BS/AI AMENDMENT 11 SUMMARY

Establish a minimum size limit for sablefish.

Alternative 1: Do nothing (i.e., no minimum size limits).

Alternative 2: Establish a single minimum size limit for all gear (include consideration of a 22-inch limit).

Alternative 3: Establish a minimum size limit for fixed gear only (i.e., hook-and-longline and pots).

DAP priority within 100 miles of Unalaska Island.

Alternative 1: Do nothing (i.e., no area restrictions on foreign processors receiving fish from U.S. fishermen).

Alternative 2: Establish year-round area closures. Two sub-alternatives consider square approximation of a 100-mile circle centered on Unalaska Island.

Alternative 3: Establish seasonal area closures. Two sub-alternatives consider January through June closures of the 100-mile zones and the entire Bering Sea.

Alternative 4: Establish a fee structure for foreign processors who receive joint venture fish.

Revise the definition of prohibited species.

Alternative 1: Do nothing.

Alternative 2: Clarify, but not substantially alter, definition.

Improve catch recording requirements.

Alternative 1: Do nothing.

Alternative 2: Require fishing and transfer logbooks for all DAP vessels.

Alternative 3: Require the logbooks only from DAP catcher/processors and mothership/processors.

Revise definition of acceptable biological catch (ABC).

Alternative 1: Do nothing.

Alternative 2: Amend definition to conform with that used by Pacific Fishery Management Council.

Increase upper value of optimum yield (OY) range.

Alternative 1: Do nothing (upper value remains 2.0 million mt).

Alternative 2: Raise upper value of OY range to 2.4 million mt.

Alternative 3: Equate upper value of OY range to annual sum of EY/ABCs.

Prohibit pollock roe-stripping.

Alternative 1: Do nothing.

Alternative 2: Prohibit JVP roe-stripping.

Alternative 3: Prohibit JVP and DAP roe-stripping.

Alternative 4: Establish semi-annual JVP pollock allocation.

AGENDA D-3
MARCH 1987

M E M O R A N D U M

TO: Council, AP and SSC Members

FROM: Jim H. Branson
Executive Director

DATE: March 12, 1987

SUBJECT: Bering Sea/Aleutian Islands Groundfish FMP
Amendment 11, Draft EA/RIR

ACTION REQUIRED

Review and approve BS/AI Amendment 11 for public review.

BACKGROUND

The Council reviewed amendment proposals in January for the Bering Sea/Aleutian Islands Groundfish FMP. Seven management problems were forwarded to the BS/AI plan team for initial analysis and preparation of a draft environmental assessment/regulatory impact review. For each management problem the plan team analyzed several alternative solutions including the one originally proposed. The problems and alternative solutions are outlined in a summary document, item D-3(a) in your notebook.

The draft EA/RIR for Amendment 11 of the Bering Sea/Aleutian Islands Groundfish FMP was sent to you last week in a special mailing. During this meeting the proposed amendments must be reviewed and approved or disapproved for release to the public for comment. Following this meeting a 30-day public comment period is scheduled. A revised amendment package will be presented to the Council for final action at the May meeting. Following Council action and federal review, Amendment 11 should be implemented by November 1987.

187/DG

GREENPEACE U.S.A.

P.O. Box 104432
Anchorage, Alaska 99510

Tel. (907) 277-8234

GREENPEACE STATEMENT CONCERNING PROPOSAL TO RAISE UPPER LIMIT OF OPTIMUM YIELD RANGE OF BERING SEA/ALEUTIAN ISLANDS GROUNDFISH

My name is Cindy Lowry and I am the Alaska Field Representative of Greenpeace, an environmental organization with 600,000 supporters in the United States, including 1600 in Alaska. Our organization desires balanced management of the diverse Bering Sea/Aleutian Islands ecosystem. Such balance involves successful management of fisheries stocks to maintain long term sustainability and preservation of marine mammal and seabird species.

Greenpeace views the Americanization of the North Pacific groundfish industry as a trend which can establish a successful, viable domestic industry. We believe the industry can be viable without depleting the resource base by setting the optimum yield range and allocations of pollock and other groundfish above levels which are necessary for the sustainability of the fish species - as well as marine mammal and seabird species.

We oppose the proposed amendment to the Bering Sea and Aleutian Islands Groundfish Fishery Management Plan (FMP) that, if adopted, would raise the upper limit of the optimum yield range from 2 million to 2.4 million metric tons. Such an increase would represent a twenty percent increase of the current upper limit. The potential impact of such a large increase on numerous species, including groundfish, marine mammal, and seabird species, must be evaluated during review of such an amendment.

The populations of Pribilof Island northern fur seals and northern sea lions are currently declining. Moreover, concerns have been raised that numerous seabird species, such as kittiwakes, murres, and cormorants, are experiencing population problems. All of these species depend upon pollock and other groundfish species as prey sources.

It would be premature to approve the large upper yield limit increase without assessing potential impacts on these and other species. ~~At this time, the proposed amendment should not be approved.~~ We recommend that another alternative be addressed by the Plan Team that would set OY (optimum yield) to ABC (acceptable biological catch) annually, with an overall cap of 2 million metric tons.

In conclusion, Greenpeace believes it would not be prudent for the long-term viability of the groundfish industry, nor the other species of the Bering Sea/ Aleutian Islands ecosystem, to approve this proposed upper yield limit increase.

Thank you for your consideration of Greenpeace's views.

Submitted to the 76th Plenary Session, North Pacific Fishery Management Council
Anchorage, Alaska March 19, 1987

Prepared by Cindy Lowry,
Alaska Field Representative, Greenpeace

AGENDA D-3
MARCH 1987
SUPPLEMENTAL

COMMENTS ON BSAI DAP PRIORITY ZONE

ALASKAN JOINT VENTURE FISHERIES, INC.

310 "K" Street
Suite 310
Anchorage, Alaska 99501
(907) 276-5342
Telex: 332471 APANC
Fax: (907) 258-0155

ACTION	ROUTE TO	INITIAL
	Exec. Dir.	
	Deputy Dir.	
	Admin. Off.	
	Exec. Sec.	
	Staff Asst. 1	
	Staff Asst. 2	
	Staff Asst. 3	
	Economist	
	Sec./Bkkr.	
	Sec./Typist	

MAR - 6 1987

March 4, 1987

Dr. Anthony J. Calio
Director
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. Department of Commerce
Herbert C. Hoover Building, Room 5128
14th and Constitution Avenue, NW
Washington, DC 20230

RE: Proposed DAP Priority Access Zone around Dutch Harbor

Dear Dr. Calio:

On the behalf of Alaskan Joint Venture Fisheries, Inc. and the fishermen in our employ, we would like to express our opposition to the proposed establishment of a DAP exclusive access zone around Dutch Harbor. We strongly endorse any and all the arguments made in recent letters addressed to your offices by Westward Trawlers, ProFish International and the North Pacific Fishing Vessel Owners Association and hereby add our voice to the chorus of protest against this discriminatory proposal.

It is agreed that the idea of establishing such an exclusive economic zone has fundamental emotional appeal but with all due respect to the authors, the proposal has little basis in the realities of the current marketplace.

Members of Pacific Seafood Processors Association (PSPA) and the Mayor of Dutch Harbor either claim or infer the following in their proposal:

1) The inception of a 100 mile DAP priority zone is imperative in order to guarantee that domestic harvesters deliver their catch to two surimi plants in Dutch Harbor.

2) A joint venture company can operate just as profitably <u>outside</u> the peripheries delineated by such a zone.

3) Joint Ventures have consistently "taken the money and run", i.e. have left none of their profits behind in the coastal communities of Alaska such as Dutch Harbor.

First, there are fish presently being delivered to a shore-based surimi plant by a joint venture boat. But the processing capacity of the plant is so small that this one boat has "plugged" the plant with only a few deliveries. Thus, after sporadic deliveries it must sit idle while the rest of the JV fleet delivers to the more efficient floating processors with no restraints. The upshot of all this is that it is not economically feasible for a multimillion dollar catcher boat to deliver to a shore-based plant under the current conditions of the fishery, wherein volume and price do not adequately offset the costs of insurance and maintenance of a typical Bering Sea trawler.

But will this surimi plant starve? No--tenders have been converted and are heading towards Dutch Harbor right now. These tenders will receive fish from JV catcher boats for delivery to shore-based plants and taking into account the efficiency and cost effectiveness of such an arrangement, one might conclude that this is precisely the investment these plants should have made long ago.

Second, contrary to the contentions of the authors of this proposal, joint venture companies cannot continue to run a profitable operation if access to these grounds is denied. Joint venture operators currently employ over 120 catcher boats worth from one to three million dollars each. Many of them have only just begun to make a profit after the king crab demise of 1980, and losing these grounds with the concomitant loss of their JV markets would be the coup de grâce for at least 100 of them. JV managers would lose over 10 million dollars in revenues and JV boat operators and crew would lose well over 100 million dollars of potential earnings. The grounds within this 100 mile circle are that productive and we absolutely cannot afford to lose access to them, especially when it has already been demonstrated that these shore-based plants can be adequately supplied with raw product without the establishment of this or any other exclusive zone.

Third, the authors' contentions that JV operations have done nothing for Alaska's coastal communities is completely invalid. Alaskan Joint Venture Fisheries owns and manages four boats that in 1986 alone left an average of $200,000 dollars each behind in Dutch Harbor. These monies represent fuel costs, moorage fees, groceries, parts, airline tickets and the myriad other expenses generated by such a fishing operation. In one way or another each and every citizen of Dutch Harbor was benefited by this money. Please take note that there are over 100 of these catcher boats, each leaving roughly this same amount behind both in Dutch Harbor and Kodiak.

In short, we cannot let an overzealous plan prematurely kill off the goose that laid the golden egg. Joint Venture operators argue for the natural evolution of a fleet of catchers into a fleet of domestic catcher/processors and they are busy building these boats now with the all-important capital generated from JV operations. We feel these domestic catcher/processors are the wave of the future and we cannot afford to stifle such a development, especially with artificial constraints such as exclusive access zones and all their discriminatory implications.

In closing, we would like to reiterate our vehement opposition to any and all legislated solutions to economic problems, problems whose solutions are better left to the marketplace.

Sincerely,

ALASKAN JOINT VENTURE FISHERIES, INC.

Eric Maisonpierre
Operations

EM:sh

cc: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Steven
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

WESTWARD TRAWLERS, INC.

15 N.E. Northlake Way Seattle, Washington 98105 phone: 206-547-6840

18 February 1987

Dr. Anthony J. Calio, Administrator
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Room 5128
Hoover Commerce Building
Washington D.C. 20230

2/19/87

Re: Proposed DAP Priority Zone
Dutch Harbor, Alaska

Dear Dr. Calio:

We are writing to reaffirm our opposition to the proposal of Pacific Seafood Processors Association (PSPA) and the Mayor of Unalaska Island for a 100 mile exclusively DAP fishery zone around Unalaska Island.

The regional process of review of this proposal is still in process however, in their letter to you of February 10, PSPA elected to escalate the discussion to the national level. Regretably, it is necessary for us to respond.

We have expressed our opposition to this proposal in testimony presented to the NPFMC on January 21; copy of the testimony of the undersigned was provided to you with a letter dated February 10 from Mr. Thorne Smith of NPFVOA.

We hope you will review that testimony, in which we described the Pollock tendering operation that is being developed between Alyeska Seafoods and Westward to supply raw material to the Alyeska surimi plant in Dutch Harbor. The first of the tenders is nearing completion of modifications necessary to receive trawl-caught Pollock at-sea; it will be departing Seattle for the fishing grounds within the next week. The second tender will be close behind.

In the meantime, we have committed one of our twelve U.S. catcher-boats to the harvest and delivery of Pollock to the Aleyeska surimi plant——construction of which was completed late in January——until the first tender arrives.

The F/V SHARON LORRAINE has been delivering Pollock to Alyeska for nearly three weeks. The first week was marked by understandable start-up problems at the new plant; the past two weeks, the new surimi plant has been able to maintain it's design capacity of about 400,000 lbs of round Pollock per day. The success of the SHARON LORRAINE in meeting that raw material demand is particularly illustrative of the absurdity of the proposed 100 mile closure.

tlx: 326048 cable: Westward Seattle

Over the past two weeks, the SHARON LORRAINE, the only vessel delivering Pollock to the Alyeska plant, has consistently delivered fish in excess of the plant's capacity to process. The plant has dealt with these excesses by:

1) diverting fish to the competing surimi plant of Nippon Suisan/Great Land Seafoods

2) operating the Alyeska fish-meal plant at capacity

3) requesting less frequent deliveries from the SHARON LORRIAINE

In addition to the tremendous tonnages delivered into Dutch Harbor by the SHARON LORRAINE, the vessel has made periodic deliveries to processing ships operating at-sea in our joint-venture fishing operations.

Currently, therefore, the two new surimi plants in Dutch Harbor could not support the harvesting ability of even two U.S. fishing vessels! We expect this situation will continue until after completion of the Pollock spawning cycle in April.

Despite this fact, the proponents of the 100 mile closure would evict the more than 100 U.S. fishing vessels which are presently harvesting Pollock and Codfish within the proposed zone.

No longer can they honestly claim that they are unable to get fish "because of the joint-ventures"; properly managed and motivated, there is U.S. harvesting capacity many times that necessary to meet the needs of the Dutch Harbor plants.

And any arguments that there is not sufficient Pollock to support both DAP and JVP operations in the vicinity of Dutch Harbor border on the absurd.

We are dedicated to the continued economic & commerical solution of the Pollock requirements of the new Surimi plants in Dutch Harbor. We are vehemently oppose to legislated solutions——which make no more sense in the fishing industry than they do in any other industry. And we wish to caution the NPFMC and the Administration of the established folly of an industrial policy in which the government tries to pursue a role of selecting an industry's winners and losers. That is the function of the marketplace!

In closing, we would like to come to the defense of Mr. McVey in his reasoned and appropriate stand on this issue.

Yours Very Truly,
WESTWARD TRAWLERS, INC.

Hugh Reilly
President

cc:
Capt. John Dooley - F/V SHARON LORRAINE
Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Dongressman Don Bonker
Congressman Rod Chandler
Congressmen Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

bcc Thorne Smith
Mark Peterson

MARINE RESOURCES COMPANY INTERNATIONAL
A Washington Partnership

2/20/87

February 18, 1987

Dr. Anthony Calio, Administrator
National Oceanic and Atmospheric Administration
Hoover Commerce Building, Room 5128
Washington, D. C. 20230

Dear Tony;

I am writing with regard to the proposed amendment to the Bering Sea/Aleutian Islands Groundfish FMP which would establish a "DAP Priority Zone" around Dutch Harbor, and specifically with reference to the Pacific Seafood Processors Association letter of 28 January to you.

First, I want to take issue with PSPA's condemnation of Bob McVey's position on this issue. I cannot recall a single instance (including several in which his position was contrary to my Company's best interests) in which Bob has acted irresponsibly or in a manner inconsistent with the MFCMA or NMFS' policy regarding MFCMA. Too often, Council members blithely vote in favor of "further analyses" or "continued studies" as an easy way out of taking substantive action on sensitive issues. However, those analyses and studies take Council and NMFS staff time, neither of which are in long supply, and require the concerned and potentially affected industry to keep its oar in, just in case.

With regard to the "DAP Priority Zone" proposal, a great deal of testimony was available to the Council, and the probability of new information coming to light over the next few months is negligible. In my view, to have argued and voted against putting this issue to bed at least for the current FMP cycle (as, unfortunately, the majority of Council members did), only begged the question and added unnecessarily to the cost (both to

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National Hotel
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Tel: 2203-5466
Telex: 413 052 SOVAM

Verkhne Morskaya
dom 134
Nakhodka 17
Primorski Krai
Tel: 25-290
Telex: 213818 MRK SU

government and industry) of managing the Bering Sea/ Aleutian Islands Groundfish Fishery.

With regard to the proposed amendment itself, it was particularly irksome that at an otherwise well-attended Council Subcommittee meeting, which was called to thoroughly air the issue and attempt to develop a broadly acceptable compromise, representatives of the processing sector were noticeable by their absence. Furthermore, the "DAP Priority Zone" Amendment's sponsor flatly refused to consider any change or compromise in the proposal as submitted. Accordingly, through no fault of the Council, the process resulted in a considerable waste of time by those who were committed to working with the Council.

Finally, with regard to the substance of the "DAP Priority Zone" issue, my views are contained in the attached letter to the Council (a procedure I prefer to circumventing the Council system and going directly to you).

Most sincerely,

Bert

H. A. Larkins
Vice-President and
General Manager

Attachment

HAL/pmn

MARINE RESOURCES COMPANY INTERNATIONAL
A Washington Partnership

January 19, 1987

Jim H. Branson, Exeutive Director
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, AK 99510

Dear Jim:

Further to the discussions of the Council's Workgroup on Priorty Access (ie. the 100-mile development zone around Unalaska), I would like to illustrate the difference between a fisherman delivering his catch on the fishing grounds versus delivering to a shoreside processor; catcher-processors are not included.

1) Assume a catcherboat that operates 200 days per year net of weather, maintenance, and logistical down time; has an average pollock catch of 100 MT/day; packs 100 MT; delivers its catch on the fishing grounds; and receives $127/MT ($0.057/lb) for pollock:

200 fishing days (fishing days=operating days)
x100 MT/day
20,000 MT/year
$127/MT
$2,540,000 gross stock/year

2) Assume the same catcherboat with the same catch rate but delivering ashore, which requires, say, an 8 hour run in, 8 hours unloading, and 8 hours back out. However, during the frequent port calls some of the logistical and maintenance activities can be piggy-backed during the off-loading process. This might result in an increase in operating days to 220 per year. In this case, half of the operating days are devoted to fishing, and the annual catch will be only 11,000 MT (ie., 220 operating days minus 110 running/offloading days times 100MT/day). To put in the same gross stock would require a price of:

$2,540,000 gross stock/year
+ 11,000 MT
$230.90/MT ($0.105/lb)

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Verkhne-Morskaya
dom 13-1
Nakhodka 17
Primorski Krai
Tel: 25-290

The difference between 5.7 and 10.5 cents/lb is simply the cost to the catcherboat of transporting its catch to the shore plant. Whether or not there is a "development zone" does not change the mathematics. If a shoreside plant will pay the higher price, it will get fish delivered to it; if a shoreside plant arranges to pick up its fish on the fishing grounds it will only have to pay the lower price. Given the same annual gross stock potential, there is no doubt in my mind that most U.S. trawlers will sell "American"--they have so testified time and again.

If, however, there is an expectation on the part of shoreside processors that a development zone will result in their being able to buy at their dock for the lower price, then clearly they are expecting the fishermen to subsidize those shoreside operations. Surely, that cannot be an acceptable fix, either on the part of the Council or under the terms of MFCMA.

Unless documentation can be shown of significant competitive effects on CPUE within any proposed zone, and if there is no intent to force U.S. fishermen to absorb the transportation cost from the grounds to the beach, then I fail to see how a "development zone" of any dimension can benefit shoreside processors or local communities.

One final note regarding the "level playing field". In MRCI's joint fisheries, the cost of Federal observers, as billed to the USSR, now averages about $4.00/MT. This is about 3 percent of the ex-vessel value of our joint-venture catch, and about the same as the State of Alaska landing tax which applies to shoreside landings.

Best personal regards,

/s/

H.A. Larkins
Vice President & General Manager

cc: NPFVOA
Reilly
Block
Pereyra
Tasker

HAL/fst

ProFish International, Inc.

PROFISH INTERNATIONAL

February 12, 1987

Dr. Anthony J. Calio
Director
NOAA
U.S. Department of Commerce
Room 5128
Herbert C. Hoover Building
14th and Constitution Avenue, NW.
Washington, DC 20230

Received 2/20/87

RE: Proposed Dutch Harbor DAP Priority Zone

Dear Dr. Calio:

On behalf of our company and the fishermen who fish for us, we want to express our strong opposition to the proposed DAP preference zone around Dutch Harbor. In this regard we endorse the arguements made in recent letters addressed to you by the Midwater Trawler Cooperative, The Highliners Association and North Pacific Fishing Vessel Owners Association in opposition to this discriminatory proposal to amend the Bering Sea groundfish plan.

