendation will be based on the following guidelines for adjustment within the 1,500-3,000 mt range:

1. Changes in the Bering Sea/Aleutian Islands groundfish Optimum Yield (OY_g), i.e., if OY_g increases, AIC may be adjusted upward;
2. The Incidence Rate (IR) of herring in the groundfish fishery;
3. Changes in the herring biomass as indicated by spawning or offshore surveys, i.e., if herring biomass decreases, AIC may be adjusted downward.

PROPOSED TEXT CHANGES

The provisions of this FMP concerning AIC constitute a supplement to and are to be considered an integral part of the Bering Sea/Aleutians Groundfish FMP, which is hereby amended to incorporate those provisions by reference.

10.0 HERRING MANAGEMENT ISSUES

This section directly addresses several issues which are relevant to the consideration of OY.

10.1 Maintenance of the Subsistence Herring Fishery

The inshore subsistence harvest of herring during the spawning season has been an important source of food to Alaska Natives living along the Bering Sea coast for centuries. This subsistence fishery is described above in Section 5.1 of this FMP.

By far the greater part of the subsistence harvest has, in recent years, been taken in and around Nelson Island. The herring stocks spawning in this area are believed, however, to constitute a very small portion of the total Bering Sea herring biomass, and are dwarfed by the stocks that are harvested commercially around Togiak. There is little direct evidence of the migratory pattern followed by the Nelson Island stocks when they move offshore, or on the extent to which these stocks remain discrete while at sea, rather than mixing more-or-less randomly with stocks spawning in other areas. As a result, Alaska Natives who are dependent upon the Nelson Island stocks for subsistence have expressed concern that even a limited and closely regulated offshore harvest of herring could pose a significant danger to their livelihood.

This FMP addresses this concern in a number of ways. Recognizing that inshore herring fisheries are inherently more amenable to sound management than offshore fisheries due to the inshore segregation of the various spawning stocks and their greater visibility, this FMP gives inshore herring fisheries an absolute priority over offshore herring fisheries. Among the inshore fisheries, subsistence fisheries are given the highest priority.

This FMP provides for minimum offshore harvest of herring in the domestic and foreign groundfish trawl fishery by prescribing the closure to groundfish trawling of areas known to be inhabited by herring during the fall and winter when the groundfish trawl fishery has harvested a sharply limited allowable incidental catch of herring that is closely tied to the latest herring biomass estimates, unless an offshore herring fishery has also been authorized for the fishing year.

The FMP also protects inshore subsistence fisheries from possible damage by the offshore harvest of herring through its specification of a conservative

MSY biomass estimate and conservative exploitation rates and other adjustments for the calculation of ABC and OY. Specifically, the FMP states that stocks used primarily for subsistence purposes will not be included in biomass estimates or exploitation rate calculations. The result of this will be to slightly lower OY in an effort to further protect those stocks. Also, ABC and OY are to be calculated twice in the course of each fishing year, in order to assure that they are based on the very latest biomass information. Despite these conservative measures for the calculation of allowable catch figures, many subsistence users of the Bering Sea herring are concerned that an even more restrictive approach was not prescribed until more direct information on offshore stock relationships is obtained, a process that may take many years. Such an extreme approach was considered unwarranted by the Council, on the basis of such evidence as the fact that, during 1976, 1977, and 1978, the offshore harvest of herring was considerably higher than it is ever likely to be under this FMP; yet, during the same three years the Nelson Island stock increased by three times; the Bristol Bay stock by twenty times, and the Goodnews Bay/Security Cove stock by almost 62 times (see Tables 6, 11 and 12). While such indirect evidence cannot be considered conclusive, it establishes the extreme unlikelihood that the smaller herring stocks utilized for subsistence are distributed offshore in such a pattern as to facilitate the catastrophic results feared by some subsistence users. These data seem, instead, to strengthen the theory of those scientists who believe that the stocks spawning from Bristol Bay to the Yukon Delta mix fairly randomly while offshore, a condition that would tend to protect the smaller stocks during the offshore sojourn.

10.2 Development of a Domestic Herring Fishery on the High Seas

Some interest has been expressed by domestic fishermen and processors in a fishery for food or bait herring in the Bering Sea. In spring of 1979, a food fishery was conducted off the Pribilof Islands by American fishermen for the first time, in a joint venture with a Russian processing vessel. The total catch was low due to the displacement of the operation by unseasonal ice conditions. This fishery would probably occur during the winter months when the oil content of herring is high and when the fish are concentrated on their wintering grounds.

It is not clear how rapidly a high seas fishery would develop or if it would develop at all given current market conditions. While there is substantial demand for bait herring in the crab and halibut fisheries of Alaska, this market is largely supplied by fisheries in the Gulf of Alaska. These fisheries are located adjacent to existing harbors and cold storage plants, an advantage which is not present in the Bering Sea fishery. It is possible, however, that the Bering Sea fishery would be more efficient in terms of catch per unit effort because of larger and denser herring populations. This might offset the disadvantage of traveling longer distances to and from the fishery.

The competitiveness of Bering Sea food herring on the world market has not yet been established.

The major advantage of a high seas herring fishery is that it would allow greater domestic utilization of the OY. Because of occasional adverse weather and ice conditions, the inshore roe fishery may not consistently take the allowable harvest, even after the fishery has fully developed and stabilized. During these years, a portion of the allowable harvest would either not be taken or would be allocated to other nations if a domestic high seas fishery was not allowed.

A second advantage of a high seas fishery is that the domestic fishery would not be entirely dependent on the Japanese roe market. If a high seas fishery were developed to a limited extent, there would be greater potential to rapidly expand this fishery should the roe market fail for some reason.

An offshore fishery would also generate data on offshore distribution and abundance, age structure and possibly mixing ratios of various stocks. There would be no other way to generate this information without a massive outlay of research dollars.

The major disadvantage of a high seas fishery is that it would operate on mixed stocks of herring, raising concerns about the over-harvesting of small stock units. The inshore roe fishery has the advantage of operating on segregated stocks so that the harvest from individual stocks can be closely regulated.

Other disadvantages of the high seas fishery include 1) fisheries monitoring is more difficult to perform on the high seas, which reduces the potential for in-season management adjustments; and 2) the high seas fishery has historically had a lower value relative to the roe fishery. The value of roe herring taken during the 1979 Bristol Bay fishery was approximately \$1500

per short ton delivered in Kodiak compared to an estimated \$800 per ton for bait herring taken in the Gulf of Alaska. If a high seas fishery were to develop and capture herring which otherwise would have been taken by the inshore roe fishery, the total value of the harvest might be substantially less than its potential. In 1980, however, there were indications that prices paid for food herring might come to equal or exceed those paid for roe herring, in view of the recent decline in the roe market.

rate, but these vessels only fished during the summer and autumn and were not on the grounds during the winter months when herring are more available. Japanese large trawlers, which were on the grounds during the winter months, had the next best rate and also took a larger harvest than Soviet large trawlers or Japanese small trawlers. Averaging the 1978 and 1979 Japanese large trawler herring incidence rate produces an incidental rate for area II of 0.22%.

Combining the estimated rates from area I and II weighted by catch distribution (0.6 area II and 0.4 other areas), the estimated overall herring incidence rate for the eastern Bering Sea was 0.125% during 1978-79 herring year. Applying this rate to the 1980 groundfish quota (excluding herring) of 1,429,802 mt, the allowable incidental catch of herring would have been 1,787 mt.

[The incidence rate will be recalculated annually by the Plan Maintenance Team (PMT) using observer data, catch data, or a combination of the two, whichever provides a more accurate appraisal of the actual rate.]

10.4 Limited Entry

The Bristol Bay herring roe fishery is the only major herring fishery in Alaska which is not covered by a limited entry system. As the fishery develops and effort increases, management problems may arise and create a need for imposing limited entry. Once a need is perceived, entry into the inshore roe fishery will be regulated by the Alaska Commercial Fisheries Entry Commission.