The proponents of the DAP preference zone have failed to recognize the substantial adverse impacts that this and similar measures such as J/V processing fees and closed seasons would have on domestic fishermen who fish in joint ventures and the allied U.S. service industries which are economically dependent on a strong domestic trawler fleet. For example, if this measure were implemented, our company alone would experience at least a $15 million reduction in markets we could make available to domestic fishermen. This reduction in markets would not be offset by corresponding increases in the capability of DAP shore-side operations. Futhermore, it would force us to conduct our reduced J/V operations at considerable distance off shore during the stormy winter period and thereby subject our catcher fleet to a much higher safety risk to the vessels and crews.

657 North 34th Street, Seattle, WA 98103 USA, 206-547-6800, Telex: 320355 PROFSH

It appears to us that the proposed preference zone is nothing more than a veiled attempt to force domestic fishermen to deliver fish to shore-side operations irregardless of whether or not it makes economic sense to do so vis-a-vis off-shore market opportunities. As such this measure would discriminate between classes of fishermen in a manner contrary to the letter and intent of the MFCMA. The architects of the Magnuson Act intended for the priorities embodied in the three-tiered allocation system to operate in response to the marketplace, not according to the discriminatory and political objectives embodied in the proposed DAP preference zone.

The proponents of this measure have shown an unwillingness to consider other alternatives such as carrier vessels for supplying fish to shore plants in Dutch Harbor. Recently, our company along with other companies managing off-shore deliveries of fish to foreign processors have offered to deliver fish to DAP processors or carriers on the fishing grounds on a priority basis under terms and conditions similar to those in our present operations. Even though not required under the law, we made this good faith offer to assist DAP shore-side operators in exercising their priority access to the resource. The proponents of the DAP preference zone, though, rejected our offer outright without any consideration of its merits or alternatives. In light of this response, one has to question the true motives of the subject proposal--is it intended to truly get fish to shore-side operators or is the long-term objective to establish an exclusive economic zone for DAP shore-side processors to give them an advantage over other domestic interests?

The present rapid expansion in domestic harvesting and processing certainly underscores the fact that the Magnuson Act is achieving one of its stated purposes--"to encourage the development by the United States fishing industry of fisheries which are currently underutilized or not utilized by United States fishermen, including bottom fish off Alaska, ..." Now is certainly not the time to introduce discriminatory measures that will disrupt this basic tenet of the Act.

In conclusion, we urge NOAA/NMFS to continue to oppose efforts to establish exclusive DAP preference zones or other measures designed to reduce the economic viability of one segment of our industry over another. The marketplace, not government, should be the decision-maker regarding how and when the available fishery resources are allocated among competing users within the priority allocation system established under the MFCMA.

Sincerely,

Walter T. Pereyra
President

lb

cc Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
Congressman Gerry Studds
Congressman Mario Biaggi
Congressman Walter Jones
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

Northern Deep Sea Fisheries, Inc.
927 NORTH NORTHLAKE WAY, SUITE 110, SEATTLE, WASHINGTON 98103
TEL (206) 545-7271 FAX (206) 547-4968 TELEX 320036 NISSUI SEA

2/19/87

February 18, 1987

Dr. Anthony J. Calio, Administrator
National Oceanic and Atmospheric Administration
Hoover Commerce Building, Room 5128
Washington, D.C. 20230

Dear Dr. Calio:

Northern Deep Sea Fisheries (NorFish) is in receipt of a letter to you from the Pacific Seafood Processors Association on the proposed 100 mile exclusive fishery zone around Dutch Harbor. NorFish is strongly opposed to this idea and supports the position taken by the NMFS Alaska Regional Director at the January Regional Council Meeting - that this proposal is "so extreme that it is not appropriate to use it as a basis for examining the basic question of DAP priority".

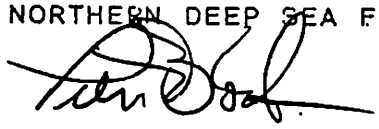
NorFish is a joint venture management company which last year employed twenty American catcher vessels which harvested 242,000 metric tons of groundfish and which, in 1987, will employ some twenty-two American catcher vessels with a target quota of 370,000 metric tons. Last year NorFish also was the exclusive vessel fleeting agent for Great Land Seafoods (GLS), one of the two new groundfish shore plants located in Dutch Harbor, which would be a purported beneficiary of this proposal.

As NorFish testified at the January council meeting, our association with GLS last year strongly suggested that the solution to the supply problem was a matter of fishing vessel economics and the recognition by the plant of the additional costs of vessel operation in a shore side delivery mode. Once the appropriate compensation differential has been established, between the at sea and shore side delivery operating modes, the shore plants will be successful in solving their supply problems. This year, as in 1986, the competition for U.S. catcher vessels is keen, with the joint ventures providing the alternative market opportunities. NorFish views the 100 mile exclusive zone as a veiled attempt by its proponents to create a market void by forcing diseconomies into the JV operations which, by default, would hope to make the shore markets more attractive. We don't believe this approach will achieve the desired result of increasing the supply of fish to the shore

plants. The zone would only serve to move the joint venture operations further off shore.

In conclusion, the Americanization process is working under the MFCMA and the priority provisions under the law are adequate. Joint venture operations have been and should continue to be allowed to be a major contributor to the Americanization process.

Sincerely yours,
NORTHERN DEEP SEA FISHERIES, INC.



Peter Block,
President

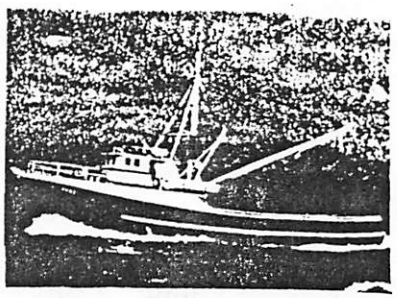
PB/jas

cc: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

LETCALIO/TXTJAN

Ocean Spray Fisheries, Inc.

4315 11TH AVENUE NORTHWEST
SEATTLE, WASHINGTON 98107
Harvesters of The North Pacific Fisheries since 1968
Member of North Pacific Fishing Vessel Owners Association



789-2033

Received 2/20/87

(206) 789-2033
Eves: 782-0694
282-9100

Dr. Anthony J. Calio,Administrator
N.O.A.A.
Hoover Commerce Bldg., Room 5128
Washington D. C. 20230

Re: Dutch Harbor 100 Mile DAP Zone

Feb.19,1987

Dear Dr. Calio:

The proposed P.S.P.A. 100 mile DAP priority area closure around Dutch Harbor is another example of what shoreside processors say they need to give them a "level playing field." Such is not the case and I would refer you to the testimony offered by Mr. Hugh Reilly at the January N.P.F.M.C. meeting.

Mr. Reilly's contentions echo exactly what I find so onerous with the proposal. Given the recent history of the American-ization process of the bottomfishery and its tie-in with the tenets of the Magnuson Act, it is clear that industry, in its market oriented drive to develop the fishery off Alaska, is proceeding very expediously both at sea and ashore, without the imposition of stilited, restricted regulatory schemes. An example of this is the Francis Miller operation where his large floating processor(which is usually anchored in protected waters) is being supplied with fish by his own fleet of smaller catcher vessels. Mr. Miller, recognizing that to get fish on a continuing basis, bought and outfitted his own boats to deliver to this basically stationary floater and this has remedyed his own supply problems. Given that the shoreside processors interested in something other then squelching the competition and returning to the "company Store" concept,they could do well to emulate Mr. Miller's success. In fact, the Aleyeska shore plant in Dutch, too, should be commended for stepping up and bringing on line tender vessels to supply their product needs. To expect outside vessels to make the economic sacrifices thatare inherent in catching, transporting and storing a highly perishable fish is totally unreasonable. A good example of what would happen economically to a three million dollar trawler was offered in testimony by Captain Harold Jones, a respected Kodiak boat owner and fisherman,

at the January N.P.F.M.C. meeting. It was stated that if he had continued delivering to the shore plant in Dutch Harbor, he would have gone broke. It is also interesting to note that Captain Jones is also a partner in shoreside processing and a floater, so his bias ,one would think, would be towards the proposal. His honesty is to be commended.

My conclusion, I hope, is obvious. Give innovative business people time to come up with solutions to a problem and they will. The proposed closure of this extremely productive area and its tremondous impact on American fishermen is fraught with negative implications when, in fact, there are positive and constructive things happening by innovative processors that should negate any need for this type of overburdensome proposal.

Respectfully submitted,

Dennis Petersen

Dennis Petersen, President
Ocean Spray Fisheries Inc.

cc:
Senator Brock Adams
Senator Dan Evans
Senator John Breaux
Senator Ted Stevens
Senator Frank Murkowski
Congressman Thomas Foley
Congressman Mike Lowry
Congressman Norm Dicks
Congressman John Miller
Congressman Don Bonker
Congressman Rod Chandler
Mr. James Campbell
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
Mr. William Evans
Mr. Rollie Schmitten
Mr. Robert McVey
Mr. Thorn Smith

Alaska Groundfish Data Bank

February 16. 1987

Dr. Anthony J. Calio, Administrator
National Oceanic & Atmospheric Administration
U.S. Department of Commerce
14th and Constitution Ave. N.W.
Washington, D.C. 20230

Dear Dr. Calio:

RE: Pacific Seafood Processors Association letter to you, Jan. 28, 1987.

While PSPA is certainly entitled to press hard in their efforts to close the waters within 100 miles of Dutch Harbor to all but eight or nine vessels, we felt PSPA's personal attack on Alaska Regional Director Bob McVey, as the result of his negative vote on the PSPA proposal, was uncalled for and merits a response.

I was present at the North Pacific Fishery Management Council meeting during the debate on the 100-mile closure proposal, and have since reviewed the tapes of that discussion. Neither during the original discussion nor during the review of the tapes did I have the impression that "Mr. McVey spoke strongly opposing further consideration of this proposal or any alternatives by the Council staff and/or the public."

The discussion over how to handle priority access revolved around whether the proposal backed by PSPA could be used as the basis for a discussion of alternative methods to achieve priority access or whether the topic should be referred to a committee.

It was noted that the council staff really did not have time to fully develop the priority access proposal if they were to also work on sablefish limited entry, size limit restrictions, etc.

There were councilmen who felt it would be best to get a discussion on the table, those who felt the subject would be more profitably handled by a committee and those who felt industry itself was on its way to developing its own methods of guaranteeing priority access.

North Pacific Fishery Management Council executive director Jim Branson noted that it would be "difficult to do the analysis this requires prior to the March meeting."

Councilman Bob Mace stated that time would be needed to develop an approach.

Councilman Don Collinsworth called the 100-mile closure proposal "a vehicle to get this moving forward."

Chris Blackburn • Director • P.O. Box 2298 • Kodiak, Alaska 99615 • (907) 486-3033

Mr. McVey said he felt the proposal was "so extreme it is not appropriate to use it as a basis for DAP priority" and noted that "solutions are already underway."

The only problem identified was that Dutch Harbor processors weren't getting enough groundfish and the proposal was simply to close so much area vessels would "be forced" to deliver shorebased.

"Forcing vessels" is a dangerous precedent and certainly not one suggested when floating processors in Kodiak deprived the shorebased plants of substantial amounts of king crab, nor will it be a viable solution as the growing fleet of U.S. floating groundfish processors and factory trawlers begin to compete with shorebased plants for vessels and product.

Mr. McVey has enough experience to know that when serious and complex problems, particularly problems that involve economics and allocations, are treated hastily and simplistically the result is chaos which ends up delaying reasonable action.

To chastise him for suggesting that "just getting something on the table" might not be the best approach seems inappropriate.

We hope that the council and NMFS will give the serious problem of priority access the attention it deserves rather than apply a temporary bandaid for public relations purposes and that future correspondence addresses issues, not people.

Sincerely,

Chris Blackburn, director
Alaska Groundfish Data Bank

CC: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
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William Evans, NMFS
Robert McVey, NMFS
Roland Schmitten NMFS
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907-486-3910
Box 991

Alaska Draggers Association

Kodiak, Alaska
99615

February 18, 1987

Dr. Anthony Calio, Administrator
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
14th and Constitution Ave. N.W.
Washington, D.C. 20230

Dear Dr. Calio:

Alaska Draggers Association has years of experience with all sorts of exclusive registration areas, exclusive areas, closed areas and every other imaginable method designed to make one group competitive at the expense of another group. The proposed 100-mile closure around Dutch Harbor is just another in a long string of efforts to promote inefficiency under the guise of equalizing competitiveness.

It's our experience that anti-competitive measures only result in assuring that the U.S. industry doesn't develop the resources to be competitive.

The proposed 100-mile closure around Dutch Harbor will only force the trawl fleet offshore where the shorebased plants can't develop methods of using joint venture vessels as a source of product by tendering.

There may be legitimate priority-access concerns which could be addressed and there may be ways of assuring U.S. processors (which includes floating processors and factory trawlers as well as shorebased processors) a competitive edge over foreign processors, but a sweeping, large area closure is more likely to retard U.S. development than help it.

We find Pacific Seafood Processors Association's Jan. 28 letter which criticizes Bob McVey for his vote on the 100-mile closure an unfair attack on a member of National Marine Fisheries Service.

We feel McVey, like most of us with a long history in the Alaska fishing industry, understands that quick and dirty fixes seldom work and often hinder fisheries development.

The issue of priority access deserves reasoned and sincere consideration, not just a sweeping proposal "to hold their feet to the fire."

Neither the council staff nor the council itself has the time and resources to develop alternative approaches before the March meeting.

We don't understand why the processors who say they will benefit from priority access insist on pushing an ill-considered quick fix and criticize those like Mr. McVey who take the Federal Standards, council process and staff time seriously enough to demand a more considered approach.

The proposal, as presented, isn't priority access, but exclusive access which attempts to force one group of independent business to serve a second group of independent businessmen.

If the federal government tries to regulate for whom a vessel may fish, we can expect the secondary processors to demand regulations requiring U.S. processors to produce and sell a certain amount of fish blocks without regard to profitability.

It's our own feeling that, like legislated phase out of foreign fishing, the priority access issue will be and should be solved by industry itself.

Sincerely,

Al Burch

Al Burch, executive director
Alaska Draggers Association

CC: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

D R A F T

ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW/ INITIAL REGULATORY FLEXIBILITY ANALYSIS OF AMENDMENT 11 TO THE FISHERY MANAGEMENT PLAN FOR GROUNDFISH OF THE BERING SEA/ALEUTIAN ISLANDS

PREPARED BY THE PLAN TEAM FOR THE
GROUNDFISH FISHERY OF THE BERING SEA/ALEUTIAN ISLANDS
AND THE STAFF OF THE
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

MARCH 11, 1987

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1.0 INTRODUCTION

The domestic and foreign groundfish fisheries in the Exclusive Economic Zone (EEZ) of the United States (3-200 miles offshore) in the Bering Sea and around the Aleutian Islands is managed under the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP). The FMP was developed by the North Pacific Fishery Management Council (Council) under the Magnuson Fishery Conservation and Management Act (Magnuson Act). It was approved by the Assistant Administrator for Fisheries of the National Oceanic and Atmospheric Administration (NOAA) and became effective on January 1, 1982 (46 FR 63295, December 31, 1981). The FMP is implemented by Federal regulations appearing at 50 CFR 611.93 and Part 675. Eight of ten amendments to the FMP have been implemented. This document describes and assesses the potential effects of proposed changes that would constitute Amendment 11 to the FMP.

The Council solicits public recommendations for amending the FMP on an annual basis. Amendment proposals are then reviewed by the Council's Bering Sea Plan Team (PT), Advisory Panel (AP), and Scientific and Statistical Committee (SSC). These advisory groups make recommendations to the Council on which proposals merit consideration for the current year's amendment cycle. Amendment proposals and appropriate alternatives accepted by the Council are then analyzed by the PT for their efficacy and their potential biological and socioeconomic impacts. After reviewing this analysis, the AP and SSC make recommendations as to whether the amendment alternatives should be rejected or changed in any way, whether and how the analysis should be refined, and whether to release the analysis for general public review and comment. At its March 18-20, 1987 meeting, the Council received these recommendations and public testimony and decided to release the analysis of the following amendment proposals and alternatives contained in this document. The Council will consider public comments on this analysis and any new information affecting the analysis at its May 20-22, 1987 meeting. The Council then will decide, based on this analysis, public comments, and the recommendations of the PT, AP and SSC, which amendment alternatives to recommend to the Secretary of Commerce for approval and implementation.

1.1 List of Amendment Proposals

Seven amendment proposals are being considered by the Council to address specified fishery management problems in the groundfish fisheries in the Bering Sea and Aleutian Islands (BSAI) area. Amendment proposal alternatives approved by the Council will constitute Amendment 11 to the FMP. The following list of amendment proposals is not intended to reflect any priority.

(a) Establish a minimum size limit for sablefish.
(b) DAP priority within 100 miles of Unalaska Island.
(c) Change the definition of prohibited species.
(d) Change catch recording requirements.
(e) Change the definition of acceptable biological catch.
(f) Change the specified range of optimum yield.
(g) Prohibit "roe-stripping" in the pollock fishery.

1.2 Purpose of this Document

The primary purpose of this document is to help the Council make informed decisions on whether and how to amend the FMP. By making this document available for public review, the Council also benefits from the resulting public comment on the analyses in this document. In addition, this document provides background information and assessments necessary for the Secretary of Commerce to determine that the FMP is consistent with the Magnuson Act and other applicable law. Other principal statutory requirements that this document is intended to satisfy are the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), and Executive Order 12291 (E.O. 12291).

1.2.1 Environmental Assessment (EA)

Part of the analysis in this document provides an EA that is required by NOAA to comply with NEPA. The purpose of the EA is to analyze the potential impacts on the quality of human environment of major Federal actions. The EA serves as a means of determining if significant environmental impacts could result from a proposed action. If the action is determined not to be significant, the EA will result in a finding of no significant impact (FONSI). This EA then would be the final environmental document required by NEPA. If a FONSI cannot be made, then a more detailed environmental impact statement (EIS) must be prepared. An EIS must be prepared if the proposed action may be reasonably expected: (1) to jeopardize the productive capability of the target resource species or any related stocks that may be affected by the action; (2)to allow substantial damage to the ocean and coastal habitats; (3) to have a substantial adverse impact on public health or safety; (4) to affect adversely an endangered or threatened species or a marine mammal population; or (5) to result in cumulative effects that could have a substantial adverse effect on the target resource species or any related stocks that may be affected by the action. Following the end of the public hearing, the Council could determine that Amendment 11 will have significant impacts on the human environment, and proceed directly with preparation of an EIS.

Certain management alternatives assessed in this document may have some impact on the environment. Such measures are those affecting harvests of stocks and may occur either directly from the actual removals of fish from the ecosystem or indirectly as a result of harvest operations (e.g. effects of bottom trawling on the animals and plants living on, or in, the sea bottom). Environmental impacts of management measures may be beneficial when they accomplish their intended effects (e.g. prevention of overharvesting stocks as a result of harvest quota management). Conversely, of course, such impacts may be harmful when management measures do not accomplish their intended effects (eg. overharvesting occurs when quotas are incorrectly specified. The extent of environmental harm depends on the amount of overfishing that has occurred. For purposes of this EA, "overfishing" is used as defined in the "Guidelines to Fishery Management Plans" (48 FR 7402, February 18, 1983) as "a level of fishing mortality that jeopardizes the capacity of a stock(s) to recover to a level at which it can produce maximum biological yield or economic value on a long-term basis under prevailing biological and environmental conditions."

Other environmental impacts that may occur as a result of fishery management practices include changes in predator-prey relations among invertebrates and vertebrates (including marine mammals and birds), physical changes to the sea bottom as a direct result of fishing practices, and nutrient changes due to processing and dumping of fish wastes. If more or less groundfish biomass is removed from the ecosystem, then oscillations may occur in the ecosystem until equilibrium is again achieved. Given the natural variability in the environment and current capability to measure it, however, changes in the ecosystem due to changes in management measures that affect groundfish removals are expected to be impossible to detect.