If an intensive high seas domestic herring fishery eventually develops, entry to this fishery could be regulated through an amendment to this FMP.

10.5 Offshore Petroleum Production

Large areas of the eastern Bering Sea Continental Shelf have been identified as potential sites for the production of oil and gas (Figure 23). If exploration is allowed and a production source is discovered, there will arise the potential for oil pollution and physical hazards to fishing, such as sea-floor well heads and tanker traffic.

12.0 OPTIMUM YIELD DETERMINATION

ABC is a modification of the biomass estimate based on stock abundance, distribution and other biological factors. Before ABC and the exploitation rate are calculated, the biomass estimates of stocks utilized exclusively for subsistence purposes are subtracted from the total biomass in order to protect subsistence harvests on small stocks. This complements the State of Alaska's current closure of the Yukon-Kuskokwim Delta to commercial fishing in order to preserve stocks spawning at Nelson Island and in the Nunivak area for the subsistence fishing upon which local residents are so heavily dependent.

OY is derived by subtraction of AIC from ABC. AIC is part of the Bering Sea groundfish OY, and must, therefore, be excluded from herring OY.

A schematic presentation of the method used to determine and allocate OY is found in Table 18. The allocation of preliminary and final OY is discussed below in Section 14.2.

The Council, upon the recommendation of the PMT, will propose preliminary and final estimates of ABC, OY, and AIC to the Assistant Administrator or NMFS Alaska Regional Director, who will promulgate final estimates through normal rulemaking procedures.

Table 18. Method for determining and allocating optimum yield of Bering/Chukchi Sea Herring

APRIL- SEPTEMBER	<p>A. <u>Determination of Preliminary OY</u></p> <p>1. ABC</p> <p>a. Estimated spawning biomass from previous season (excluding <u>subsistence stocks</u>) x exploitation rate. ^{1/}</p> <p>b. Add 2,000 mt for estimated harvest potential of unsurveyed Alaska Peninsula-Aleutian Island stocks.</p> <p>2. OY: <u>Subtract AIC from total herring ABC.</u></p>	<p>B. <u>Allocation of Preliminary OY</u></p> <p>1. 2,000 mt to domestic offshore bait/food fishery. - not available until July 1 south of 60° N. lat. or August 1 north of 60° N. lat.</p> <p>2. Remaining OY to domestic inshore subsistence and roe fisheries. No TALFF.</p>
SEPTEMBER	<p>A. <u>Determination of Final OY</u></p> <p>Identical to that for preliminary ABC and OY except use current season estimated spawning biomass.</p>	
OCTOBER- MARCH		<p>B. <u>Allocation of Final OY</u></p> <p>1. <u>If final OY exceeds amount taken in subsistence and roe fisheries</u></p> <p>a. Remaining OY to domestic offshore food/bait fishery to extent of final DAH.</p> <p>b. Remaining OY in excess of final DAH to TALFF - includes unused domestic allocations to be determined by January 30.</p> <p>2. <u>If No final OY in excess of amount taken in subsistence and roe fisheries</u> - Enforce offshore winter savings area for domestic and foreign fisheries, <u>except</u>:</p> <p>a. domestic fishery allowed to harvest unused portion of 2,000 mt initial allocation.</p> <p>b. foreign groundfish fishery allowed to harvest unused portion of AIC.</p>

^{1/} Exploitation rate varies according to stock condition and spawning biomass estimates; under MSY stock conditions (240,930 mt biomass) exploitation rate is 20% (see section 9.6.2.2).

by emergency regulation if ice conditions or other factors preclude full development of the roe fishery within state waters.

Rationale

The inshore commercial, primarily roe, fishery is currently managed exclusively by the State of Alaska, because the entire fishery occurs within State waters. It is expected that the roe fishery will continue inside of three miles in the future since roe quality and recovery rates are greatest in close proximity to the spawning grounds. It is desirable to continue restricting the roe fishery to State waters because product quality will be highest, management and regulation of the fishery will be simplified, aerial biomass surveys will be more easily performed, and fishing on discrete stocks is facilitated. Management of the roe fishery by the State is based on the following considerations:

- (1) the effect of overall fishing effort;
- (2) the catch per unit effort and rate of harvest;
- (3) the relative abundance of herring in comparison with pre-season expectations;
- (4) the performance of the roe fishery;
- (5) the proportion of immature or spawned out herring and the age structure of the population;
- (6) general information on the condition of herring;
- (7) information pertaining to the optimum yield for herring;
- (8) timeliness and accuracy of catch reporting by buyers to the extent that such timeliness or accuracy may reasonably be expected to affect proper management; and
- (9) any other factors necessary for the conservation and management of the herring resource.

These considerations allow an adjustment of harvest levels during the fishery and also are some of the considerations relied on by the Council and NMFS in development of preliminary and final OY's.

The third management measure will prevent a targeted fishery on herring from occurring on stocks immediately prior to spawning in order to allow the inshore fishery the maximum opportunity to harvest the spawning stocks.

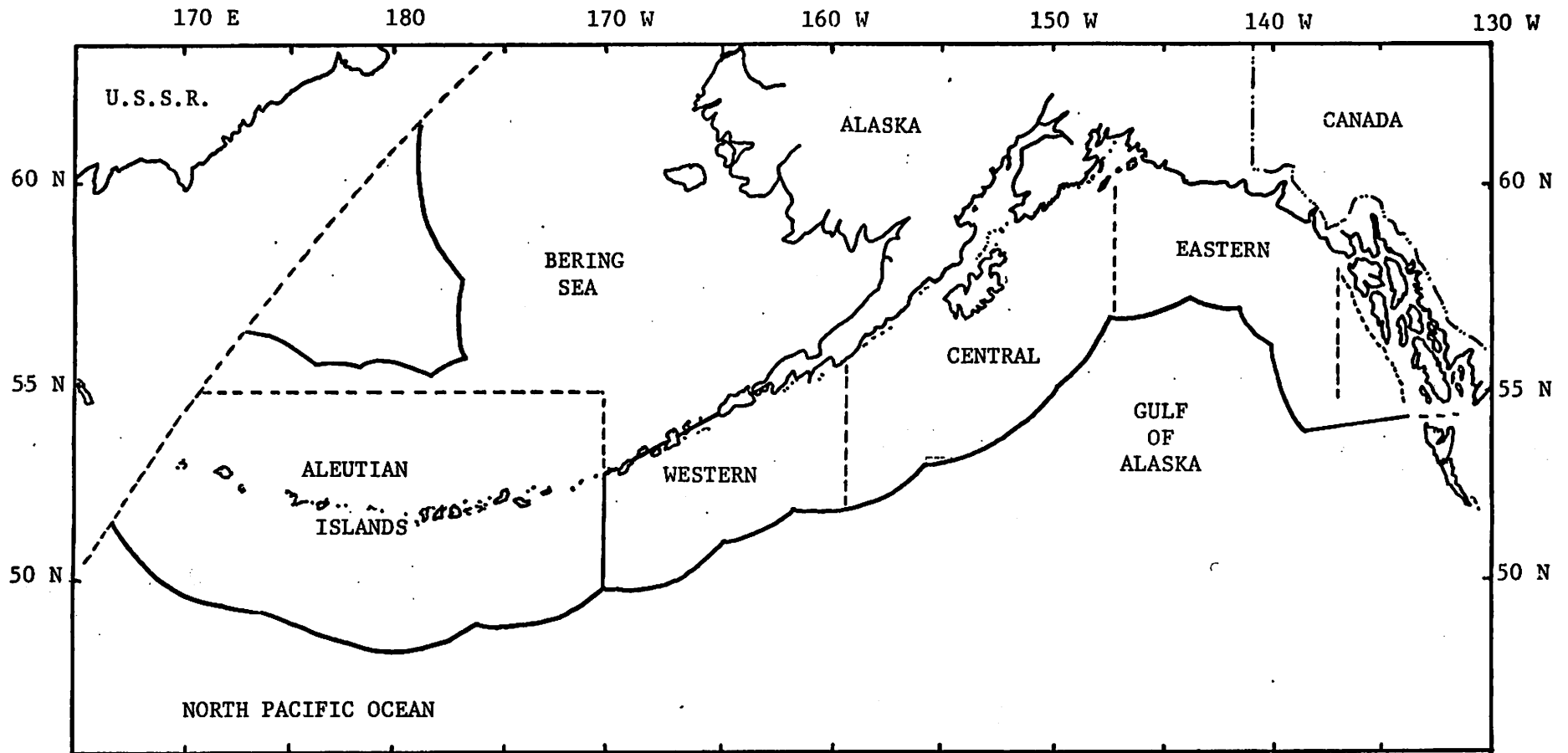


Fig. Major regulatory areas of the Bering Sea and Aleutian Islands Groundfish and Gulf of Alaska Groundfish FMP's.