1.2.2 Regulatory Impact Review (RIR)

Another part of this document is the RIR that is required by NOAA for all regulatory actions or for significant policy changes that are of public interest. The RIR: (1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems; and (3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are major under criteria provided by E.O. 12291 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with RFA. The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively, "small entities") of burdensome regulatory and recordkeeping requirements. This Act requires that if regulatory and recordkeeping requirements are not burdensome, then the head of an agency must certify that the requirement, if promulgated, will not have a significant effect on a substantial number of small entities.

The analysis in this document estimates the impacts that regulations implementing the described amendment alternatives would have on the groundfish fisheries in the BSAI area. It also provides a description of and an estimate of the number of vessels (small entities) to which these regulations would apply.

1.3 Description of Entities

A total of 934 vessels may fish groundfish in the BSAI area and Gulf of Alaska in 1987 (Table 1). This number is based on 1987 Federal groundfish permits that have been issued to domestic vessels as of March 1, 1987. This number includes vessels that will only harvest fish (catcher vessels), vessels that will harvest and process their catches (catcher/processor vessels), vessels that will only process fish (mothership/processor vessels), and support vessels that will engage in transporting fishermen, fuel, groceries, and other supplies.

Table 1. Numbers of groundfish vessels with Federal permits to fish off Alaska in 1987 that are less than 5 net tons and 5 net tons or larger.

	Number of Vessels	
	Less than 5 net tons	Over 5 net tons
HARVESTING ONLY	71	676
HARVESTING/PROCESSING	20	151
PROCESSING ONLY		1
SUPPORT ONLY		15
Total vessels	91	843

Of this 934 total, 843 vessels (90 percent) are over 5 net tons or larger. Ninety-one vessels (10 percent) are less than 5 net tons. This analysis is limited to discussion of the vessels that are 5 net tons or larger. They are home-ported in Seattle, Sitka, Kodiak, and Dutch Harbor, and other ports in and outside of Alaska. Numbers of vessels by harvesting, processing and support category are shown in Table 2. The total number of vessels that come from the Seattle area is 222, those from Alaska total 393, and those from other areas total 128.

Table 2. Numbers of groundfish vessels federally permitted to fish off Alaska in 1987 from the Seattle area, Alaska, and other areas.

	Number		
Mode	Seattle Area	Alaska	Other Areas
HARVESTING ONLY	153	411	112
HARVESTING/PROCESSING	54	81	16
PROCESSING ONLY	1		
SUPPORT ONLY	14	1	
Total	222	393	128

Net tonnages of catcher vessels (harvesting only) and catcher/processor vessels (harvesting/processing) varies widely. The total net tonnage of the catcher vessels is 32,449 net tons, and the total net tonnage of the catcher/processor vessels is 12,502 net tons.

Catcher vessels use three types of gear: hook-and-line (longline), trawls, or pots. A large majority (79%) of the vessels permitted to fish for groundfish off Alaska use hook-and-line gear (Table 3).

Table 3. Numbers and statistics of groundfish vessels that are Federally permitted to fish off Alaska.

	Number	Average Net Tons	Average Length (ft)
HOOK-AND-LINE	650	32	49
POTS	12	95	95
POWER TROLL	1	15	45
TRAWL	141	145	106
TRAWL/H&L	16	81	65
TRAWL/POT	1	135	123

The hook-and-line vessels generally are the smallest vessels fishing groundfish, having average net tonnage capacities of 32 net tons and average lengths of 49 feet. Trawl vessels are on the opposite end of the size scale as generally the largest vessels fishing groundfish with average net tonnage capacities of 145 net tons. Pot vessels have average net tonnage capacities of 95 net tons. Other combinations of catcher vessels exist. Sixteen trawl vessels are also equipped with hook-and-line gear and one trawl vessel also fishes with pots. One vessel using power troll gear is permitted to fish groundfish. Hook-and-line and trawl gear, however, is the most prevalent kind of gear used to harvest groundfish off Alaska. The total net tonnage of hook-and-line vessels is 21,357 net tons; the total net tonnage of vessels using trawl gear is 22,009 net tons.

2.0 ESTABLISH A MINIMUM SIZE LIMIT FOR SABLEFISH

[THIS CHAPTER AND ANALYSIS WAS NOT COMPLETED BY THE TIME OF THIS MAILING. WORK IS CONTINUING. IT WILL EITHER BE SENT TO YOU DIRECTLY FROM THE CENTER WHEN READY, OR BROUGHT TO THE MEETING.]

3.0 ESTABLISH DAP PRIORITY WITHIN 100 MILES OF UNALASKA ISLAND

3.1 Description of and need for the action

The Magnuson Fishery Conservation and Management Act (MFCMA) outlines a priority to be used in determining fishery allocations. Domestic vessels who deliver to domestic processors (DAP) are afforded the highest priority. Domestic vessels that deliver to foreign processors (JVP) are considered next. Any amount surplus to these needs may then be allocated to foreign fishing vessels (TALFF). It has been policy to interpret this priority access or processor preference as relevant to the preseason allocation of TAC. Another interpretation of priority access is that the preference should extend to space and time, that is, that DAP should be given priority on the grounds through area closures to JVP and TALFF, or that DAP should be given priority in time through seasonal closures to JVP and TALFF.

It is in the spirit of the second interpretation of processor preference that the mayors of Unalaska and Akutan propose a regulatory change to allow only DAP fishing to occur in an area within 100 miles of Unalaska. The proposal is to correct an access problem whereby local shoreside processing facilities in the communities of Unalaska/Dutch Harbor and Akutan have had difficulties securing a steady supply of groundfish. It is the presumption, therefore, that such priority access would help to correct their supply problem.

The zone is a circle, with a radius of 100 miles centered upon Unalaska (Figures 3.1, 3.2). There would be no foreign or joint venture fishing allowed in the zone; fishing access would be restricted to domestic vessels delivering either to shore-based plants or to domestic at-sea processors. Domestic vessels which both catch and process groundfish would also be allowed to fish in the zone.

There are currently approximately 130 U.S. trawlers operating in the Bering Sea/Aleutian Islands management area (Table 1.1). Of these, a substantial number (≈ 120) deliver the catch to foreign processing vessels (joint venture). For the most part, these vessels are not able to easily and safely deliver fish shoreside. First, a substantial proportion are not able to hold fish onboard. Rather, these vessels deliver fish to at-sea processors through transfer of the cod end of the trawl. Second, even for those few vessels that have sufficient hold capacity to match their considerable harvesting capacity it is difficult to ensure shoreside delivery of product because the vessel may not have sufficient stability to carry fish any great distance, particularly in poor weather.

There is also the question of reduced product quality during the time it takes to deliver fish shoreside. Again, many of the trawlers have no refrigeration onboard, and, on average, face a running time of 10 hours to Dutch Harbor. Thus, there is some product deterioration during the period. More important than travel time to the decline in product quality, according to some joint venture operations (Annie Burnham, pers. comm.), is that delivery to shoreside would necessitate one or more pumping operations to transfer the fish, and it is the suctioning of fish that is most detrimental to quality.

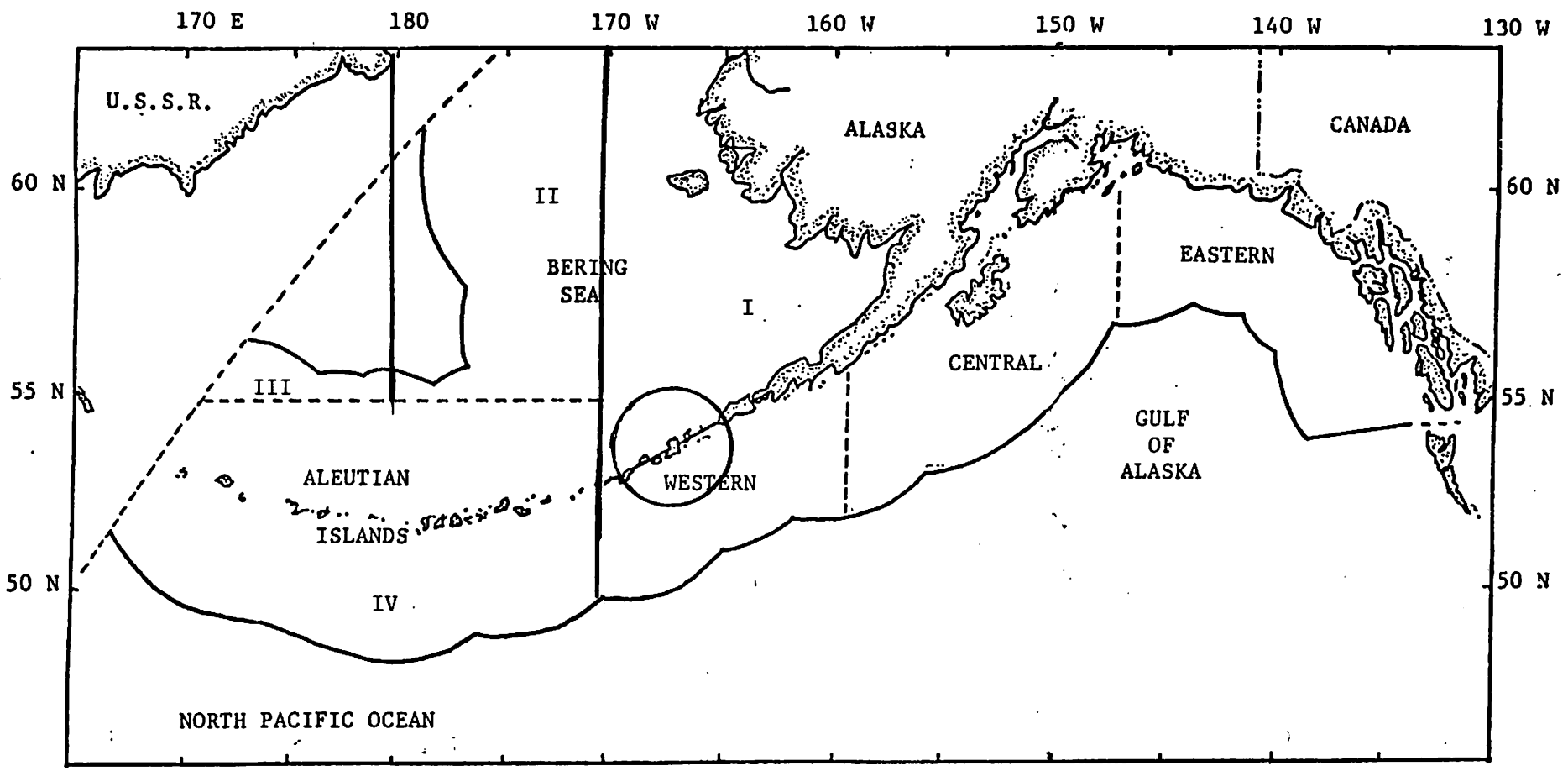

Figure 3.1. Major regulatory areas of the Bering Sea and Aleutian Islands Groundfish and Gulf of Alaska Groundfish FMP's.

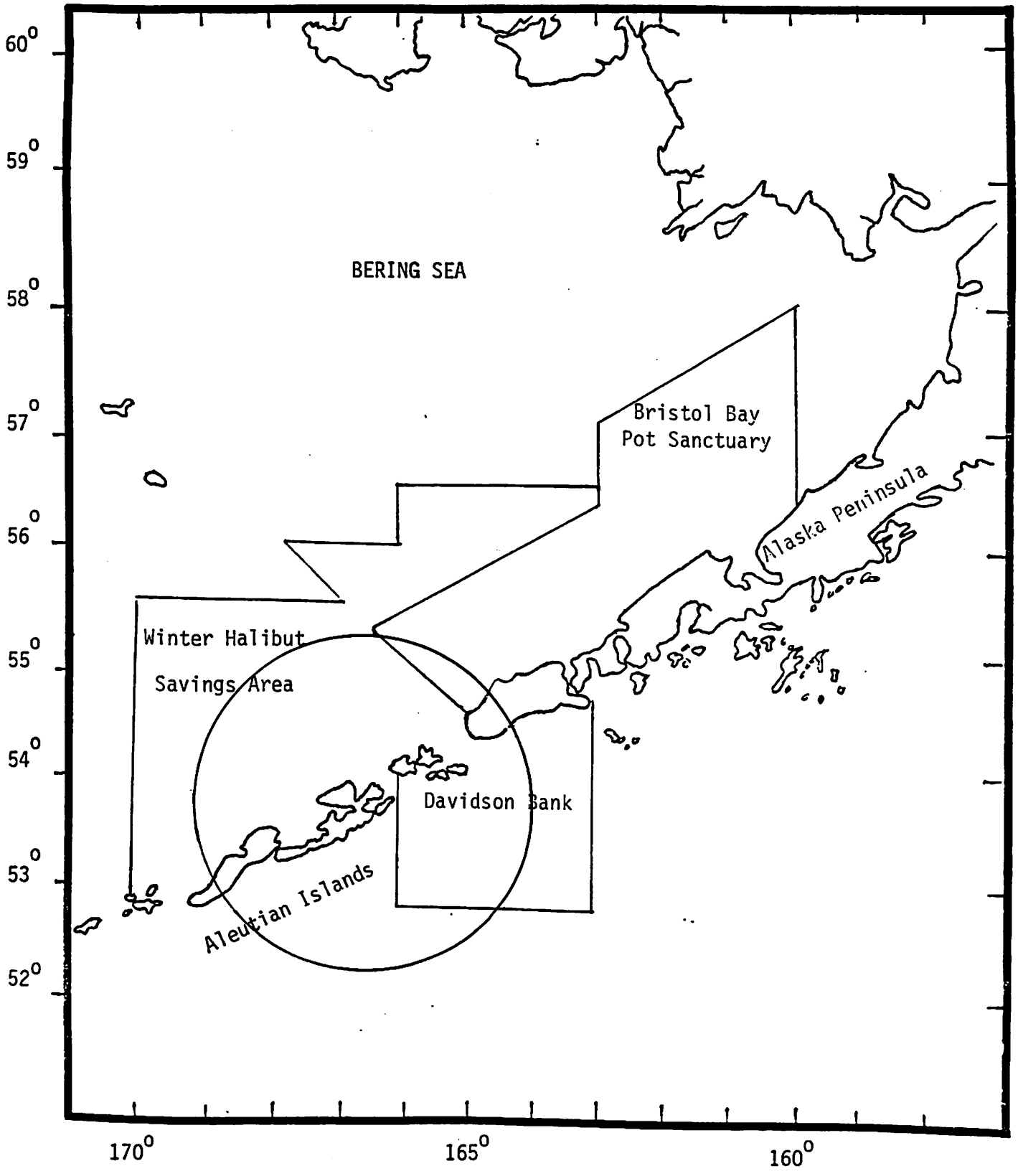

Figure 3.2. Alaska Peninsula/Aleutian Islands: Foreign closures currently in effect (Bristol Bay Pot Sanctuary, Winter Halibut Savings Area, and Davidson Bank) and proposed closed zone.

The current cost structure in the fishery is also a major contributor to the difficulty in securing shoreside delivery of product. The trawlers under contract to the joint venture service companies are paid a price per ton which is fixed preseason. The shoreside plants have been willing to pay more per pound, but according to public testimony and discussion, the higher price paid is not enough to offset the increased costs associated with bringing fish ashore. These costs include, for direct delivery of product by a trawler, increased fuel purchases, associated running expenses, as well as the cost associated with lost fishing time. Lost fishing time can be substantial if the vessel is fishing the east side of Unimak Pass, if the weather is poor, and if it takes considerable time to relocate schools of fish productive to fishing.

At-sea transfers of product avoid the cost of lost fishing time but, of course, necessitate the purchase and operation of tendering vessels for shoreside delivery. Depending on the type of vessel, these expenses can be substantial. Moreover, a tendering operation will require at least two pumping operations and may again negatively impact fish quality.

The discussion which follows provides a more detailed and quantitative picture of both the status quo (Alternative 1) and what might occur if a 100-mile closure were adopted (Alternative 2). Other possible solutions to the problem are explored by considering a seasonal closure of the DAP access area to JVP (Alternative 3), a seasonal closure of the entire BSAI management area to JVP (Alternative 3a), and by presenting an alternative which would seek to equalize costs through imposition of an per ton assessment on foreign processing vessels (Alternative 4).

3.2 The Alternatives

3.2.1 Alternative 1: Do nothing (the status quo)

Under the status quo any vessel may fish in any area of the Bering Sea/Aleutian Islands management area or Gulf of Alaska management area except for certain time/area restrictions. The restrictions for the foreign fleet which operates in the Bering Sea/Aleutian Islands area include closures in the Pot Sanctuary and seasonal closures in the Halibut Winter Savings Area (Figures 3.1, 3.2). Davidson Bank, in the Gulf of Alaska, is also closed to foreign trawlers (Figure 3.1, 3.2).

Under Amendment 10 to the BSAI FMP the area south of 58° N latitude, between 160° W and 162° W longitude is closed to all fishing year round, with an exception for DAH cod trawlers landward of a line approximating the 25 fathom contour, with the areas depicted in Figure 3.3 as Zone 1 and Zone 2 closed to DAH flatfish trawling (yellowfin sole and other flatfish) when specified PSC limits for king and tanner crab are exceeded.

At present, the shore plants in Unalaska and Akutan are experiencing some difficulty in securing sufficient product for their plants. Since adoption of this alternative implies continuation of the status quo it is useful to describe the current supply difficulties from an operational perspective and to outline what measures are underway to rectify the problem without intervention.

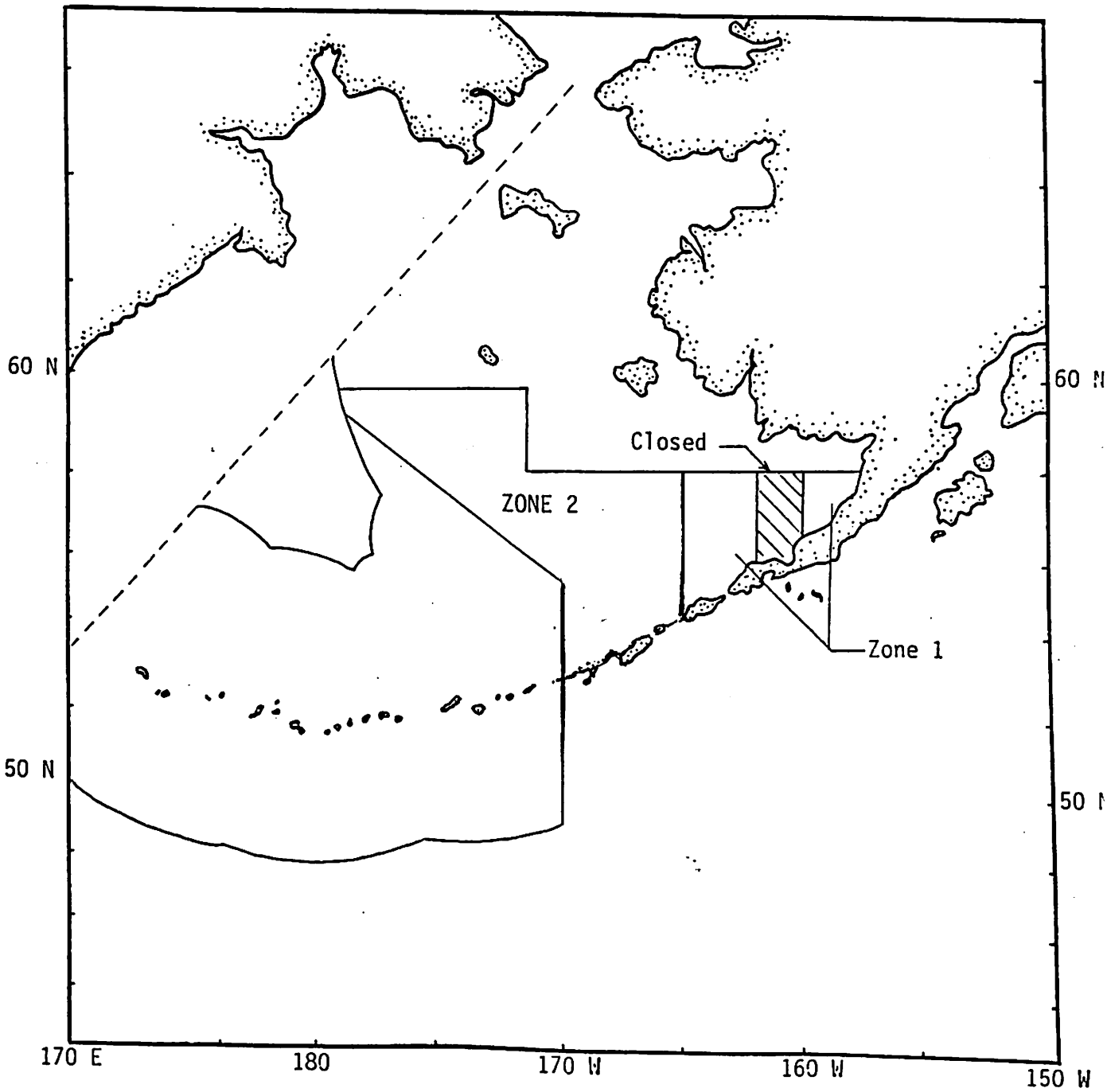

Figure 3.3. Areas (Zones) closed to fishing and DAH flatfish fishing under Amendment 10.