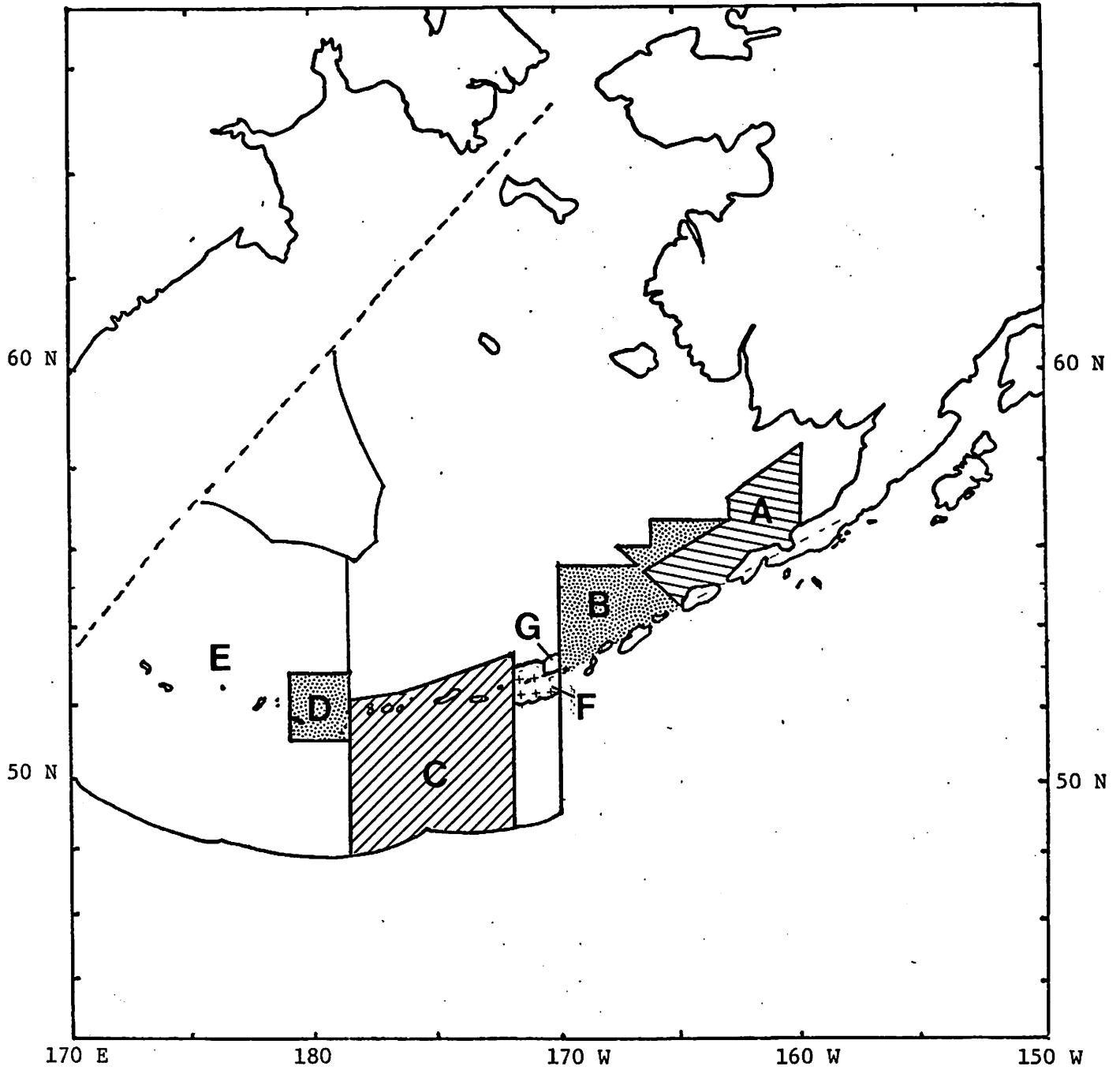


Fig. Areas with special restrictions on foreign and/or domestic fisheries in the Bering Sea and Aleutian Islands Groundfish Plan area.

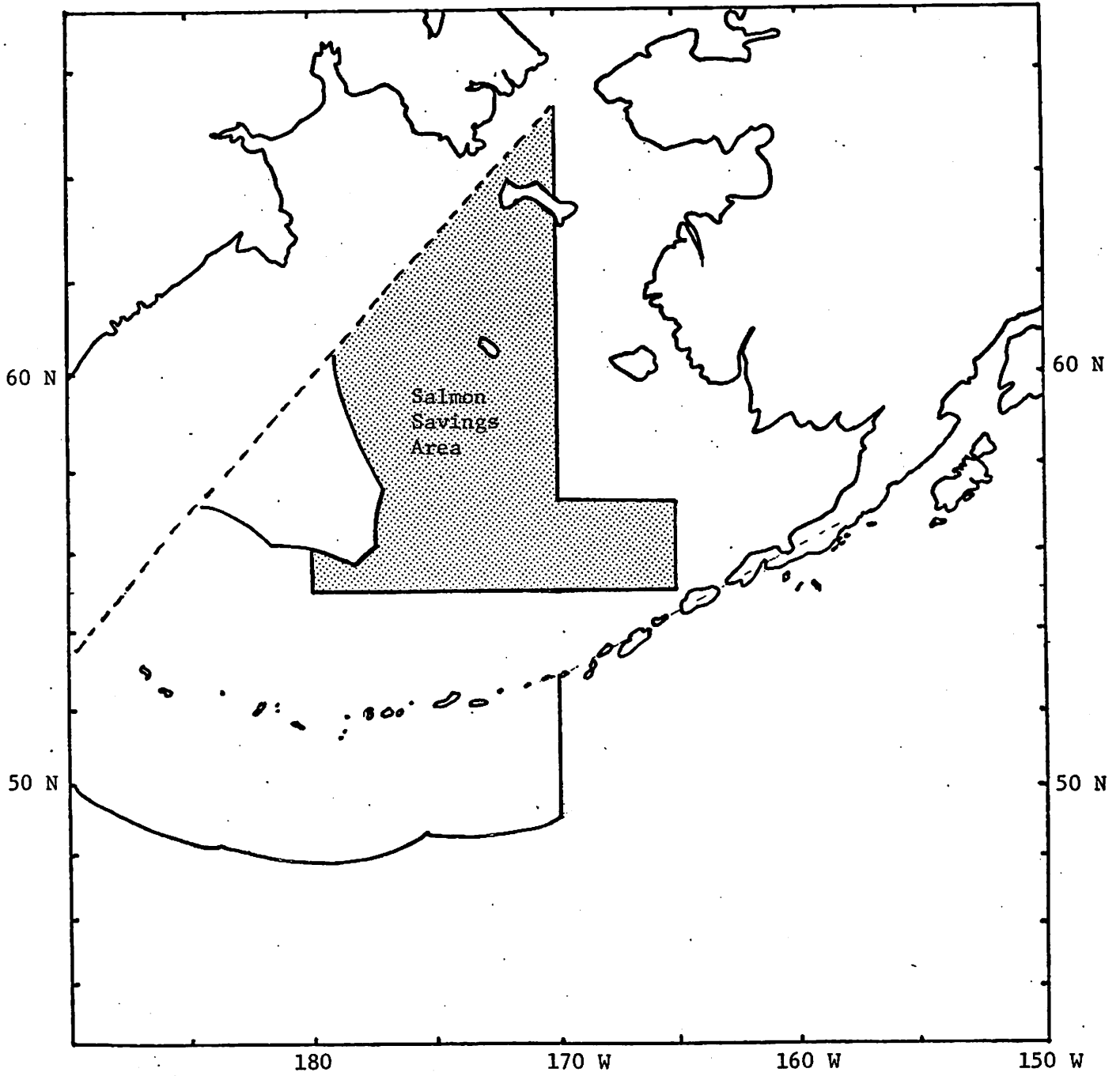


Fig. Salmon Savings Area of the Bering Sea and Aleutian Islands Groundfish FMP.

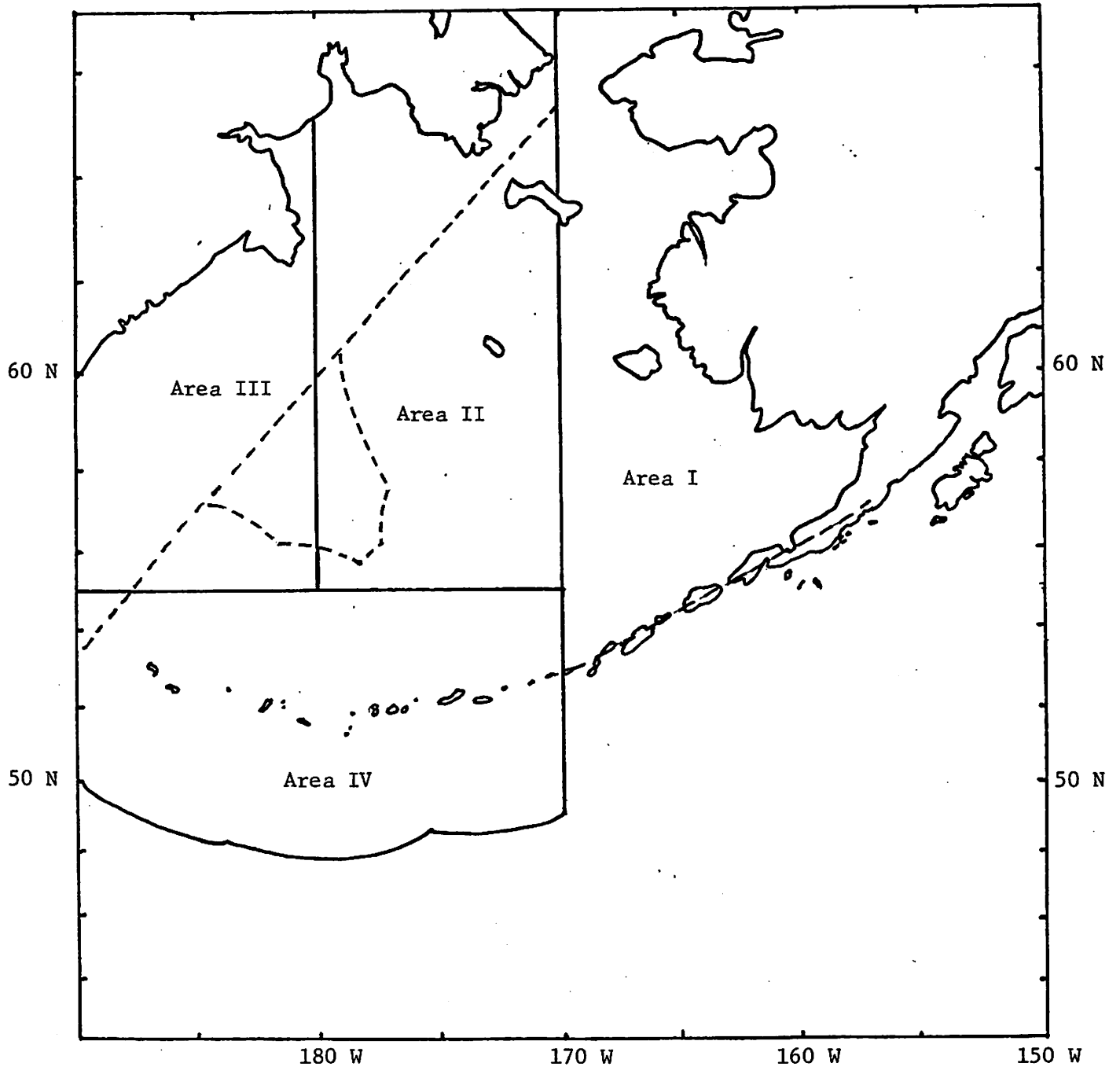


Fig. INPFC management areas in the Bering Sea and Aleutian Islands.