Essentially, the problem is one of costs. Although shore plants are willing to pay a differential of some 3 cents/lb above that paid to domestic vessels fishing for joint ventures indications are that transportation costs (the cost of getting the fish from the grounds to the plants) may range from 5.7 to 10.5 cents/lb (Bert Larkins, pers. comm.).

One solution is for the plants to secure vessels to be used solely for delivery of product. One of the plants (Aleyeska) has made such arrangements and, currently, one catcher vessel is able to fully supply the daily needs of the plant. It is not known whether that arrangement will continue should the fish move to more distant fishing grounds, nor is it known whether the other plant in Unalaska (Greatland) has secured future deliveries. Currently Greatland is closed for maintenance and repairs and because of the inability to secure product (Aleutian Eagle, 1987).

A second solution is for the shoreside plants to vertically integrate by purchasing their own fishing vessels. This is an expensive solution in terms of initial capital outlay as a new vessel of the type commonly used in the Alaskan fisheries may cost several million dollars. Such an investment may prove attractive in the long run should it result in a greater stream of profits, but will accentuate anticipated problems in overcapitalization of the fishery.

The tendering option and the fishing vessel purchase option which are market alternatives to management intervention may occur without Council action. Since this document considers the consequences of specific proposed management alternatives these two possibilities are not considered further.

3.2.2 Alternative 2: Establish an area within 100 miles of Unalaska/Akutan in which only fishing for domestic processors is allowed

This alternative would allow only DAP (shore based processing or at-sea processing) fishing in a circle extending 100 miles from Unalaska. The restrictions would be in effect for the entire fishing year. Since the zone includes area in both the Gulf of Alaska and the Bering Sea/Aleutian Islands management areas both affected FMPs would need to be amended.

Data availability, practicality in monitoring the catch, and ease of enforcement necessitated two departures from the original proposal. The shape of the closed zone has been modified to approximate a square of 1/2° by 1° squares (Figure 3.4)[1]. This was done for two reasons. First, for the purposes of analysis, no other approach is possible, as the most detailed data available are catches by 1/2° by 1° square. Approximating catches in partial areas using these data is inappropriate. Second, the observer program database at the NWAFC is designed to monitor and report catches using areas described by 1/2° by 1° square. Any change in this procedure would necessitate considerable reprogramming effort, therefore the center staff suggests adoption of the square closure area.

1. At this latitude each square is approximately 30 miles on a side.

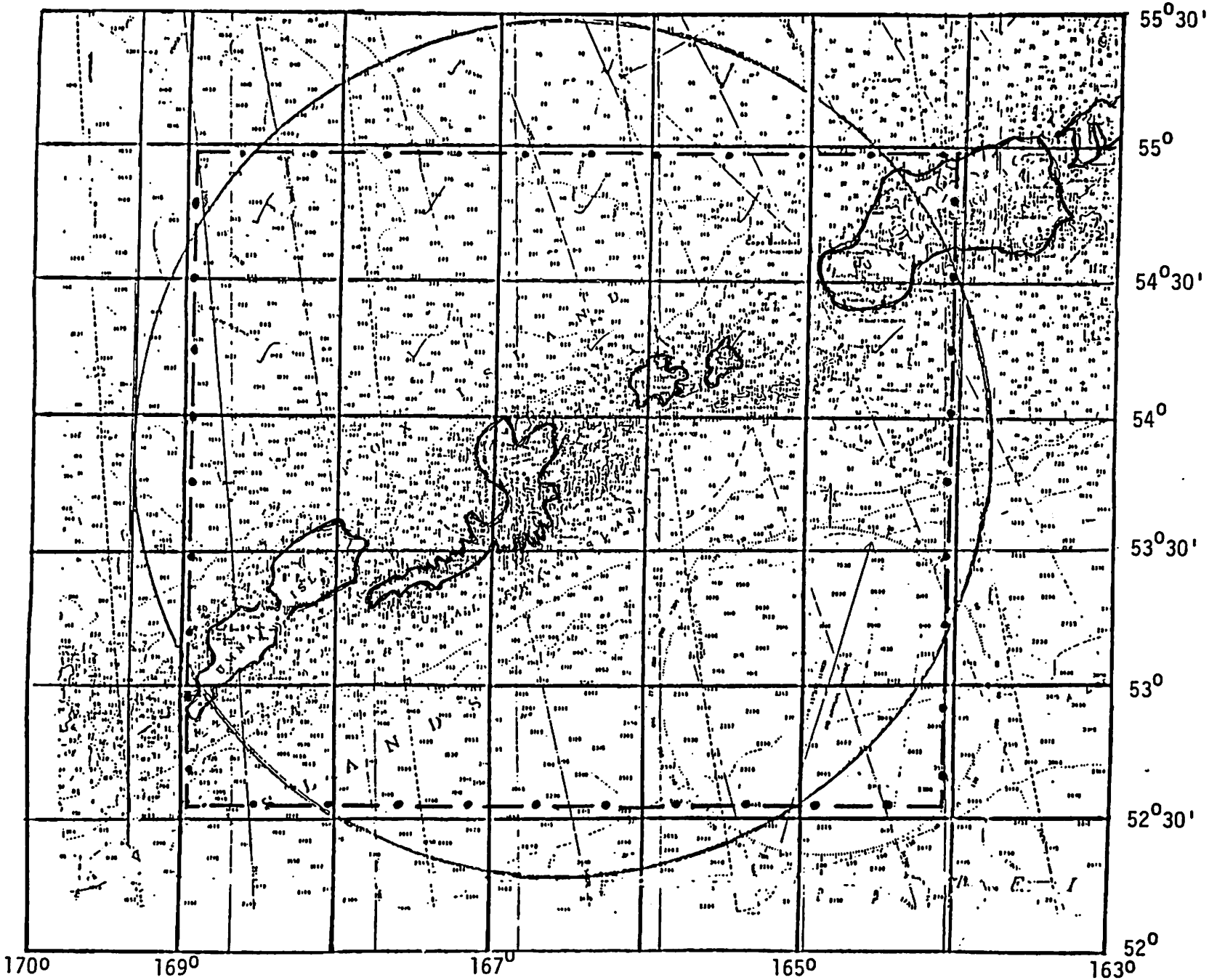

Figure 3.4. 100-mile zone proposed for closure to foreign and joint venture fishing. Circle is originally proposed area. Outer square (entire figure) is Zone 2. Inner square (—·—) is Zone 1.

Two approximations to the circle are shown. The first is the entire area as depicted in Fig. 3.4--a rectangular block containing every 1/2° by 1° square intersected by the circular zone. The second is a smaller block (depicted by a dash-dot-dash border) which eliminates all border squares from block 1. Closure of the smaller area will be considered as Alternative 2a while closure of the larger square will be considered as Alternative 2b.[2]

The other departure from the original proposal, a change from a specification of only DAP fishing in the zone to one of no foreign processing in the zone, is done for reasons of enforceability of the implementing regulations. The proposal suggests that only DAP fishing be allowed in the 100-mile zone. A regulation which allowed only DAP fishing would be difficult to enforce, as a U.S. trawler could be acting as a DAP vessel on one tow in delivering the cod end to a DAP at-sea processor or to a tender delivering shoreside and on the very next tow as a joint venture trawler in delivering the cod end to a foreign processor. Such a switch from DAP to JVP on two successive tows would render enforcement of the DAP-only restriction in the zone nearly impossible. NMFS enforcement suggests that the regulation be worded so as to prohibit the presence of foreign processing vessels in the zone. Such a change would make the implementing regulations enforceable but would not prevent foreign processors from waiting just outside the zone boundaries for deliveries.

3.2.3 Alternative 3: Close the 100 mile zones (described in Alternative 2) to joint venture fishing during the months of January - June

This alternative would institute a restricted fishing season for all joint venture operations in the 100-mile zones described above. Joint venture fishing would not be allowed between January 1 and June 30. There would be no similar restriction on DAP fisheries.

A variation on the seasonal closure of the 100-mile zones is a seasonal closure of the entire BSAI management area to joint venture fishing for the months of January - June. This is considered as Alternative 3b.

3.2.4 Alternative 4: Establish a fee structure for foreign processors who receive joint venture caught fish

This alternative would establish a fee system similar to that in existence for the directed foreign fishery whereby foreign processors that receive fish from domestic fishing vessels would be required to pay a unit fee ($/mt) in proportion to the ex-vessel value of the species received. The fee revenue would accrue to the U.S. government. A fee schedule is presented which attempts to equalize unit costs between foreign vessels processing at sea and U.S. shoreside processing facilities by considering

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2. It follows from footnote 1 that Alternative 2a considers a closed area approximately 210 miles square, while Alternative 2b closes an area approximately 150 miles square.

vessel operational costs and processing costs for domestic and foreign processors (Lynde, 1981; NRC, 1986).

3.3 Biological and Physical Impacts

The likely impacts of adoption of each of the three alternatives to the status quo are examined in this section. Impacts are examined from, first, an environmental perspective, that is, how the measure might affect the non-human and human part of the ecosystem. Impacts are then examined from an economic perspective, viz., how the proposed change would affect the economics of fishing, and of processing; how the quantity and price to the consumer might be changed; and how management, information and enforcement costs might change. The approach taken is one of relative analysis, that is, the effect of each alternative is examined relative to the status quo.

The environmental impacts of each of the identified alternatives and sub-alternatives will therefore be presented in sequence with the economic impacts of each presented in a subsequent section. The concluding section, "cost-benefit" conclusion, will attempt to summarize the analysis.

3.3.1 Description and estimate of the number of small entities affected

The numbers of harvesting vessels operating in the Bering Sea/Aleutian Islands management area and in the Gulf of Alaska for DAP, JVP, and TALFF are discussed in Section 1.3. All alternatives could restrict JVP, and TALFF fishing operations and could enhance DAP fishing operations. Since the focus of this proposal is on domestic processors the regional distribution of shore-based processing plants, capacity, employment, investment, (Table 3.1) and the current capability of domestic at-sea processing vessels (Table 3.2) is also presented.

Table 3.1. Shore-based processing in the Unalaska/Akutan area: capacity, employment, investment[3]

Plant	Location	Capacity (mt/day)	Employees	Investment[4]
Greatland	Dutch Harbor	275	50 U.S.	$12
Aleyeska	Unalaska	300	70 U.S.	$12
Trident	Akutan	250	63	$14
		825	183	$38

Table 3.2. Domestic at-sea processing, by area.

Sub-area	Numbers of Vessels	DAP Requested, mt
Bering Sea	18	102,000
Aleutian Islands	-	65,400
Total[5]	25	167,400

3.3.2 Environmental Impacts

Alternative 2: 100 mile closure

It has been suggested that a few boats (3-6) of the kind currently used by joint ventures could supply the annual needs of the three processing plants in the Unalaska/Akutan area. The issues to be examined are therefore: the shoreside processing capacity in the Unalaska area in relation to joint venture harvesting capacity; the current supply situation for the plants and what steps are being taken to remedy the shortage of product; the ability of the joint venture fleet to harvest fish in areas outside the closed zone; and the costs to the joint venture fleet in terms of catch foregone.

The closure of either of the areas shown in Figure 3.4 could lead to changes in the biomass levels of the affected species in the BSAI and GOA management areas if those closures result in significantly less overall

3. In terms of groundfish. Therefore if a plant processes other species only the groundfish component is included.

4. Initial value, in millions of $.

5. Total for BSAI area. Eighteen boats indicated fishing would take place in the Bering Sea sub-management area.

harvest than under the status quo. For the purposes of this analysis significant means a change in biomass which is: 1) measurable within the noise of the survey data and the precision of the population estimation procedure; and 2) of a long-term rather than transient nature.

To analyze the potential biological and socioeconomic impacts of closure of the 100 mile zone to joint venture and foreign fishing recent fishery performance data were examined. The data used were catches, by species, by month, by 1/2° by 1° square, for the years 1984 and 1985. These are the most recent available data, since detailed 1986 catch data will not be available until later this year. The data are the best available, but it is important to point out two limitations of the current analysis.

First, as is evident from the 1984 to 1985 trend, from overall 1986 fishing performance, and from what is being reported concerning the 1987 fishery, very rapid changes in the structure of the fishery are taking place. The most obvious trends are a rapid decline in the amount of directed foreign harvest and the concomitant increase in joint venture harvest. Also notable is a rapid increase in the amount of allocations to DAP. It follows, therefore, that trends shown in the 1984 and 1985 data have continued, or even accelerated, in 1986 and 1987. This means that the impacts considered using data from 1984 and 1985 may misrepresent the present fishery to a greater or lesser extent depending on the rate of change.

Second, the 1/2° by 1° square catch data are based on raw observer data. Since the observer coverage on fishing vessels is not 100% it is necessary to expand the raw catch data to predict actual total catch in a square. Data which would allow expansion on a square by square basis are not available, therefore, it is necessary to expand all squares by the uniform factor used to produce the "best blend" estimates. These estimates are made at the INPFC area level (Bering Sea I, Bering Sea II, etc.) hence the expanded square estimates assume a constant level of coverage across the INPFC area. To the extent that this assumption is invalid and to the extent that catches differ in composition from square to square the estimates presented herein will be in error.

Keeping these caveats in mind, the 1984 and 1985 joint venture and foreign fishery performance data are presented in Table 3.3. The Shumagin INPFC area, which is the same as the western Gulf sub-area in the Gulf of Alaska, is also included, as the 100 mile zone would extend southward of Unimak Pass. Aggregating the catches by 1/2° by 1° square for 1984 and 1985 for Block 1 (small closure), Block 2 (larger closure), and for the remainder of the Bering Sea and Shumagin areas allows comparison of the relative contribution of each area to total catch in the two years (Table 3.4).

To facilitate that comparison the relative proportion of catch in each zone versus the total catch in the relevant management area (BSAI - all areas; GOA - Shumagin area) is shown in Table 3.5. Some general conclusions can be drawn from examination of these data.

First, the Gulf of Alaska portion of the closed zones was of great significance to joint ventures operating in the Shumagin district in 1984 and 1985. Catches of all groundfish combined in the proposed closed areas

Table 3.3. 1984 and 1985 joint venture and foreign catches in the BSAI Management Area and Shumagin Sub-management Area, by INPFC area, in metric tons.[1/]

INPFC Area		Pollock	P. Cod	Atka Mackerel	Flatfish	Rockfish	All Species
(Joint Venture)							
BS I	1984	185,863	24,136	1	49,741	156	261,128
	1985	359,324	35,551	3	172,403	35	574,785
BS II	1984	44,450	245	15	64	0	44,809
	1985	10,933	83	0	18	0	11,062
BS IV	1984	6,694	6,390	35,927	365	465	51,606
	1985	7,283	5,638	37,856	325	428	53,574
Shumagin	1984	8,018	305	578	566	1,658	11,471
	1985	12,246	310	1,842	324	239	15,247
(Foreign)							
BS I	1984	256,870	20,163	23	152,894	169	435,773
	1985	245,141	14,071	1	127,598	50	391,292
BS II	1984	604,871	37,070	18	29,828	293	683,256
	1985	524,278	42,267	1	20,000	65	591,829
BS IV	1984	70,900	1,277	71	3,386	456	77,334
	1985	50,864	839	0	48	4	51,871
Shumagin	1984	42,471	10,843	478	603	311	55,798
	1985	23,821	7,338	2	11	115	31,382

1/ Sources: Berger, J., R. Nelson Jr., J. Wall. 1985. Summaries of Provisional Foreign and Joint Venture Groundfish Catches (Metric Tons) in the Northwest Pacific Ocean and Bering Sea, 1984, NWAFC.

Berger, J., S. Morai, R. Nelson Jr., J. Wall. 1986. Summaries of Provisional Foreign and Joint Venture Groundfish Catches (Metric Tons) in the Northwest Pacific Ocean and Bering Sea, 1985, NWAFC.

Table 3.4. 1984 and 1985 Joint Venture and Foreign Catches in the BSAI Management Area and Shumagin Sub-management Area in mt. /1,2/

Block/Area (Joint Ventures)	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
1984						
Block 1 - BSAI	44,035	11,192	10	1,458	181	57,925
1 - GOA	7,636	198	227	510	559	9,467
Subtotal	51,671	11,390	237	1,968	740	67,392
Block 2 - BSAI	124,412	13,699	51	1,751	186	141,294
2 - GOA	7,647	205	249	512	658	9,611
Subtotal	132,059	13,904	300	2,263	844	150,905
Outside - BSAI	11,424	17,451	35,164	48,615	399	224,476
- GOA	54	15	5	9	63	147
Subtotal	11,478	17,466	35,169	48,624	462	224,623
1985						
Block 1 - BSAI	57,405	12,065	1	1,614	174	72,389
1 - GOA	1,869	313	1,997	333	369	14,042
Subtotal	59,274	12,378	1,998	1,947	543	86,431
Block 2 - BSAI	155,635	13,676	1	2,196	176	173,020
2 - GOA	2,626	328	1,997	340	369	14,823
Subtotal	158,261	14,004	1,998	2,536	545	187,843
Outside - BSAI	214,176	29,259	37,660	175,956	393	484,786
- GOA	14	3	3	3	1	25
Subtotal	214,190	29,262	37,663	175,959	394	484,811
(Foreign)						
1984						
Block 1 - BSAI	102,031	2,130	219	1,676	46	106,272
1 - GOA	23,506	818	6	193	124	24,766
Subtotal	125,537	2,948	225	1,869	170	131,038
Block 2 - BSAI	119,265	2,556	299	1,973	60	124,353
2 - GOA	24,124	1,506	7	199	140	26,164
Subtotal	143,389	4,061	306	2,172	200	150,517
Outside - BSAI	818,630	54,612	165	159,588	2,158	1,036,473
- GOA	51,821	12,156	595	915	2,695	68,902
Subtotal	870,451	66,768	761	160,503	4,853	1,105,375
1985						
Block 1 - BSAI	109,919	897	0	1,463	11	112,307
1 - GOA	8,236	90	2	26	0	8,353
Subtotal	118,154	986	2	1,489	11	120,660
Block 2 - BSAI	114,174	1,291	0	1,632	15	117,133
2 - GOA	8,240	287	2	29	0	8,559
Subtotal	122,414	1,577	2	1,661	15	125,692
Outside - BSAI	726,684	55,975	2	131,417	293	914,516
- GOA	17,718	6,338	7	438	270	24,788
Subtotal	744,402	62,314	9	131,855	563	939,304

/1/. Blocks are as shown if Figure 3.3. Block 1 is the "small" 100 mile closure--the area between 164° W and 169° W; 55° 00" N and 52° 30" N. Block 2 is the "large" 100 mile closure--the area between 163° W and 170° W; 55° 30" N and 52° 00" N. "Outside" is the area not included in Block 2.
/2/. Source: Foreign observer database, NWAFC. Data used are catches by 1/2° x 1° square expanded to account for % observer coverage and aggregated over the relevant area; therefore, the sum of these catches may not exactly match those catches reported in Table 3.3.