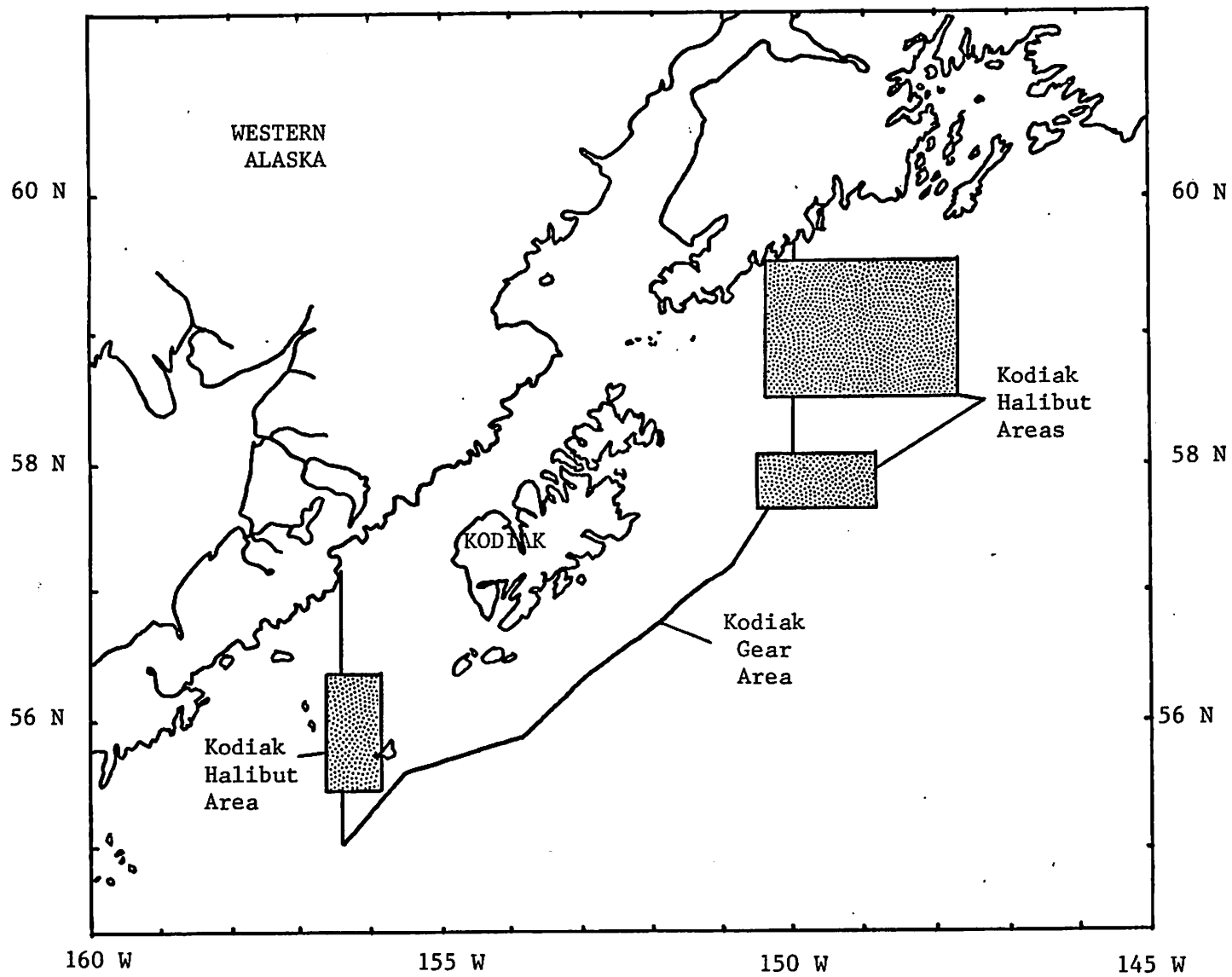


Fig. The Kodiak Gear Area (Lechner Line) and three Kodiak Halibut Areas of the Gulf of Alaska Groundfish FMP.

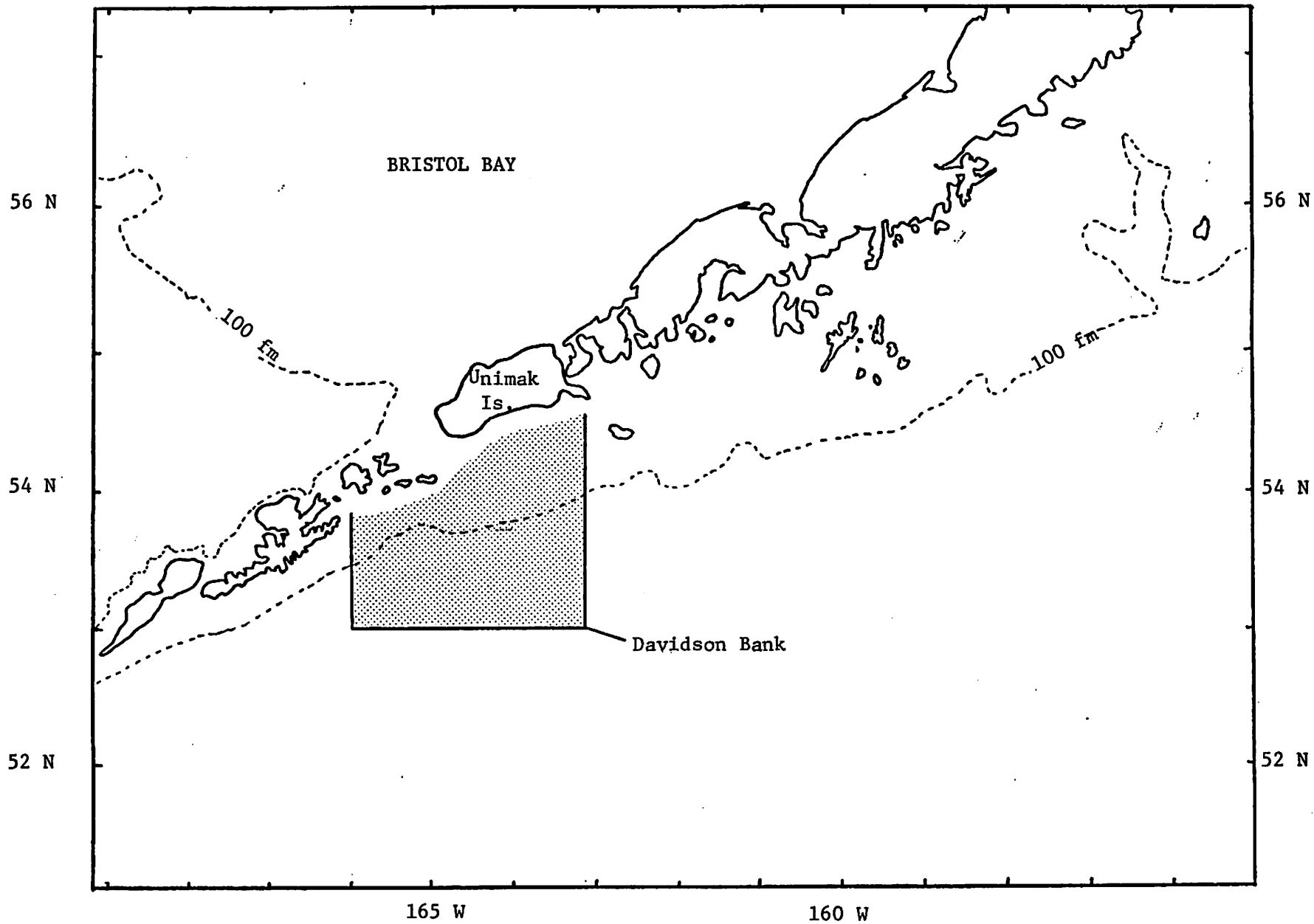


Fig. Davidson Bank restricted area of the Gulf of Alaska Groundfish FMP.

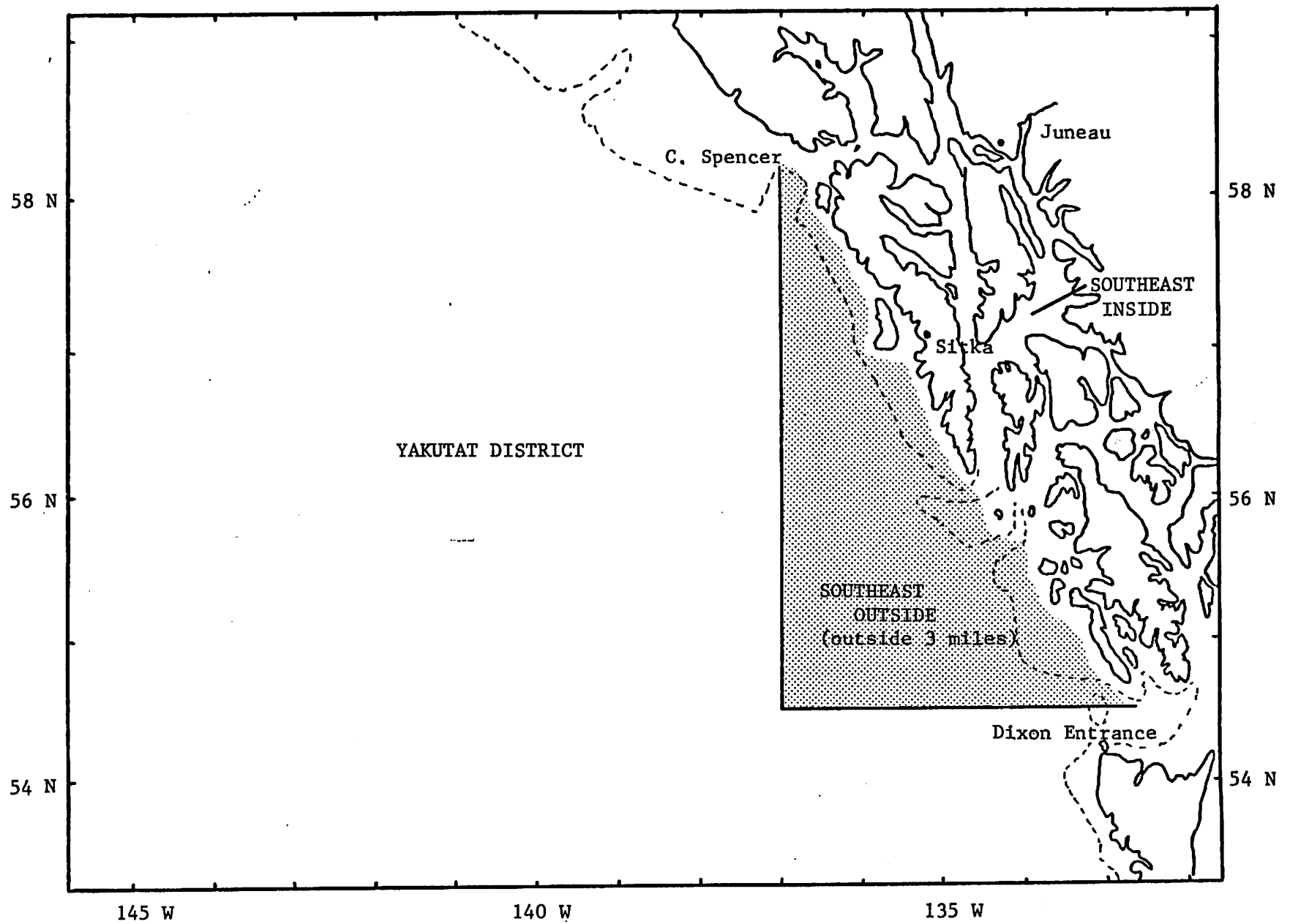
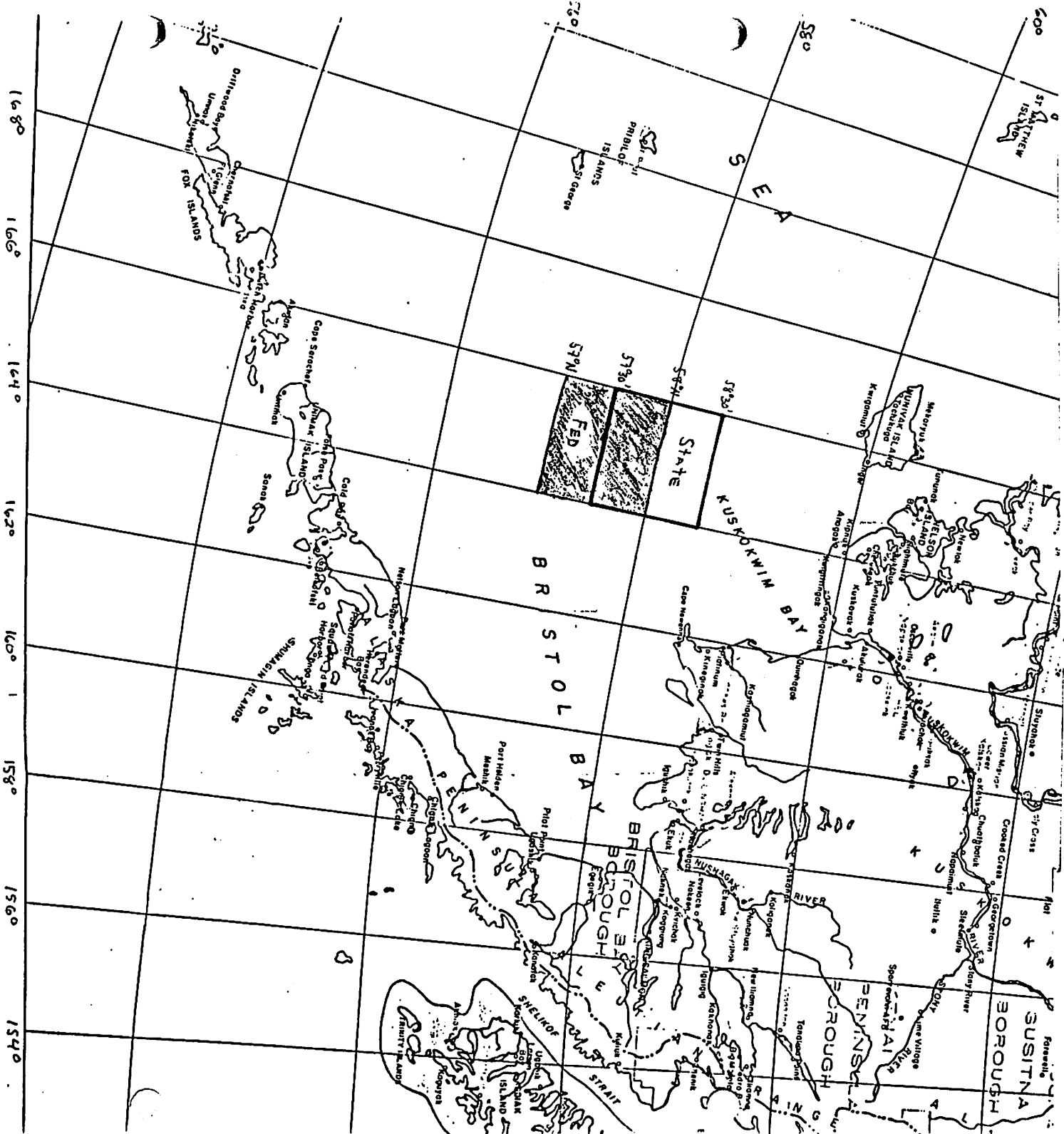
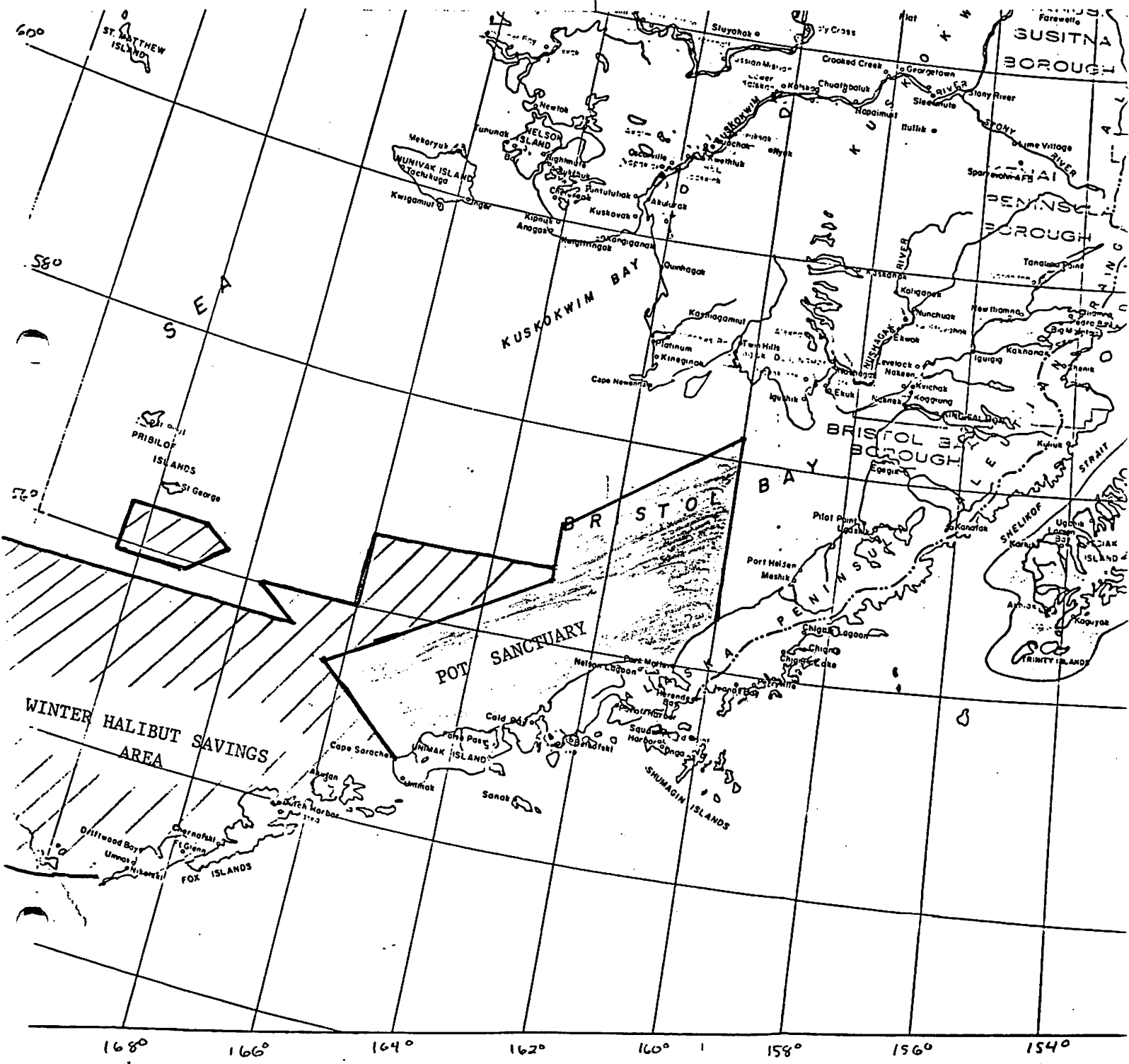