Table 3.5. Percentage of 1984 and 1985 Joint Venture and Foreign Catches Foregone in the BSAI Management Area and Shumagin Sub-management Area, assuming none of the catch is made up outside the closed zone

Zone/Area	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
(Joint Ventures)						
1984						
Zone 1 - BSAI	32.4%	5.6%	0.0%	2.9%	30.9%	15.8%
1 - GOA	99.2%	90.0%	89.4%	97.9%	77.5%	97.0%
Subtotal	36.0%	6.5%	0.7%	3.9%	56.7%	17.9%
Zone 2 - BSAI	91.6%	17.5%	0.1%	3.5%	31.8%	38.6%
2 - GOA	99.3%	93.2%	98.0%	98.3%	91.3%	98.5%
Subtotal	92.0%	18.3%	0.8%	4.4%	64.6%	40.2%
1985						
Zone 1 - BSAI	15.5%	28.1%	0.0%	0.9%	30.6%	11.0%
1 - GOA	70.8%	94.6%	99.9%	97.1%	99.7%	94.6%
Subtotal	15.9%	28.6%	5.0%	1.1%	57.8%	12.8%
Zone 2 BSAI	42.1%	31.9%	0.0%	1.2%	30.9%	26.3%
2 - GOA	99.5%	99.1%	99.9%	99.1%	99.7%	99.8%
Subtotal	42.5%	32.4%	5.0%	1.4%	58.0%	27.9%
(Foreign)						
1984						
Zone 1 - BSAI	10.9%	3.7%	47.2%	1.0%	2.1%	9.2%
1 - GOA	31.0%	6.0%	1.0%	17.3%	4.4%	26.1%
Subtotal	12.4%	4.2%	21.1%	1.1%	3.4%	10.4%
Zone 2 - BSAI	12.7%	4.5%	64.4%	1.2%	2.7%	10.7%
2 - GOA	31.8%	11.0%	1.2%	17.8%	4.9%	27.5%
Subtotal	14.1%	5.7%	28.7%	1.3%	4.0%	12.0%
1985						
Zone 1 - BSAI	13.1%	1.6%	0.0%	1.1%	3.6%	10.9%
1 - GOA	31.7%	1.4%	20.5%	5.6%	0.0%	25.0%
Subtotal	13.6%	1.5%	16.7%	1.1%	2.0%	11.3%
Zone 2 - BSAI	13.6%	2.3%	0.0%	1.2%	4.9%	11.4%
2 - GOA	31.7%	4.3%	20.5%	6.2%	0.0%	25.7%
Subtotal	14.1%	2.5%	16.7%	1.2%	2.6%	11.8%

range from 95% to 100% of the total Shumagin catch and, in 1985, the catch in the larger block was essentially the same as total joint venture catch in the sub-area. Second, the contribution of the GOA portion of the zones to total foreign catch in the Shumagin district is much less than that seen with the joint venture fleet with catches in Block 1 and 2 of all species combined in the range of 26-27% of the Shumagin total harvest. Third, the Gulf part of the closed areas is much less significant in terms of contribution to total Alaskan catch than the Bering Sea portion of the zones. Fourth, for the BSAI management area, the proposed closed areas are relatively more important to the joint venture fleet than the foreign fleet.

Lastly, and, perhaps most significantly, for the BSAI management area, the portion of each species catch in the proposed zone ranges from nearly 0 for Atka mackerel (joint ventures - 1984 and 1985; foreign - 1985) to in excess of 90% for pollock (joint venture - Block 2 - 1984). Overall, the catch that occurred in the smaller zone is in the order of 2-3% for the foreign fleet and 60% for the joint venture fleet. For the larger proposed closure, the appropriate proportions are 3-4% and 60-65%, respectively.

What is important for this analysis, however, is not what the catch was in 1984 or 1985 but what the distribution and total amount of harvest would be if the proposed blocks were in fact closed to joint venture and/or foreign fishing. This is difficult to assess since, as mentioned above, the current and, presumably, the future fisheries will be much different than what occurred two or three years ago. Second, assuming that all catch occurring in the zones would be unavailable to harvesters upon closure is a "worst case" scenario in which the catch foregone would not be made up by fishing in the remaining open area. The opposite "best case" scenario would be to assume that all catch foregone could be harvested elsewhere in the remaining open areas. Under this latter assumption there is no biological impact resulting from the closure of the zone to joint venture and foreign fishing.

Obviously, reality lies between these two extremes and, hence, the impact lies between nil and that implied by the numbers in Table 3.5. Note that even under the assumption that total catch is unaffected by closing the 100 mile zones, because of the fleet's potential to make up the lost catch, there would be a potential biological impact since the spatial distribution of the harvest will change. This is not deemed biologically significant under the definition given above.

The question of biological impact hinges, then, on the amount of catch that can be made up if either of the proposed closures are enacted. The answer depends on the distribution of the biomass of the various species both in space and time. Foreign catch data for pollock and cod in 1984 (Figure 3.5, Figure 3.6) indicate that there are fish of these species caught outside the closed areas (see also Table 3.3), although there is some indication that the proposed closures represent the most productive grounds for these species. The seasonality of the data is hidden by these annual totals, however. Also, fishery performance does not necessarily reflect biomass distributions.

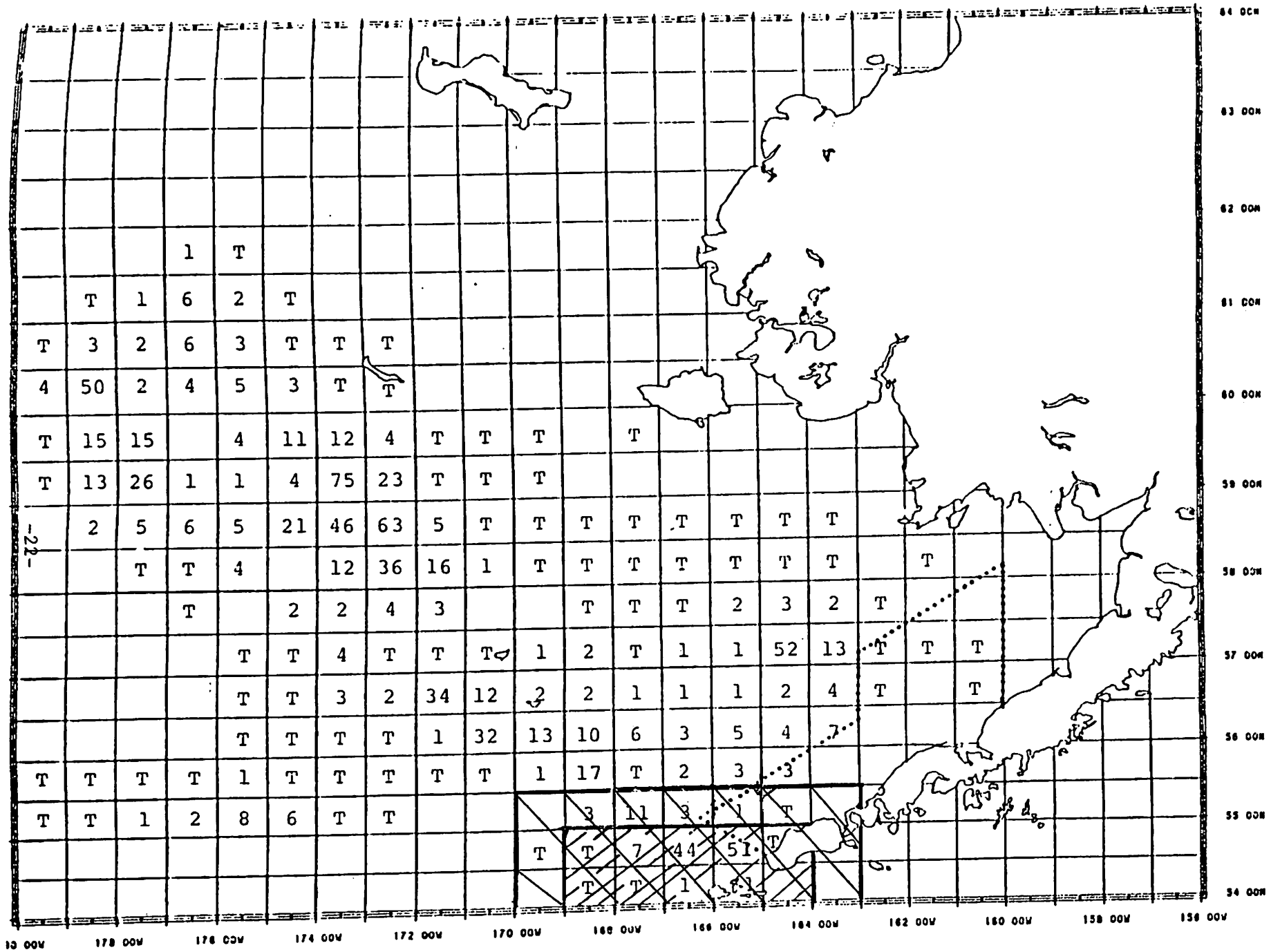

Figure 3.5. --Foreign-reported catch (thousands of metric tons) of walleye pollock in 1984.
T = less than 500 t.

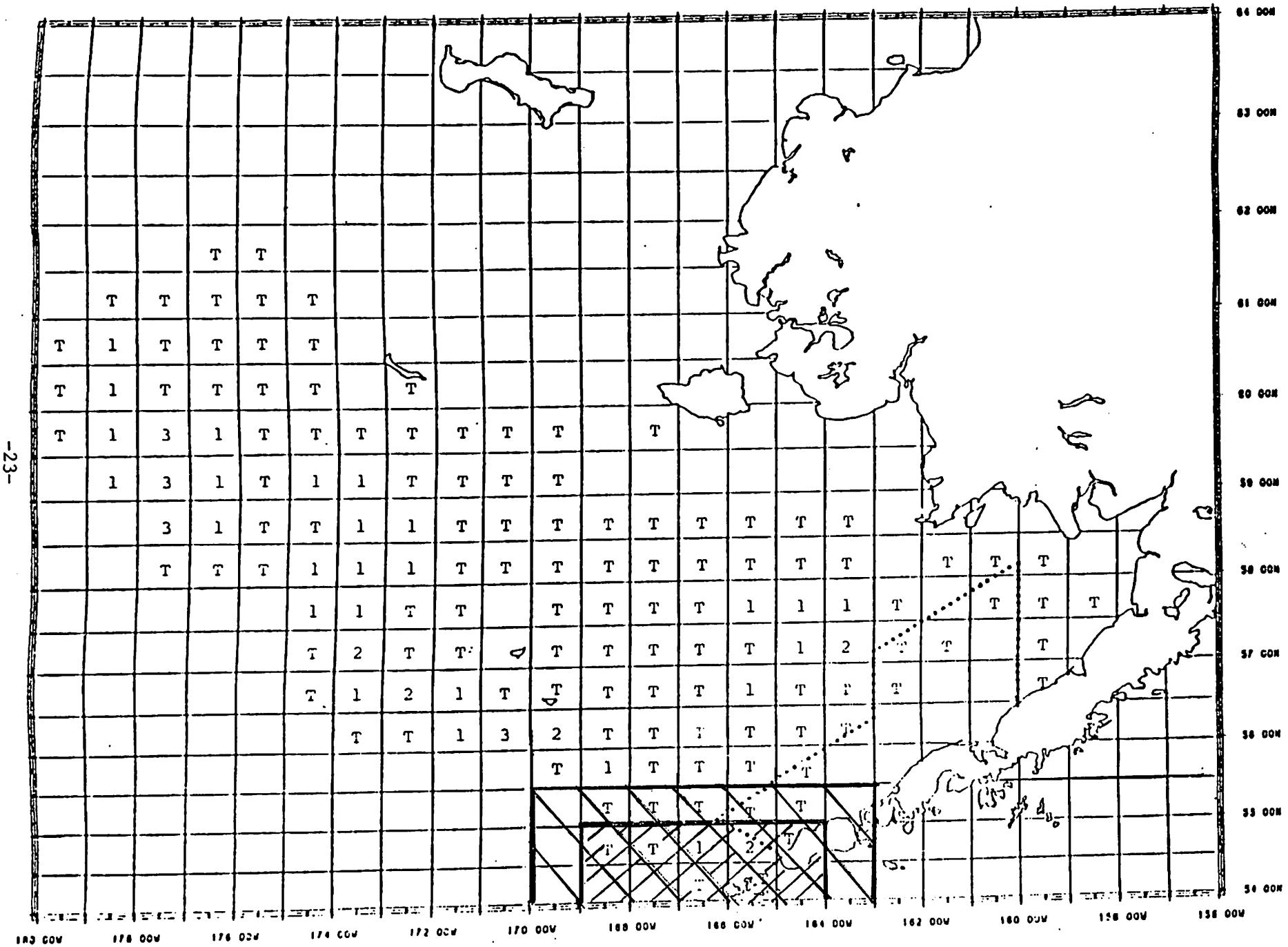

Figure 3.6.-Foreign-reported catch (thousands of metric tons) of Pacific cod in 1984.
T = less than 500 t.

Biological survey data may also be used to describe these distributions. CPUE data for pollock in 1984 and 1985 indicate a widespread distribution for this species (Figure 3.7, Figure 3.8), at least during the period of the survey.[6] From these data, then, it would seem that at least for pollock, and possibly cod, fish are available outside the proposed closures, and thus, from a biological perspective, significant changes in biomass levels are not expected.

Alternative 3: Seasonal closures

This alternative would close the areas proposed above only during the first half of the year. The biological impact of this alternative is therefore necessarily less than under Alternative 1. As a sub-alternative, however, it has been suggested that the entire Bering Sea/Aleutian Islands management area be closed to joint ventures during part of the year. The present analysis considers the specific closure of the entire BSAI area during the period January 1 - June 30 to all joint venture and foreign operations.

Catches by month for 1984 and 1985 for both joint venture and foreign vessels are shown in Table 3.6 and Table 3.7. Data for these years indicate that, in terms of total groundfish, for joint venture and foreign harvesters, the summer months, June, July and August are most important. The same general relation holds at the individual species level, also. Note that for the pollock fishery, however, the winter-spring roe fishery (Feb, Mar, Apr) is an important component of the total fishery. Informal reports from the 1987 fishery indicate the importance of the roe season to the total fishery is increasing.

The domestic cod fishery also has strong seasonal differences in its conduct. In the spring-early summer period bottom trawlers target on concentrations of cod in the Unimak Pass area. Later in the year, however, the trawlers are targeting on flatfish with significant amounts of cod as bycatch, that is, are operating in a general mixed species on-bottom fishery with catches of cod, pollock, and flounder. A seasonal closure of either of the zones would be expected to have an especially adverse impact on the fishery which targets on cod.

Thus, the seasonal catch distribution indicated by Tables 3.6 and 3.7 may not be representative of the current or near future fishery and may ignore species specific seasonal effects for pollock and cod. Table 3.8, however, which presents the percentage of catch in each zone in each season, does consider species specific impacts. Using these data it is possible to assess the proportion of catch that occurs between January 1 and June 30. This catch represents the "worst case" scenario--the maximum catch foregone assuming a January - June closure of Block 1, Block 2, or the entire BSAI management area. This scenario assumes that harvesters do not redistribute

6. The survey takes place during the summer months. It is likely that at other times of the year the population distributions for many species, notably cod and pollock, are very much different than these survey distributions.

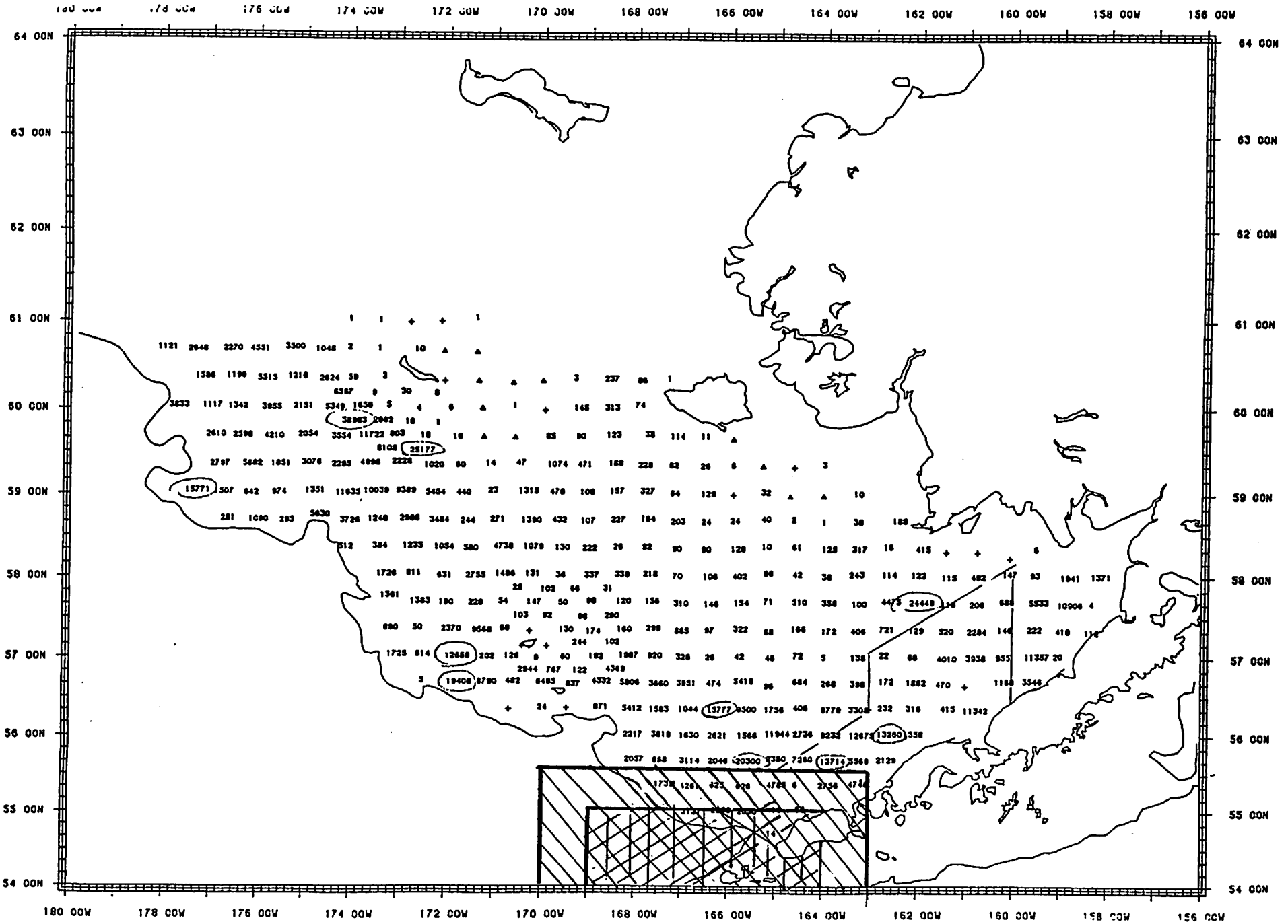

Figure 3.7 .--Catch per unit effort (lbs/hr trawled) of walleye pollock (Theragra chalcogramma) from 1984 research survey data.