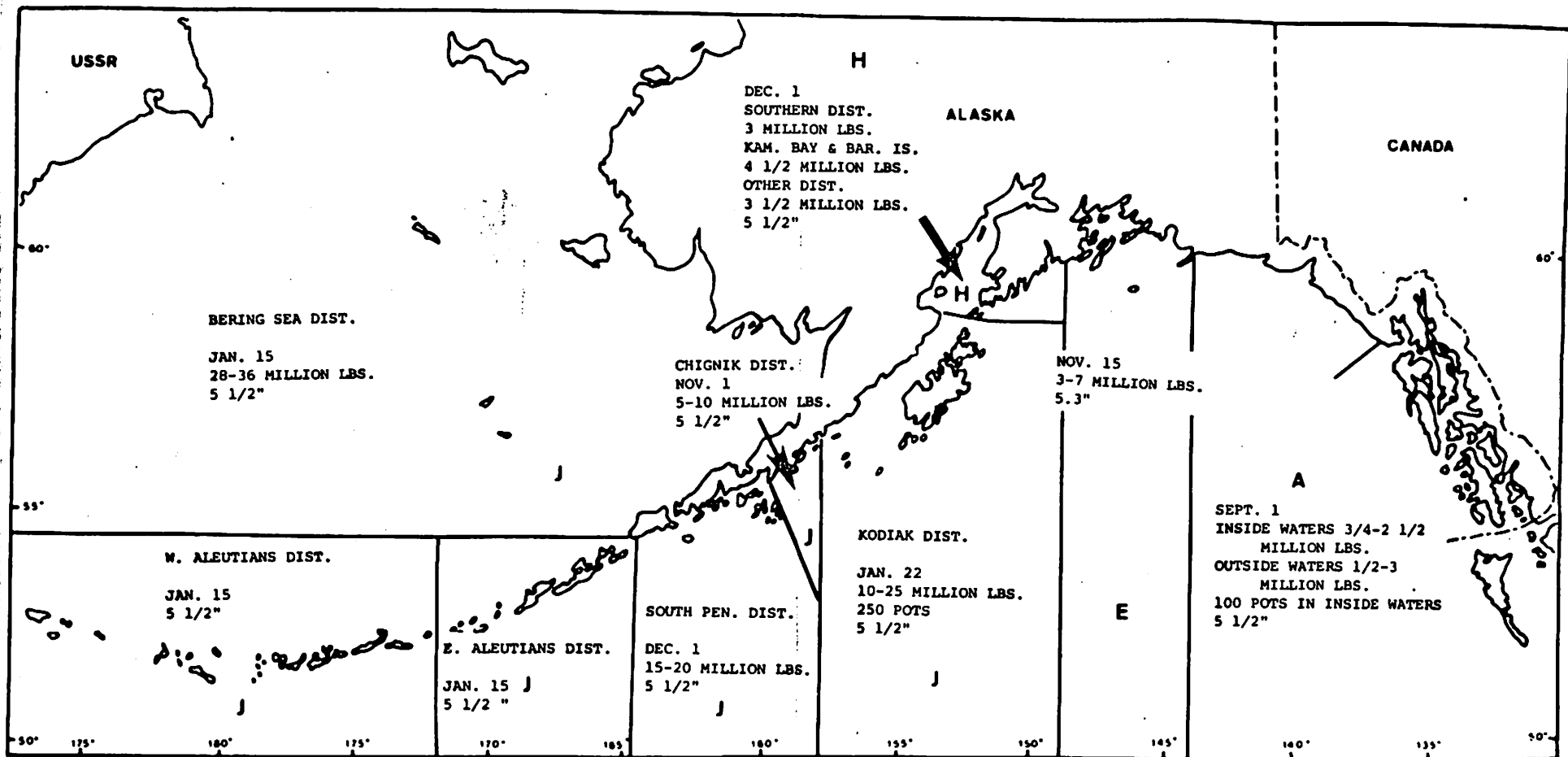
Fig. Regulatory subareas of the Eastern Regulatory Area of the Gulf of Alaska Groundfish FMP.

Bristol Bay High Seas Tanner
Crab Pot Storage Area (State
and Federal)