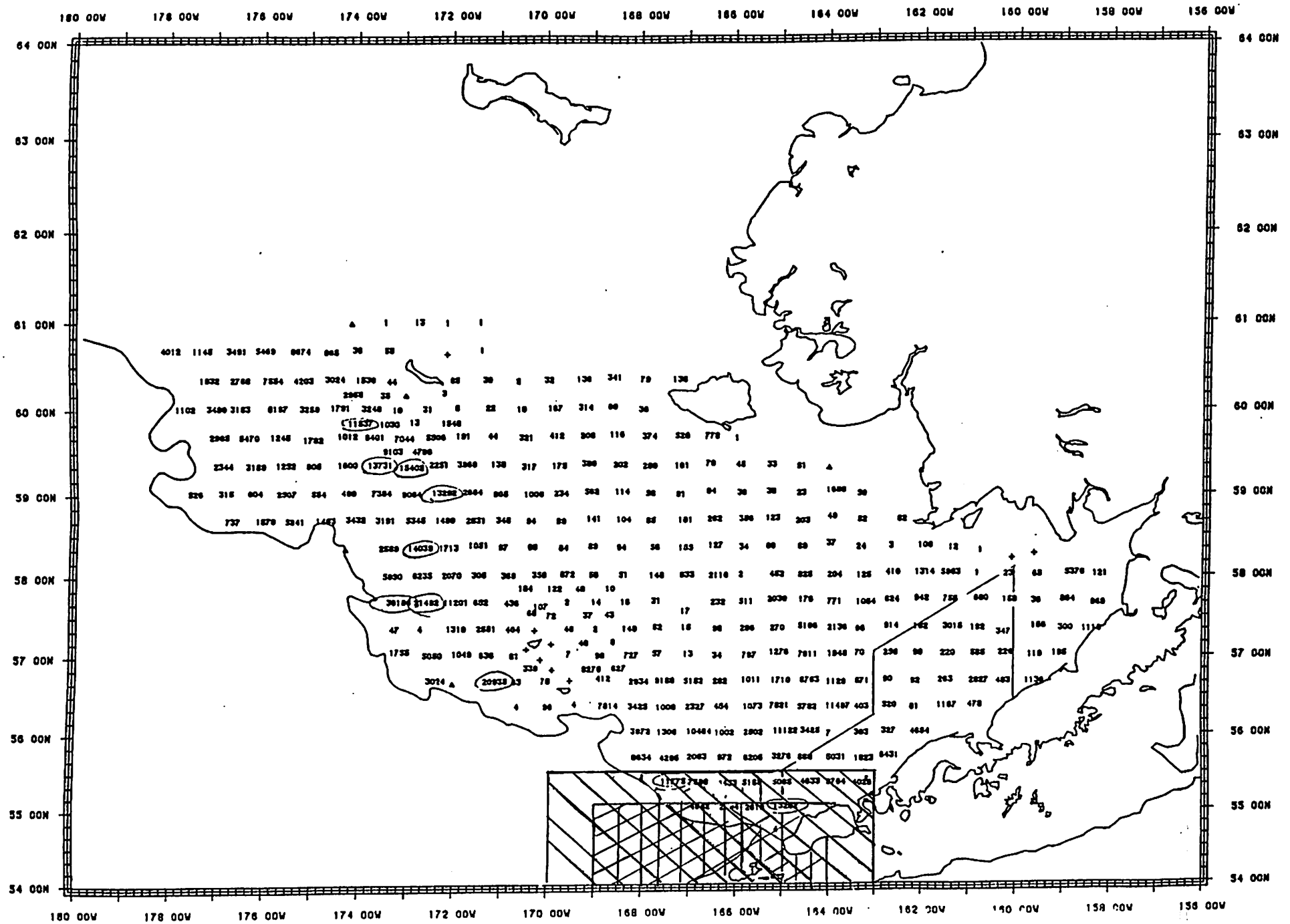

Figure 3.8.--Catch per unit effort (lbs/hr trawled) of walleye pollock (Theragra chalcogramma) from 1985 research survey data.

Table 3.6. 1984 joint venture and foreign catches in the BSAI Management Area and Shumagin Sub-management Area, by month, in metric tons.

Joint Venture

Month	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
Jan	38	212	0	25	0	280
Feb	607	3,739	0	411	0	5,068
Mar	28,757	6,937	0	809	0	37,196
Apr	43,111	3,679	1,842	4,653	108	55,059
May	1,974	2,688	7,656	7,574	281	21,044
Jun	31,340	3,971	10,018	11,300	115	58,051
Jul	68,855	3,963	9,655	5,797	407	89,922
Aug	50,553	3,550	6,159	9,938	157	73,667
Sep	11,196	2,417	0	9,636	65	26,550
Oct	6,937	216	140	750	172	8,559
Nov	131	0	0	1	1	133
TOTAL	243,499	31,372	35,470	50,894	1,306	375,529

Table 3.6. (Cont'd)
1984 joint venture and foreign catches in the BSAI Management Area and Shumagin Sub-management Area, by month, in metric tons.

	Foreign					
Month	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
Jan	14,868	2,377	1	1,066	5	18,334
Feb	63,859	8,934	0	1,846	7	74,719
Mar	14,329	4,015	12	5,216	14	23,692
Apr	6,567	2,989	0	10,902	4	20,685
May	21,681	576	0	4,557	11	26,878
Jun	84,980	5,674	67	5,696	1,316	97,813
Jul	150,587	3,629	202	16,180	1,426	172,063
Aug	164,228	4,850	81	24,035	1,011	194,346
Sep	179,878	5,044	21	19,365	396	204,824
Oct	127,043	8,878	318	25,308	628	162,740
Nov	108,667	11,902	302	25,291	191	146,835
Dec	77,152	11,962	62	23,273	45	112,963
TOTAL	1,013,839	70,830	1,066	162,675	5,054	1,255,892

Table 3.7. 1985 joint venture and foreign catches in the BSAI Management Area and Shumagin Sub-management Area, by month, in metric tons.

Joint Venture

Month	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
Jan	110	140	0	15	0	267
Feb	1,743	4,297	0	522	0	6,979
Mar	45,197	6,864	8	1,062	3	53,822
Apr	61,474	3,327	4,031	11,102	32	84,842
May	7,214	3,069	17,518	36,463	232	67,872
Jun	20,530	5,898	8,614	30,486	218	71,307
Jul	126,349	8,039	7,563	36,318	30	185,415
Aug	59,591	5,318	0	31,798	145	101,572
Sep	41,027	4,345	1,099	20,006	108	67,852
Oct	15,286	1,846	822	10,669	166	29,584
Nov	2,929	126	9	61	7	3,145
TOTAL	381,450	43,269	39,655	178,502	941	672,387

Table 3.7. (Cont'd)
1985 joint venture and foreign catches in the BSAI Management Area and Shumagin Sub-management Area, by month, in metric tons.

	Foreign					
Month	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
Jan	15,716	742	0	9,134	1	25,592
Feb	17,187	12,921	0	2,218	0	32,328
Mar	18,604	5,553	0	9,724	0	33,881
Apr	1,603	2,851	0	6,366	1	10,823
May	4,125	1,580	0	2,863	4	8,580
Jun	46,375	903	0	8,419	15	55,722
Jul	127,011	1,737	0	10,527	311	139,588
Aug	156,664	4,048	0	19,780	44	180,540
Sep	145,055	3,946	0	19,418	73	168,504
Oct	150,985	9,870	2	19,221	111	180,212
Nov	104,719	10,693	0	15,616	13	131,075
Dec	78,774	9,047	9	10,232	7	98,151
TOTAL	866,818	63,891	11	133,518	580	1,064,996

Table 3.8. Percentage of 1984 and 1985 Joint Venture and Foreign Catches in the BSAI Management Area, January - June, by block

Block/Area	Pollock		P. Cod		A. Mackerel		Flatfish		Rockfish		All Groundfish	
(Joint Ventures)	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*
Block 1	17.3%	3.0%	34.8%	27.3%	0.0%	0.0%	2.6%	0.8%	9.9%	0.4%	10.0%	3.8%
Block 2	59.1%	12.5%	42.2%	30.0%	0.0%	0.0%	3.1%	1.0%	9.9%	0.4%	26.3%	9.5%
All of BSAI	77.9%	36.6%	68.0%	54.9%	55.1%	79.9%	49.0%	44.7%	22.4%	64.1%	48.1%	43.2%
(Foreign)												
Block 1	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%	0.0%	0.3%	1.6%	0.1%	0.0%
Block 2	0.2%	0.0%	0.4%	0.1%	0.0%	0.0%	1.2%	0.8%	0.3%	1.6%	0.2%	0.0%
All of BSAI	21.9%	12.3%	25.1%	31.5%	2.8%	0.0%	17.9%	29.0%	43.3%	5.2%	21.5%	15.5%

effort to the latter part of the year. The data in Table 3.8 can be used to examine this eventuality. As might be expected, a six month closure of Block 1 would have a modest impact on the joint venture cod and pollock fishery and minor impact on the other fisheries. The foreign fleet would be little affected, at least in terms of catches similar to that shown by 1984 and 1985 fishery performance. The Block 2 closure is potentially much more significant to the joint ventures, particularly with regard to cod and pollock, but, again, insignificant to the foreign fleet.

Closure of the entire Bering Sea to joint ventures and foreign fishing vessels during January 1 - June 30 could have major impacts on the current patterns of catch in the joint venture fishery. This is particularly obvious with regard to cod and pollock where up to 70-80% of the catch could be foregone.

This "worst case" scenario is not very likely considering the fact that recent fishery performance indicates that the latter part of the year can provide very productive fishing for all species and also considering the considerable available fishing power and the large investment in the fleet. It is therefore, unlikely, in general terms, that such a seasonal closure, even if that closure were Bering Sea wide, would greatly reduce the total harvest in the management area, except, possibly, in the very short term. In terms of ecosystem performance, therefore, the seasonal closures would have little significant environmental impact.

This generality may not be true in the case of the pollock roe fishery, however, as a Bering Sea closure during the months of January 1 - June 30 would eliminate the JVP roe fishery. A strong spawner-recruit relationship would imply that reduced mortality on pollock stocks during their spawning period may positively influence the steady state biomass levels for the species. Unfortunately, spawner-recruit relationships for pollock are poorly understood.

Alternative 4: Foreign Processing Fees

If the imposition of fees on foreign processors, including those vessels receiving the catch of domestic harvesters, leads to a long term reduction in the harvest levels of the groundfish species of the Bering Sea, significant environmental impact might be expected. This is unlikely, however, since those fees would, at most, accelerate the replacement of foreign processors with domestic processors (both shoreside and at-sea), and thus, in the long run, not result in any reduction in total harvest in the Bering Sea management area.

3.4 Socioeconomic Impacts

3.4.1. Fishery Costs and Benefits (Harvesters and processors)

Alternative 2: 100 mile closure

The environmental impacts of potential reductions in catch were discussed in Section 3.3.2. Obviously, harvest reductions also have economic impacts. The most obvious perspective for examination of these impacts is one of reduced ex-vessel gross receipts in response to the reduction in harvest. Potential revenue losses arising from the proposed block closures are examined in Tables 3.9 and Table 3.10, which present total ex-vessel revenue in a zone, and percentage of total revenue in a zone, respectively. These are "worst case" scenarios of the likely revenue impact on the harvesting sector for the reasons argued above. The opposite "best case" scenario would assume no catch is foregone and that, therefore, ex-vessel receipts would not decline.

In contradistinction to the environmental analysis, however, the possibility of no reduction in receipts does not mean there is no economic impact on the fleet. This is because the displacement of the fleet from normally productive grounds to areas which may be less productive and involve greater running time from port will necessarily increase operational costs. This is not only due to increases in fuel costs because of increased running time, but also a consequence of increased "searching costs"--money and time spent locating productive grounds. Also, the distance to the new grounds or the timing of the new season may be such that some vessels will be unable to participate at all.

Representative costs for three sizes of joint venture trawlers are shown in Table 3.11. Costs per metric ton of groundfish range from $88 to $95 depending on vessel size. Fuel costs constitute between 12% and 18% of total operating costs, thus, if trip length were to double because of increased running time, fuel costs would be expected to double, everything else remaining equal. This means that fuel costs may increase by as much as $15.45 per mt of groundfish harvested, increasing total operational costs by approximately 17%.

One important question to be answered, however, is does everything else remain equal? In particular, will CPUE change to the extent that there is a change in gross revenue, an increase or decrease in operating costs, or both, should vessels relocate to less productive grounds? This is a relevant question if vessels which would have fished in areas of high CPUE were forced to fish elsewhere. This would certainly be the case in the closure of the two proposed zones in Unimak Pass because the total requirements of the shoreside plants, ≈ 825 mt/day (Table 3.1), are much less than the total catching capacity of the joint venture fleet, 400-600 mt/day per vessel (Alaska Dragger's Association, pers. comm.), which in terms of a fleet of 120 vessels, is about 60,000 mt/day[7]. Thus, the daily catches of two or three vessels could satisfy the requirements of the shore based plants.

If there is a "CPUE effect" which increases cost to vessels fishing for joint ventures when they are forced to move to inferior grounds, there is a corresponding opposite positive effect to those vessels that remain in the area. This benefit would accrue primarily to domestic at-sea

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7. This may be a high estimate. Reports from the joint venture roe pollock fishery indicate current maximum fishing rates are about 10,000 mt/day.

Table 3.9.1. 1984 and 1985 Joint Venture and Foreign Gross Ex-vessel Revenue in the BSAI Management Area and Shumagin Area ($1,000s), by Block

Block/Area	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
(Joint Ventures)						
1984						
Block 1 - BSAI	4,624	2,451	2	195	48	6,835
1 - GOA	794	43	34	58	148	1,117
Subtotal	5,418	2,494	36	253	196	7,952
Block 2 - BSAI	13,063	3,000	8	235	49	16,673
2 - GOA	795	45	38	58	174	1,134
Subtotal	13,859	3,045	45	292	224	17,807
Outside - BSAI	1,200	3,822	5,310	6,514	106	26,488
- GOA	6	3	1	1	17	17
Subtotal	1,194	3,808	5,311	5,495	122	26,506
1985						
Block 1 - BSAI	6,028	2,642	0	216	46	8,542
1 - GOA	194	68	302	38	98	1,657
Subtotal	6,222	2,710	302	254	144	10,199
Block 2 - BSAI	16,342	2,995	0	294	47	20,416
2 - GOA	273	72	302	38	98	1,749
Subtotal	16,615	3,067	302	333	144	22,165
Outside - BSAI	22,488	6,408	5,687	23,578	104	57,205
- GOA	1	1	0	0	0	3
Subtotal	22,490	6,408	5,687	23,578	104	57,208
(Foreign)						
1984						
Block 1 - BSAI	10,713	466	33	225	12	12,540
1 - GOA	2,445	178	1	22	33	2,922
Subtotal	13,158	645	34	246	45	15,462
Block 2 - BSAI	12,523	560	45	264	16	14,674
2 - GOA	2,509	328	1	22	37	3,087
Subtotal	15,032	888	46	287	53	17,761
Outside - BSAI	85,956	11,960	25	21,385	572	122,304
- GOA	5,389	2,650	90	103	714	8,130
Subtotal	91,346	14,610	115	21,488	1,286	130,434
1985						
Block 1 - BSAI	11,541	196	0	196	3	13,252
1 - GOA	857	20	0	3	0	986
Subtotal	12,398	216	0	199	3	14,238
Block 2 - BSAI	11,988	283	0	219	4	13,822
2 - GOA	857	62	0	3	0	1,010
Subtotal	12,845	345	0	222	4	14,832
Outside - BSAI	76,302	12,259	0	17,610	78	107,913
- GOA	1,843	1,382	1	50	72	2,925
Subtotal	78,144	13,640	1	17,659	149	110,838

Table 3.9.2. 1984 and 1985 Ex-vessel Revenue for Joint Venture and Foreign Fisheries in the BSAI Management Area, January - June, by block ($1,000s)

Block/Area	Pollock		P. Cod		A. Mackerel		Flatfish		Rockfish		All Groundfish	
(Joint Ventures)	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*
Block 1	$2,463	$1,150	$2,371	$2,568	$0	$0	$173	$198	$15	$1	$4,316	$2,980
Block 2	$8,430	$4,873	$2,875	$2,822	$0	$0	$208	$243	$15	$1	$11,343	$7,359
All of BSAI	$11,108	$14,224	$4,640	$5,165	$2,929	$4,545	$3,309	$10,671	$35	$97	$20,771	$33,519
(Foreign)												
Block 1	$117	$8	$46	$0	$0	$0	$12	$2	$2	$1	$175	$12
Block 2	$173	$8	$49	$18	$0	$0	$263	$142	$2	$1	$247	$23
All of BSAI	$21,535	$10,875	$3,146	$3,948	$2	$0	$3,882	$5,170	$254	$4	$3,496	$18,905

Table 3.10. Percentage of 1984 and 1985 Joint Venture and Foreign Gross Ex-vessel Revenue in Block 1 and 2 of the BSAI Management Area and Shumagin Area.

Block/Area (Joint Ventures)	Pollock	P. Cod	A. Mackerel	Flatfish	Rockfish	All Groundfish
1984						
Block 1 - BSAI	32.4%	35.9%	0.0%	2.9%	30.9%	15.8%
1 - GOA	99.1%	90.0%	89.4%	97.6%	77.5%	97.0%
Subtotal	36.0%	36.4%	0.7%	4.4%	56.7%	17.9%
Block 2 - BSAI	91.6%	44.0%	0.1%	3.5%	31.8%	38.6%
2 - GOA	99.3%	93.2%	98.0%	98.0%	91.3%	98.5%
Subtotal	92.1%	44.4%	0.8%	5.1%	64.6%	40.2%
1985						
Block 1 - BSAI	15.5%	28.1%	0.0%	0.9%	30.6%	11.0%
1 - GOA	70.8%	94.6%	99.9%	97.1%	99.7%	94.6%
Subtotal	15.9%	28.6%	5.0%	1.1%	57.8%	12.8%
Block 2 - BSAI	42.1%	31.9%	0.0%	1.2%	30.9%	26.3%
2 - GOA	99.5%	99.1%	99.9%	99.1%	99.7%	99.8%
Subtotal	42.5%	32.4%	5.0%	1.4%	58.0%	27.9%
(Foreign)						
1984						
Block 1 - BSAI	10.9%	3.7%	47.2%	1.0%	2.1%	9.2%
1 - GOA	31.0%	6.0%	1.0%	17.3%	4.4%	26.1%
Subtotal	12.4%	4.2%	21.1%	1.1%	3.4%	10.4%
Block 2 - BSAI	12.7%	4.5%	64.4%	1.2%	2.7%	10.7%
2 - GOA	31.8%	11.0%	1.2%	17.8%	4.9%	27.5%
Subtotal	14.1%	5.7%	28.7%	1.3%	4.0%	12.0%
1985						
Block 1 - BSAI	13.1%	1.6%	0.0%	1.1%	3.6%	10.9%
1 - GOA	31.7%	1.4%	20.5%	5.6%	0.0%	25.0%
Subtotal	13.6%	1.5%	16.7%	1.1%	2.0%	11.3%
Block 2 - BSAI	13.6%	2.3%	0.0%	1.2%	4.9%	11.4%
2 - GOA	31.7%	4.3%	20.5%	6.2%	0.0%	25.7%
Subtotal	14.1%	2.5%	16.7%	1.2%	2.6%	11.8%

Table 3.11. Cost Structure of Joint Venture Trawlers

	85 ft.		108-115 ft.		120 ft.	
	$/lb.	%	$/lb.	%	$/lb.	%
Variable Costs						
Labor	$0.015	37.5%	$0.014	33.3%	$0.013	30.2%
Fuel	0.007	17.5	0.005	11.9	0.005	11.6
Total Variable Costs	0.022	55.0	0.019	45.2	0.018	41.8
Fixed Costs						
Interest	0.002	5.0	0.003	7.1	0.004	9.3
ROI @ 30%	0.003	7.5	0.004	9.5	0.005	11.6
Insurance	0.004	10.0	0.004	9.5	0.004	9.3
Maintenance	0.006	15.0	0.007	16.7	0.007	16.3
Depreciation	0.003	7.5	0.005	11.9	0.005	11.6
Total Fixed Costs	0.018	45.0	0.023	54.7	0.025	58.1
TOTAL COSTS $/lb.	0.040	100.0	0.042	99.9	0.043	99.9
TOTAL COSTS $/mt	$88.20		$92.61		$94.80	

Other Information:

Crew size	4.02	5.02	4.95
Catch/Man/Day (lbs)	30,000	35,000	40,000
Catch/Day	121,000	176,000	198,000
Days/Fishing Year	150	190	200
Total Catch/year (lbs)	18,150,000	33,440,000	39,600,000
Total Catch/year (mt)	8,231	15,147	17,959

Source: NRC, "A Strategy for the Americanization of the Groundfish Fisheries of the Northeast Pacific," V.2, p. 128 (1985).

catcher/processors or mothership/processors and to those domestic catchers who had previously fished for joint ventures who chose to remain in the zone. The numbers of vessels in the latter category will depend on the demand of domestic shorebased processors. Indications of shorebased capacity versus joint venture capture capacity indicate the number of vessels making the switch from joint venture to DAP fishing will be small, at least initially. Note that this positive effect accruing mostly to at-sea domestic processors is of a transitory nature. This is because as the fishery become more fully "Americanized" harvesting vessels and at-sea and shore processing capacity will enter the fishery to take advantage of increased catch opportunities in the zone. How quickly this might occur is unknown, but if the current rate of "Americanization" continues the entire catch will be domestically processed in a few years.

To answer the question posed above it is necessary to quantify the "CPUE effect". This is done by estimating the relation between catch and effort using detailed catch-effort data. Such estimation is difficult, and it has been impossible, in the time available for preparation of this analysis, to provide a detailed estimate of the catch vs. effort, or CPUE vs. effort relationship for the current fishery. However, analysis prepared by the Council Staff in consideration of Amendment 6 (1983) to the Bering Sea FMP may still be useful in examining the CPUE effect.

That work used catch-effort data for the period 1979-1981 in the Japanese trawl fishery to estimate a relationship between the two. The function estimated, using 1981 data, is

$$\ln (C - (72000 - C)) = -17.307 + 1.956 \ln (E) \quad [8] \qquad (1)$$

where C is catch in mt, and E is effort in trawl-hours.

The fishery today is very different from the fishery of 1981. In particular, the CPUE's reported in that period have increased in recent years. Nevertheless, if the general relationship still holds, one may use equation 1) to estimate how CPUE might increase given a reduction in effort. To do this solve for CPUE (C / E) and suppose that effort, E, is reduced from the initial level by some proportion, i, ($0 < \theta \leq 1$). Then it is possible to compute a ratio of CPUE after the change to CPUE before the change. This ratio is the proportional increase in CPUE given by a proportional reduction of effort. Using 1) the relationship is given by

$$(CPUE^{NEW})/(CPUE^{OLD}) = \theta(1 + bE^2)/(1 + b\theta^2E^2) \qquad (2)$$

where $b = e^{-17.307} = 3.05 \times 10^{-8}$.

If current effort levels in the proposed closed zone are 100 vessels fishing 100 days in a year, with each vessel fishing, on average, 10 hour days, E is 100,000 hours. If effort is cut in half due to the closure, (2) would estimate that the vessels remaining would benefit by an increase in

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8. Regulatory Impact Analysis, Amendment 6 to the Bering Sea/Aleutian Islands management plan, App. 1, p. 21.

CPUE of approximately 98%. If effort were instead reduced by 25% then CPUE would increase approximately 33%.

The profitability of this increase in CPUE can be examined by assuming that inputs (labor, time, etc.) are fixed. Then, an increase in CPUE would lead to an increase in catch (output) at the original level of inputs. From this perspective gross revenue has increased in the same proportion that CPUE has increased. If the returns to the vessel owner are 50% of net revenue (after the payment of all costs including crew shares) then the increase in profitability would be one half of increase in net revenue.

For example, calculations using the data of Table 3.11 for a fishing vessel of 108-115 ft., indicate that total costs per day are about $93/mt and total annual catch is 15,000 mt. If daily catch had been 100 mt and CPUE increases such that catch is increased to 150 mt/day then gross revenue would increase by 50% and net revenue would increase from $700 per day to $2,850 per day.[9] If this gain were experienced by 30 vessels, the total increase in profitability would be $64,500.

The increase in profitability could therefore be substantial for those vessels able to fish in the DAP only zone, given the potential displacement of effort as indicated in Table 3.4. As mentioned above those benefits would accrue to the remaining vessels; perhaps 3 to 6 fishing vessels who had been operating as joint venture catcher vessels and up to 25 domestic catcher/processors or mothership/processors (Table 3.1, 3.2).

At the same time the opposite phenomenon would occur for the displaced vessels. CPUE could be expected to decrease for two reasons. The first is a consequence of the assumption that the closed areas represent the most productive fishing grounds. This is certainly true as far as past fishery performance is concerned although the survey data presented in Figure 3.7 and Figure 3.8 indicate that there may be potentially productive grounds for pollock in other areas of the Bering Sea. If these concentrations are available to the fishery it remains true that the increased running time and search time will increase costs. It is also possible that the spawning aggregations of pollock which are so attractive to roe and surimi processors do not occur in areas further north and west of the Unimak Pass area.

The second reason for an expected decline in CPUE is a consequence of the model presented above. A relation such as (1) or (2) would predict that as new effort is put into an area CPUE will decline, all else equal. The decline in CPUE experienced by the displaced joint venture vessels may be much less in percentage terms than that predicted as an increase for vessels allowed to fish in the zone since the percentage changes in effort are less. The actual decline will depend on the concentrations of target species on the new grounds and the percentage increase in total effort in the area. If both of these factors are modest the decline in CPUE will also be modest. However, the numbers of vessels involved ($\approx$ 120) imply that the total loss in profits could be significant.

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9. Assuming an ex-vessel price of $100/mt.

Using the same data used for the example above, suppose that the decrease in CPUE due to moving to new grounds and due to increased effort is 10%. Then gross revenue per unit of effort can be expected to decline 10%. If operational costs increase 15% because of increased fuel costs due to increased running and search time the data indicate that the vessel can no longer make a profit. Although the owner may continue to fish to cover his variable costs it is improbable that the vessel would remain in the fishery over the long term.

Another question to be addressed is whether shorebased plants would continue to offer a higher price than offered by foreign processors should the management actions be effective in securing delivery of product shoreside. Generally, the answer will depend on whether or not competition for vessels remain, that is, whether the joint venture catcher vessels can make up the catch foregone outside the closed area. If they can, and if foreign processors do not reduce their demand for product, the shore plants will need to maintain the differential. If on the other hand, joint venture prices are reduced, demand for joint venture caught fish is reduced, or if there is excess fishing capacity (e.g., due to the fact that some vessels may be unable or unwilling to fish distant grounds, or that the cost effects outlined above are such that fishing for joint ventures is no longer profitable) then the plants will have little incentive to maintain the higher prices. Such a price reduction would reduce the profitability gains discussed above for those vessels delivering shoreside.

The potential losses to foreign processors has not yet been specifically addressed. This is because, relative to 1984 and 1985, the foreign presence is greatly reduced, and in all likelihood, will be even further reduced in 1988. Second, changes in foreign ex-vessel profit/loss are not directly relevant under the MFCMA, which under the National Standards, views fisheries management from the perspective of the U.S. economy. If those changes, however, lead in turn to changes in the import of product from or reexport of product to the United States economic impacts are expected. These effects with respect to the roe fishery for pollock are a topic of Chapter 9. Other import-export market effects are difficult to quantify and are beyond the scope of this document.[10]

Alternative 3: seasonal closures

The kinds of costs and benefits to fishing vessels, and to landbased and at-sea processors, are qualitatively identical to that arising from the area closures discussed in the preceding section: increased operational costs, and decreased CPUE and hence, net margin for displaced boats; and increased CPUE and increased profits for the remaining vessels. The segments of the industry effected are the same. This is because the qualitative effects of a closure are the same regardless of its extent in space and time.

The quantitative aspects differ, however, according to the amount of catch foregone (see Table 3.7, Table 3.8, Table 3.9.1 and Table 3.10). As argued

10. Useful information on the world market for whitefish, in general, and cod, in particular, can be found in Queirolo (1986) and Crutchfield (1986).

in the environmental impact section, a seasonal closure of either of the suggested zones would be intermediate in impact between the no action alternative and the year round closure alternative (Alternative 2). Thus, the preceding discussion on costs and benefits to the fishing fleet overstates the impact of a six month closure of the Unimak Pass fishing grounds to joint venture and foreign fishing.

Likewise, Alternative 3b, which would impose a January 1 to June 30 closure on joint venture fishing Bering Sea wide, is predicted to have potentially a greater impact on the fishing vessels operating in the Bering Sea because of the large amount of catch likely to be foregone.

In sum, the economic impact of Alternative 2, Alternative 3a, and Alternative 3b are qualitatively the same. The magnitude of the impacts will stand in direct proportion to the amount the harvest is reduced in the closed zones, or in the entire Bering Sea. Short term benefits will accrue to those vessels delivering shoreside (to the extent that shoreside capacity exists to process fish) and to domestic vessels processing at-sea. Costs will be borne by the owners and crews of joint venture vessels who are not able to deliver shoreside, or who experience increases in costs, decreases in revenue, or both, and by joint venture service companies.

In the longer term, all the Alaskan harvest will be processed domestically, with or without establishing a zone for priority access, or a seasonal closure of all or a portion of the Bering Sea management area. The question to be answered is what is the best course for this Americanization--where best is taken to mean that course of action which results in the greatest stream of benefits to the U.S. economy. The answer depends on the investment climate, and the relative costs of various types of operation. This last issue--relative costs--is the topic of the following discussion concerning the imposition of fees or assessments on foreign processors receiving product from domestic catcher vessels.

Alternative 4: fees on foreign processors in the joint venture fishery

Much of the analysis of the preceding alternatives has been concerned with the changes in expected harvest, either in the physical sense for the environmental analysis, or in terms of ex-vessel revenue for the economic analysis. It is clear, however, from the debate surrounding this controversial issue and from the discussion above that one key factor is the relative cost advantage of foreign at-sea processing, versus domestic at-sea processing versus domestic shoreside processing.

Comparative cost information is limited but a recent study by Natural Resource Consultants (NRC, 1986) indicates that, for a pollock filleting operation, total processing costs shoreside and at-sea are roughly equivalent (Table 3.12). The cost comparison does not, however, include shoreside delivery cost.

A similar comparison of processing costs for surimi operations reveal a rough parity between domestic shorebased and at sea processors, with an estimated cost differential of between 4 and 11 cents per pound (Table 3.13). The Japanese catcher/processor of surimi faces costs similar to

Table 3.12. Costs Per Pound of Processing Pollock Fillets[1/]

(cents per pound)

Cost Element	American Factory Trawler	Alaska Shore-based Plant
Fish	---	27
Labor	28	19
Fuel and Lube/Energy	13	2
Packaging	3	3
Maintenance and Depreciation	10	6
Insurance	5	1
General and Administrative	2	4
Unloading/ Unloading Freight to Seattle	2	7
Return at 18%	19	10
TOTAL PER POUND	82	72
TOTAL PER POUND W/O 18% RETURN	63	62

1/ Skinless, boneless, shatterpack fillets

Source: NRC, "A Strategy for the Americanization of the Groundfish Fisheries of the Northeast Pacific" V.2, p. 148, (1985).

Table 3.13. Surimi Processing, Shore Based v. Sea Based
(cents/lb.)

Cost Element	Alaska[1/] Shoreside Plant	American[1/] Operated Mothership	American[1/] Catcher/ Processor	Korean Mothership	Japanese Catcher/ Processor
Fish	30-35	23-25	-	23-25	-
Other Materials					
Packaging	3	3	3	3	3
Labor	17	23	27	6	34
Fuel/Energy	1	1	4	1	4
Freight	10	10	10	10	10
Insurance	.5	.5	1.5	.5	1
Depreciation	3	2	6	2	7
Maintenance	.5	1.5	3	.5	2
Other	2	2	2	2	2
Return on Capital (16%)	10	5	16	5	18
Total	77-82	71-73	73	53	81

Assumptions:[1/]

Annual Production Volume (millions of pounds)	23	63	24
Initial Capital cost (millions of dollars)	$13	$18	$22

Source: Natural Resources Consultants, Fletcher & Co. Analysis (Summer 1986 estimates).

those encountered by domestic shoreside plants while there is a substantially reduced cost for product processed by Korean motherships. The cost savings in the Korean operation are primarily a consequence of reduced labor costs, and, secondarily, a result of a lower opportunity cost of capital.

In addition to these cost differentials, Alaskan shorebased processors are assessed a landings tax on the gross value of receipts (Table 3.14). Given fish costs of 30-35 cents per pound the total cost of product to these plants may be 31-36 cents and the total processing costs 78-82 cents per pound. This is almost 30 cents more per pound than the processing costs of a Korean surimi mothership.

Table 3.14. The Alaska Renewable Resource Tax

Species	Shore Plants	Processed at-sea	Other
Groundfish	1%	3%	1.2 %[11]
Salmon	3%	-	
Crab	1%	5%	

Source: (Harold Jones, pers. comm.)

Suppose that this cost information is used to arrive at a per unit fee to those foreign processors who receive fish from U.S. catcher vessels under the rational that the economic system will work without intervention if all players are afforded a level playing field. The fee structure therefore recognizes that because of certain national subsidies for other nations and because U.S. regulations or law impose additional operational costs on shoreside processors an assessment may be imposed on those foreign processors to equalize total processing costs.

A fee on pollock alone may be sufficient, or it may be desirable to impose fees on cod and pollock. Using the above results (a 20-30 cent per lb differential) implies that, for pollock, an assessment of between $400 and $600 per mt would be necessary to equalize total operational costs of Korean mothership operations and Alaskan shoreside plants.[12] Of course, such a fee would penalize those foreign operations already experiencing higher costs (e.g. Japanese catcher/processor).

A fee system, therefore, might either consider differential costs of various nations and assess fees on a per nation basis or, instead, compute a weighted average cost differential to determine the fee (essentially the procedure now used for foreign fee assessment).

11. There is a 1% landings tax assessed by the borough of Dutch Harbor. In addition, the Alaska Seafood Marketing Institute (ASMI) levies a fee of 0.2% on all member processors.

12. A cost differential of 1 cent/lb is equivalent to $22.05/mt.

If, however, the rationale for imposition of the fee is to counteract the advantage accorded to foreign processors via the combination of national subsidies and the non-imposition of costs related to U.S. legal system (landings taxes, MFCMA assessments, OHSA requirements, etc.) it is more appropriate to consider only the relevant proportion of differential costs. A full analysis of the relative advantage of subsidies and the relative disadvantage of mandated costs is beyond the scope of this analysis, however, a rough approximation using information in Tables 3.13 and 3.14 is that U.S. processors are at least disadvantaged 2-3% due to the landings taxes. This translates to a differential of 6 to 9 cents per lb (for surimi processing, Table 3.13) which is equivalent to a per mt assessment of $130-200. If one wished to factor in transportation costs of fish shoreside (estimated earlier at 6-11 cents/lb) to level the playing field for Alaskan shorebased plants a total assessment of 12-20 cents/lb ($265-440/mt) would be appropriate.

Operationally, the assessment estimation, and collection procedures could be handled in the same way that the current fees on directed foreign fishing operations are administered. Note that the MFCMA permits the collection of fees

> at least in an amount sufficient to return to the United States an amount which bears to the total cost of carrying out the provisions of the [Magnuson] Act during ... fiscal year 1986 the same ratio as the aggregate quantity of fish harvested by foreign fishing vessels within the fishery conservation zone during 1985 bears to the aggregate quantity of fish harvested by both foreign and domestic fishing vessels within such zone and the territorial waters of the United States during [1985].[13]

This alternative does have price implications, however. That is, the new cost structure may affect the basic market pricing mechanisms, potentially raising prices at the secondary processing, wholesale and retail levels. Price responses will depend on the willingness and ability of the seller to pass on cost increases (i.e. the relative price elasticities of supply and demand).

3.4.2. Reporting Costs

The closed zone alternative(s) or the closed season approach may require imposition of new check in/check out procedures for all fishing vessels. If the reporting burden is placed on the foreign processing vessels existing regulations should suffice. Imposition of fees on foreign processors will not require any changes in the status quo reporting requirements..

3.4.3. Administrative, Enforcement, and Information Costs and Benefits

The administrative cost of the area closure relates to the cost of any reprogramming on the part of the observer program and PacFIN. These costs are not likely to be substantial. The administrative cost of the seasonal

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13. 16 U.S.C. 1824(b)(10)(B)

closure of the entire Bering Sea to joint venture and/or foreign fishing will be minimal, in fact, it may be possible to realize some cost savings. With regard to the fee alternative, the administrative costs of imposition will also be minimal if the procedures adopted are identical to that used currently for the directed foreign fisheries. If a separate program is established to determine, and collect assessments administrative costs could be substantial.

The enforcement costs of the proposed closures depend on the wording of the implementing regulations. If the regulations are written such that the closed areas are declared off limits to foreign processing vessels enforcement costs will not increase greatly. Note that the size and shape of the area has little effect on enforcement costs. Enforcement of the fee collection alternative should not increase status quo costs, assuming, as above, that the program is a supplement to the existing foreign fee program administered by NMFS.

3.4.4. Impact on Consumers

If the price paid by re-processors of blocks (especially pollock, but also cod) increases because of retractions in supply (due to the reduced catch from joint ventures) or because of increases in costs (CPUE declines, per ton assessments) then consumers will suffer a loss. The magnitude of this loss will depend on the price response of the consumer demand curve and the magnitude of the price shift. Changes in product level at the U.S. national retail level are expected to be modest in relation to the U.S. market for whitefish products. Significant changes in the supply of pollock for surimi or substantial price shifts for either raw product or primary surimi could have a major impact on the U.S. markets for analog products.

3.4.5. Redistribution of Costs and Benefits

All the alternatives described above may benefit the western Alaskan communities which participate in shorebased processing if those closures or fees result in more product being delivered shoreside. If more fishing, transport, and processing vessels visit those ports to purchase fuel, supplies, and for service and maintenance the local economies will further benefit. If less vessels use these ports for servicing local revenue may decrease. All alternatives benefit the domestic at-sea processing component, primarily because of potentially significant increases in CPUE and hence profitability. All alternatives harm joint venture operations to some extent. Losses in income to joint venture fishermen may be substantial. Additionally, if the restrictions are major and long term the viability of the joint venture service companies will be threatened. In the long run these losses to joint ventures will occur even under the status quo. The magnitude of these gains and losses will depend, of course, on the magnitude of the catch reduction and the CPUE effects.

3.4.6 Cost - Benefit Conclusion

First, it is not clear whether the supply problem in Unalaska/Akutan will be resolved without government intervention by business and marketing efforts currently underway. Second, it is obvious that the more extreme

alternatives (closure of the larger Block 2, a January - June closure of the entire Bering Sea to joint ventures and foreign fleets) will have significant positive impacts on the domestic at-sea processing component and significant negative economic impact on the joint venture fishery.

It is impossible to conclude, however, that the closures will result in more product delivered shoreside than would otherwise be the case. Certainly, all alternatives increase the likelihood of this happening by improving the competitive position of the shorebased plants. What actually happens is completely dependent on the ability of the displaced fleet to make up the foregone catch, and on the ability of the domestic at-sea processing component to preferentially capture the benefits. Cost reductions and increases also depend, in part, on the magnitude of the CPUE effect. If costs are reduced enough to allow vessels to lose fishing time by delivering shoreside or to operate (or charter) tendering vessels to complete the transfer of product while still enhancing profitability the supply problem for shorebased processors will cease over the near term. If the cost reduction on the grounds is not large enough to cover the transportation costs closures will not rectify the problem.