Bristol Bay Pot Sanctuary and
Winter Halibut Savings Area

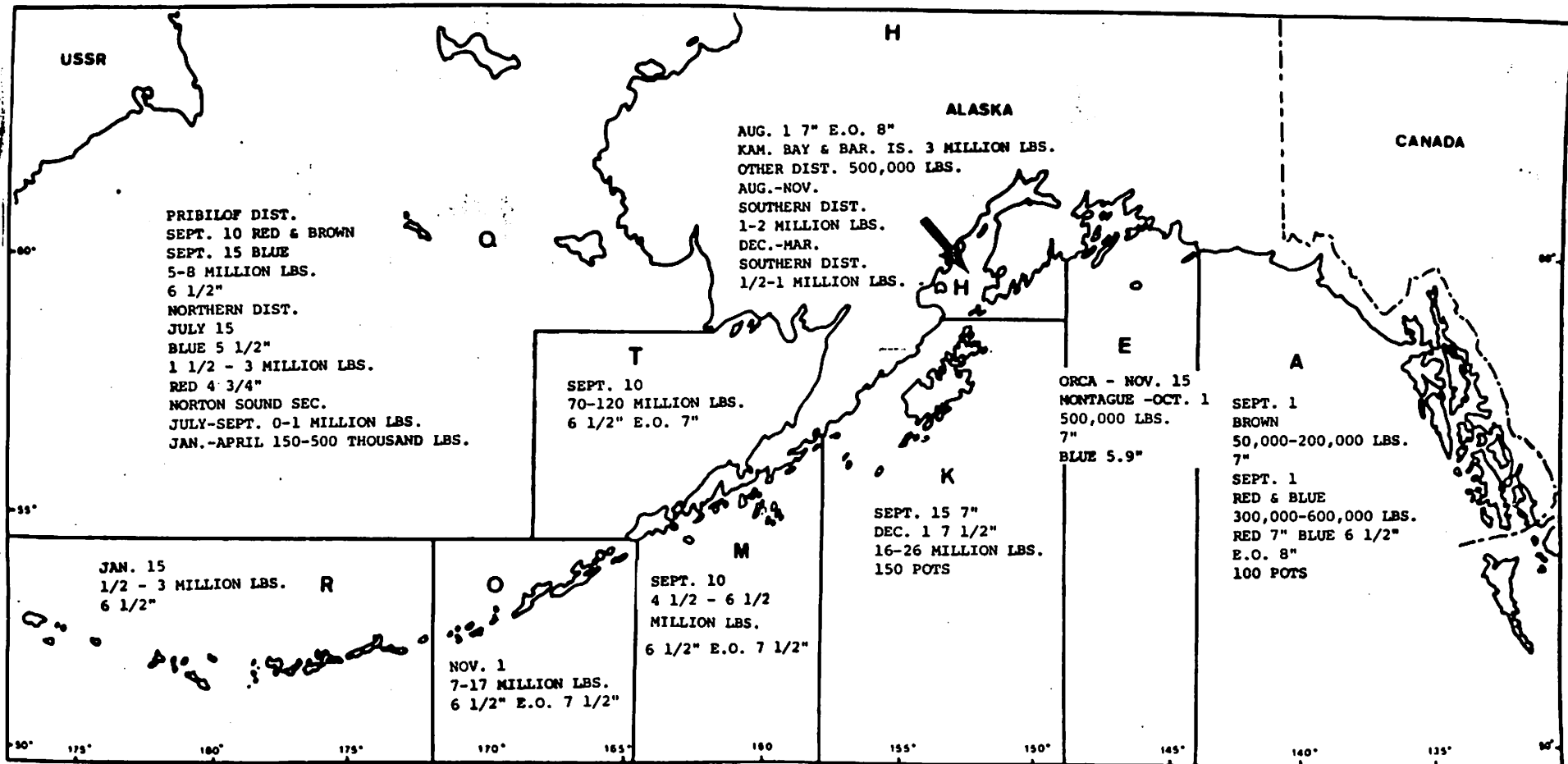




State and Federal Management Areas.

TANNER CRAB FISHERY

NOTATIONS INDICATE: OPENING DATES
 GUIDELINE HARVEST LEVELS
 POT LIMITS, WHEN APPLICABLE
 MINIMUM LEGAL SIZE
 E.O. = EMERGENCY ORDER



KING CRAB FISHERY

NOTATIONS INDICATE: OPENING DATES
 GUIDELINE HARVEST LEVELS
 POT LIMITS, WHEN APPLICABLE
 MINIMUM LEGAL SIZE
 E.O. = EMERGENCY ORDER

State Areas.

Federal will be the same.

Cherak, Harper Bay
and Seaman Bay

52 Captains
143 w/ Crewmen

KOKECHIK FISHERMEN - 1981

<u>NAME</u>	<u>SOCIAL SECURITY NUMBER</u>
1) **Edward Aguchak Aloysius Aguchak Ambrose Aguchak	547-10-6499
2) **Francis Aguchak Charlie Aguchak	547-10-6188
3) **Carlie Akeralrea	574-14-4299
4) **Francis Charlie Billy Rivers Harley Sundown	574-12-8739
5) **Wesley Henry	574-12-8487
6) **Larson Hunter Gerald Hunter	574-09-9628
7) **Joseph Kaganak *Nathan Kaganak	574-16-2954 574-09-6154
8) **Sebastian Kasayulie *Benjamin Utteryok Peter Utteryuk	574-22-2745 574-14-3641
9) **Mike Utteryuk Steven Utteryuk *Timothy Kaganak	574-09-6152
10) **Tony Ulak Leonard Bell	574-20-2404 574-46-7326
11) **Billy Andrews Mathew Andrews Paul Andrews Balosša Andrews	574-09-5932 574-26-0481 574-28-3655 574-32-6413
12) **Andrew Ayuluk Sr. James Ayuluk Eugene Ayuluk	574-09-6121 574-28-3578 574-32-3544
13) **Louis Friday David Friday William Friday	574-10-4710 574-20-1919 574-28-3116
14) **Felix Matchian Patrick F. Matchian Vincent Matchian	574-12-7971 574-32-3550 574-46-4662
15) **Edmond Pingayak Francis Pingayak Norman Pingayak Lillian A. Pingayak	574-28-1777 574-09-6282 574-46-8099 574-30-4671
16) **Joseph V. Paniyak Peter J. Boy Scout Anthony F. Paniyak Dion Imgalrea	574-14-2637 574-18-9240 574-20-8783
17) **John Pingayak Joseph Slats Moses Tulin	574-20-0746 574-24-4205 574-32-1763

NAMESOCIAL SECURITY NUMBER

	George Ford	085-42-3870
17)	**Pius Hoelscher	574-09-9763
	Nicky Hoelscher	574-30-9727
	Murphy Hoelscher	
	Howard Hoelscher	574-09-6157
18)	*Nazarie Lake	
	James Joseph	
	Robert O'Brien	
19)	*John Murran	
	**Paul Nukusak	574-14-2333
	Knute Smart, Jr.	574-12-8810
20)	**August Seton	574-12-0756
	Ronny Seton	
	Gregory Olson	
	Marvin Seton	
21)	*Peter Seton	574-19-6172
	Thomas Seton	574-18-5686
22)	**Joseph Smart	574-09-4014
	Arthur Smart	574-18-3800
	David Smart	574-28-7632
23)	*Buster Smith	574-09-9792
	Clarence Smith	574-14-5548
	Augustine Smith	574-32-2332
24)	*Carl Smith	574-09-4036
	Aloysius Smith	
25)	**Carl Tall	574-09-9798
	Eric Olson	574-22-8268
	Luke Tall	574-26-1182
26)	*Donald Tall	574-14-0230
	Mark Tall	
	Francis Tall	574-09-4035
27)	*Silas Tomaganak, Jr.	574-46-4978
	Silas Tomaganak	574-09-9799
	Issac Tomaganak	574-32-0968
	Evan Tomaganak	574-46-8694

*boat captain, individual boat
**boat captain, co-op boat

Hooper Bay

<u>NAME</u>	<u>SOCIAL SECURITY NUMBER</u>
28) *Glen Joe Calvin Joe	574-32-3014
29) *Paul Joe, Sr. Paul Joe, Jr. Harvey Hill	574-09-7847 574-46-3303 574-48-0844
30) *Louis Bunyan Sr. David Bunyan Ambrose Bunyan Clifford Bunyan	574-10-6946 574-30-8723 574-52-3692 574-46-5671
31) *Cornelius Black Ike Seton Joseph Lake, Jr.	574-12-9369 574-30-9701 574-14-8698
32) *Louis Bunyan, Jr. Wilfred Bunyan	574-52-3477 574-26-2714
33) **Harvey Joe Peter Gump Norman Joe	574-22-8507 574-46-7230 574-26-1667
34) **Anthony Tinker, Sr. Tommy Tinker William Tinker	574-09-4034 574-22-9217
35) **Rudy Smith, Sr. Danny Smith Rudy Smith Rudy Smith, Jr. Jonathan Smith	574-12-0269
36) **Dominic Smith James Smith Henry Smith	574-22-8567 574-46-5917 574-46-2961
37) **Ignasius Gump Raymond Gump Aloysius Gump	574-09-9757 574-46-1380 574-46-4117
38) *David Simon Sr. Harold Simon John Simon	574-09-5058 574-46-5171
39) *Samson Mann, Jr. Guy S. Mann, Sr. Johnny Mann	574-49-2904 574-09-2640 574-46-0268
40) *Benjamin Night Benjamin Night	561-38-3916 574-24-5165
41) *Moses Night Victor Night Aloysius Olson	574-16-9742 574-46-8807 574-46-1686
42) *Vincent Green Dennis Green	574-24-5388 574-46-2376
43) *Damien Hoelscher Frank Hoelscher	574-10-7282

<u>NAME</u>	<u>SOCIAL SECURITY NUMBER</u>
44) **Jimmy P. Slats	574-18-3255
Gregory Slats	574-20-4295
Virginia Slats	574-46-5954
Nellie G. Slats	574-30-4003
45) **Gregory Teve, Sr.	574-12-1506
Moses Cholok	574-22-2660
Paul Teve	574-46-4413
50) **Francis Ulroan	574-12-4030
John Ayuluk	
Mark Ulroan	
Frederick Ulroan	
51) *Jacob Nash	574-09-7656
Billy Nash	574-34-1547
Eva Linda Nash	574-30-4004
52) *Simon Unin	574-24-1218
Morris Akutalnok	574-32-2709