Whether the net benefit exceeds net costs in terms of the total U.S. economy will depend on the size of the closure (in space and time), the costs of displacement and the ability to make up catch potentially foregone because of the closures, and the quantitative relationship relating CPUE to profitability. All three items require estimation which has the usual attendant errors, however, our ability to predict the probable catch in new fishing areas is very limited, and it is this prediction of catch changes that is critical to the whole prediction process.

Worst and best case predictions are possible, however, using results presented earlier. The smaller block closure (Alternative 2a) would reduce joint venture gross ex-vessel revenue by $8-10 million if none of the catch foregone is made up (Table 3.9.1). Likewise, the worst case for the larger block closure indicates a revenue loss of $18-22 million (Table 3.9.1). Worst case scenarios for the foreign fisheries indicate potential losses in gross revenue of $14-18 million for the two alternative closures (Table 3.9.1). The corresponding best case scenarios would predict no ex-vessel revenue declines although profits would be expected to decline because of increased costs.

In the same manner, the worst case for the seasonal closure indicates a loss in ex-vessel gross revenue of $21-34 million for joint ventures, and $3-19 million for the foreign fisheries for a six month closure of the entire Bering Sea management area (Table 3.9.2). Corresponding worst case declines in ex-vessel revenue for seasonal closures of the blocks are, for the smaller closure, $3-4 million and $12-175 thousand for joint ventures and foreign fisheries, respectively; and, for the larger closure, $7-11 million and $23-250 thousand, respectively (Table 3.9.2). Again, the best case scenario would predict no revenue decline.

The best and worst case scenarios for DAP revenue would predict the maximum and minimum gains to DAP due to the closures (area or area/season). The worst case would be that DAP is unable to increase its share of the landings. Revenue increases would then be $0. This is very unlikely, as

is the best case scenario where gains would be characterized as equal to the revenue losses above, under the assumption that all catch foregone by joint ventures is taken by DAP vessels.

Although this bounds analysis may be useful in limiting the discussion of impacts, the latitude of predictions is extreme. Again, actual impacts will depend on the amount of catch foregone, the ability of DAP to harvest that catch, and, especially, the relationship between effort, CPUE, and costs.

Regardless of the outcome of this calculation procedure it is important to recognize that if it is the Council's desire to protect the local economies of western Alaskan communities, particularly with regard to the local seafood processing capabilities, adoption of one of the alternatives described above may prove attractive. To the extent that the U.S. regulatory system and foreign subsidies hinder free market competition in the international seafood markets per unit catch assessments on foreign processing vessels may be effective in increasing the rate of total U.S. domestication of the fishery.

The down side of any alternative which is effective in eliminating the foreign presence is the problem of idling U.S. fishing vessels while U.S. processing capacity increase and the possibility of price increases and supply reductions at the wholesale and retail level.

4.0 REVISE THE DEFINITION OF PROHIBITED SPECIES

4.1 Description of and Need for the Action

Prohibited species currently are defined in Section 14.2 of the FMP as one of four categories of species likely to be taken by the groundfish fishery in the BSAI area. Prohibited species are discussed also under the respective sections on domestic and foreign management measures (Sections 14.4.2 and 14.5.2).

A basic problem with these definitions is that, for some species to be included in the prohibited species category they would have to be managed under other FMPs or Federal regulations. Apparently, the original BSAI groundfish FMP anticipated other fishery management plans for king crab, Tanner crab and Pacific herring. The prohibited species definition under Section 14.2 specifically exempts species the harvest of which is authorized by other FMPs, PMPs or Federal regulations. However, the anticipated FMPs for king crab, Tanner crab and Pacific herring ultimately failed to be implemented or were subsequently withdrawn. This leads to the question of whether these species are correctly included in the prohibited species listing in the BSAI FMP. The FMP does not attempt to manage fishing for non-groundfish species but does try to limit injury to these species by the groundfish fisheries. The problem, however, is that the current definition, at best, does not clearly state this intent and, at worst, may provide legally indefensible protection to species thought to be protected as prohibited species.

An example of this problem is king crab. The prohibited species definition under section 14.2 makes an exception for species "when ... their retention by United States vessels is not prohibited under other FMPs or Federal regulations." Section 14.4.2.A reinforces this exception when it states that "United States vessels must minimize their incidental harvest of ... any ... species the fishery for which ... is governed by another FMP...." Presently, there is no operative FMP for king crab or Federal regulation prohibiting the retention of king crabs by domestic vessels (and the fishermen on them). Hence, king crab is a species that fits the exception and is not prohibited. By this reading of the definition, literally all the species listed in the definition are not prohibited except for salmonids and Pacific halibut for which there are other FMPs or Federal regulations. This literal reading of the definition, however, probably is fallacious since there are other parts of the FMP that indicate prohibited status for non-groundfish species. The current prohibited species definition is at fault for not clearly stating this intent.

In summary, the FMP has a flawed definition of prohibited species. As a result, regulations implementing the FMP pertaining to prohibited species, suffer from confusing and imprecise language that may not be legally enforceable against every vessel fishing for groundfish in the EEZ off Alaska. This is especially true for Tanner and king crab species since anticipated FMPs for these species are not now in effect. This problem extends also to other non-groundfish species for which other applicable law does not exist.

4.2 The Alternatives

4.2.1 Alternative 1: Do nothing - status quo.

Under this alternative, no changes would be made to the definitions of prohibited species in the FMP or its implementing regulations.

4.2.2 Alternative 2: Revise definition of prohibited species.

Under this alternative, the prohibited species definition in the FMP would be changed to list those species or species groups which must be avoided while fishing for groundfish and, if caught incidentally, must be immediately returned to the sea with minimum injury. Listed species will include the "traditional" species of salmon, halibut, king and Tanner crabs for domestic and foreign groundfish fisheries plus other non-groundfish species for the foreign fishery only. Retention of any of these species would not be allowed unless authorized by other applicable law. This would allow, for example, a groundfish fishermen the option of retaining halibut caught with hook and line gear during an open season for halibut specified by the International Pacific Halibut Commission. In addition, the definitions would provide for treating groundfish for which the TAC has been fully harvested in the same manner as prohibited species. Changes appropriately reflecting these new definitions would be made in the regulations implementing the FMP. Specific FMP and regulatory language for this alternative is given under parts 4.6 and 4.7 of this chapter.

4.3 Special Biological and Physical Impacts

Pacific halibut, salmonids, king and Tanner crabs are often referred to as the "traditional" prohibited species because of preexisting state restrictions on taking these species outside of bona fide fisheries for them. In addition, the traditional fisheries off Alaska have largely involved these species. The Council clearly indicates in the FMP its intent to protect these traditional fisheries while fostering the growth of the domestic groundfish fishery. Hence, there is a general common understanding of what species are prohibited and must not be retained if caught while fishing for groundfish.

Neither alternative would change this common understanding of prohibited species. The expected biological and physical impacts of implementing either alternative, therefore would be nil. No substantive change is expected in the behavior of the groundfish fishery under either alternative. Therefore, the amount and kind of fishing mortality imposed on groundfish and non-groundfish species will likely remain unchanged. Likewise, no significant change in the perturbations on the physical environment from fishing activity is expected under either alternative.

To the extent that enforcement of prohibited species restrictions is enhanced under Alternative 2, however, domestic groundfish fishermen may improve their ability to avoid catches of prohibited species. As such, Alternative 2 may provide for a marginal decrease in the mortality rate of prohibited species. In addition, there may be an associated decreased perturbation of the physical environment important to prohibited species due to decreased activity of fishing gear in areas of prohibited species abundance. The extent to which these improvements in the environment of prohibited species may occur is

speculative at best and impossible to measure against the normal variability of factors affecting marine life in the epibenthos and water column.

4.4 Socioeconomic Impacts

Because Alternative 2, as compared to the status quo, would not significantly affect the common understanding of prohibited species, no significant change in the behavior of groundfish fishermen is expected under Alternative 2. Hence, this alternative would not significantly affect the amount of groundfish harvested, the location timing of the fishery, nor the choice of fishing gear used. Instead, the intended and expected effect is an improvement in the ability to enforce the Council's existing and basic policy on prohibited species. Any economic impacts on the groundfish fishery from implementation of Alternative 2, therefore, would stem from an increased probability of imposing penalties for violating prohibited species regulations.

Assuming that penalties for violating prohibited species regulations has the effect of increasing conformance within the groundfish fishery, economic benefits under Alternative 2 would accrue to the legitimate users of the prohibited species, ie. the salmon, crab and halibut fisheries, since more of these species would remain unmolested by the groundfish fishery. Whether implementation of Alternative 2 would lead to any real decreases in catches in the salmon, crab and halibut fisheries is debatable and would depend on a substantial decrease in the actual number of prohibited species intercepted by the groundfish fishery. Calculating these benefits would require information on the number, size and species of prohibited species that would not be intercepted due to the threat of punitive legal action under Alternative 2 and the assumption that those species not intercepted would ultimately be caught by legal fisheries. Such information is not available.

Another potential benefit from implementing Alternative 2 is the increased potential of successfully prosecuting groundfish fishermen who violate prohibited species regulations. This benefit cannot be characterized in monetary terms unless the information described above is available and the attendant assumptions are correct. Otherwise, this benefit may be viewed more as a cost to society in terms of increased litigation and a cost to fishermen violators who would have otherwise (under the status quo) been treated with impunity.

In summary, marginal economic benefits of Alternative 2 in terms of decreased interceptions of prohibited species by the groundfish fishery are speculative at best in qualitative terms and cannot be quantitatively estimated. The principle benefit of Alternative 2, however, is the improved ability to enforce the prohibited species regulations against all vessels fishing for groundfish in the EEZ off Alaska. If it is assumed that this improved enforcement capability will result in increased conformance within the groundfish fleet, then the added administrative costs of prosecuting prohibited species violations probably will be outweighed (in qualitative terms) by the the assumed benefit of increased avoidance of prohibited species by the groundfish fishery.

4.5 FMP Amendment Language

4.5.1 Alternative 1:

Text of the FMP regarding prohibited species would remain unchanged at sections 14.2 B, 14.4.2 A-E, and 14.5.2 A-I. Also, Annex V to the FMP would remain unchanged.

4.5.2 Alternative 2:

4.5.2.1

Text in the BSA groundfish FMP beginning after the first paragraph of section 14.2.B would be revised to read as follows:

> "Categories of species involved:
>
> Four categories of species or species groups are likely to be taken by the groundfish fishery. The optimum yield concept is applied to all except the 'prohibited species' category. These categories are tabulated in Annex V and are described as follows:
>
> 1. Prohibited Species -- those species and species groups the catching of which must be avoided while fishing for groundfish and which must be immediately returned to the sea with a minimum of injury when caught and brought aboard, except when their retention is authorized by other applicable law."

4.5.2.2

Other text in the BSA groundfish FMP would be revised to read as follows at the indicated sections:

> "14.4.2.A General Pacific halibut, salmonids, Tanner crab, and king crab are prohibited species when fishing for groundfish and must be treated in accordance with section 14.2.B.1. Groundfish species or species groups under this FMP for which the TAC has been achieved shall be treated in the same manner as prohibited species.
>
> 14.4.2.B Objective. The objective of this section is to provide an environment which supports domestic harvesting of groundfish with an awareness of principles and techniques for keeping incidental catches of Pacific halibut, salmon, Tanner crab, and king crab to a minimum.
>
> 14.5.2.A General. The prohibited species and species groups listed in Annex V must be treated in accordance with section 14.2.B.1. Groundfish species or species groups under this FMP for which the TAC has been achieved shall be treated in the same manner as prohibited species."

4.5.2.3

Annex V in the BSA groundfish FMP would be changed by adding, in the column headed "Prohibited Species," the subheadings "U.S. Vessels" and "Foreign Vessels." The species listed under the "U.S. Vessels" subheading would

include "Salmonids, Pacific halibut, King crab" and "Tanner crab." The species listed under the "Foreign Vessel" subheading would be the same as those currently listed. In addition, footnote 1 in Annex V would be revised to read as follows: "Must be treated in accordance with Section 14.2.B.1."

4.6 Regulatory Language

4.6.1 Alternative 1: No change would be made to sections pertaining to prohibited species in 50 CFR Parts 611 and 675.

4.6.2 Alternative 2:

4.6.2.1

Text in the indicated sections of 50 CFR 611 and 675 would be revised to read as follows:

In Section 611.93 (b)(1)(ii)(A), Text would be revised to read as follows:

> "The term 'prohibited species' means for purposes of this section: shrimps (Pandalidae); scallops (Pactinidae); snails (Gastropoda); Pacific herring (Clupea harengus pallasi); salmonids (Salmonidae); Pacific halibut (Hippolglossus stenolepis); king crab (Paralithodes spp.); Tanner crab (Chionoecetes opilio, C. bairdi); Dungeness crab (Cancer magister); corals (Coelenterata); surf clam (Spisula solidissima); horsehair crab (Erimacrus isenbeckii); and lyre crab (Hyas lyratus spp.). Except to the extent that their harvest is authorized under other applicable law, the catch or receipt of these species must be minimized and, if caught or received, they must be returned to the sea immediately in accordance with §611.11 of this Part. Records must be maintained as required by this §611.93 and §611.9 and 611.90 (e)(2) of this Part."

4.6.2.2

In Section 611.93, Table 1, the column heading "Unallocated Species" would be changed to "Prohibited Species."

4.6.2.3

In Section 675.3, paragraph (a) would be revised to remove references to Federal regulations for Tanner crab and to make other minor refinements.

4.6.2.4

In Section 675.20(c)(1), the prohibited species definition would read as follows:

> "Prohibited species, for the purpose of this Part, means any of the species of salmon, Pacific halibut, king crab, and Tanner crab (listed as prohibited species in Table 1 of this Part) caught by a vessel regulated under this Part while fishing for groundfish in the Bering Sea and Aleutian Islands management area, unless retention is authorized by other applicable law, including the regulations of the International Pacific Halibut Commission."

4.6.2.5

In Table 1, Section 675.20, the column heading "Unallocated species" would be changed to "Prohibited species" and the species listed in this column would limited to salmonids, Pacific halibut, king crab, and Tanner crab. In addition, footnote 1 would be changed to read: "Must be treated in accordance with paragraphs (c)(2), and (c)(3) of this Section 675.20."

5.0 IMPROVE CATCH RECORDING REQUIREMENTS

5.1 Description of and Need for the Action

Current Federal regulations do not provide adequate authority to collect information from DAP fishermen that is necessary to account for all groundfish removals in the commercial fishery. They do not provide authority to verify at-sea the amounts of groundfish harvested and retained by U.S. catcher/processor and mothership/processor vessels. Nor do they provide adequate authority to collect information on amounts of groundfish discarded at sea or levels of effort required to catch groundfish. This information is necessary for analysis by NMFS scientists to account for total removals of groundfish by DAP fishermen and the work required to achieve those removals. These data are necessary to determine the condition of groundfish stocks. Verification of catches from U.S. catcher/processor and mothership/processor vessels is becoming especially necessary in view of the large amounts of groundfish being caught and processed by these vessels now that U.S. fisheries are replacing the once dominant foreign fleet.

Reporting requirements of foreign vessels, which dominated the groundfish fishery for the past two decades, have been in place since 1977. In recent years, the DAP fishery has emerged and the groundfish catch by U.S. vessels has overtaken the foreign fishery for the first time in 1986. The groundfish catch by U.S. fishermen has grown from about 8,600 metric tons in 1979 to over 1.4 million metric tons in 1986. Although large domestic offshore trawlers fishing in joint ventures with foreign processors are responsible for the majority of this increase, new U.S. catcher/processor and mothership/processor vessels are contributing to a rapidly growing wholly U.S. catching and processing (DAP) industry.

Ability to verify the amounts of groundfish being caught by catcher/processor and mothership/processor vessels at-sea is inadequate, which reduce the effectiveness of Federal management and enforcement of the groundfish fisheries. For example, significant amounts of groundfish may be on board a vessel in processed form, which may be misspecified in currently required weekly catch reports. Or, amounts of groundfish may be on board a vessel, which are grossly in excess of amounts reported. New U.S. business ventures are being founded that result in transfer of processed fish to foreign vessels or to U.S. cargo vessels for transhipment to U.S. ports or other countries. No means are in place to verify amounts of fish caught or amounts of fish products transferred.

The National Marine Fisheries Service proposes new record keeping requirements that that will allow for better at-sea verification of the groundfish being caught, the amount of effort required to catch groundfish, amounts of fish received by processing vessels, and fish products transferred, both in terms of species and tonnages. The record keeping requirements involve the following types of logbooks: Fishing Logbook and a Transfer Logbook.

The Fishing Logbook will include four sections:

(a) Effort Log
(b) Discard Log
(c) Daily Cumulative Product Log

The Fishing Logbook must be maintained on a trip-by-trip basis aboard DAP vessels while fishing in the EEZ off Alaska. The daily and cumulative amounts of product for each species and product type must be maintained to the nearest hundredth of a metric ton (0.01 mt = about 20 pounds) for each trip. The quantity of each fish product that is offloaded must be recorded by species , resulting in the cumulative net balance of cargo aboard the vessel. The respective purposes of the Effort Log and Discard Log in the Fishing Logbook are to provide scientists information on catches per units of effort, which is used to estimate the condition of the resource, and more complete information on total groundfish removals. The purpose of the Cumulative Product Log is to allow a federal fisheries officer to compare the cumulative amounts of fish that have been logged with the amounts of processed product that a vessel has on board.

The Transfer Log will require the date, location, quantities offloaded, name of transport vessel, and port of destination. The purpose of the Daily Transfer Log is to allow a federal fisheries officer to compare the cumulative amounts of processed fish that have been logged and transferred with the amounts of processed product that a vessel has on board.

Information obtained from effort and discard logs will be integrated into a database for fisheries analyses. A program will be established that will require the submission of logbooks on a periodic basis specified by regulations to the National Marine Fishery Service.

5.2 Alternatives Including the Action

Three alternatives are considered, including doing nothing, i.e., the status quo. Alternatives 2 and 3 are directed at vessels that are 5 net tons or larger.

5.2.1 Alternative 1: Do nothing - status quo. Do not require the Fishing Logbook and the Transfer Logbook.

5.2.2 Alternative 2: Apply new catch recording requirements on DAP vessels. Catch recording will require a Fishing Logbook and a Transfer Logbook as follows:

> Catcher boats - maintain the Effort Log part of the Fishing Logbook; maintain the Discard Log part of the Fishing Logbook, unless delivering to a catcher/processor or mothership/ processor vessel.
>
> Catcher/processors & mothership processors - maintain the Fishing Logbook and Transfer Logbook.

5.2.3 Alternative 3: Apply new catch recording requirements to catcher/ processor and mothership/processor vessels. Catch recording will require a Fishing Logbook and a Transfer Logbook.

> Catcher/processors & mothership processors - maintain the Fishing Logbook and Transfer Logbook. The Fishing Logbook will require an Effort Log, a Discard Log, and a Daily Accumulative Product Log.

5.3 Biological and Physical Impacts

5.3.1 Alternative 1: Do nothing - status quo.

This alternative is the least favorable of the alternatives, because it would do the least for accounting for amounts of groundfish that are removed from the ecosystem. Improved accounting of amounts of groundfish that are removed from the ecosystem is necessary to lessen the risk of overharvesting the groundfish stocks. Under Alternative 1, environmental impacts that might occur as a result of overharvesting groundfish stocks are categorized as changes in predator-prey relations among invertebrates and vertebrates, including marine mammals and birds, physical changes as a direct result of on-bottom fishing practices, and nutrient changes due to processing and dumping of fish wastes.

Harvests of groundfish remove predator species that would otherwise have consumed other marine life. All of the groundfish species are predators. Sablefish is a good example of a groundfish predator. Sablefish consume small pollock, herring, and capelin during the day and deep sea fish, including grenadiers (family Macrouridae) and viperfish (family Chauliodontidae), and bottom dwelling invertebrates during night. Other fish in their diet include Pacific cod, sculpins, small flounders, rockfish, and small sablefish. Whatever amounts of these prey species would have been consumed by predator sablefish had they not been caught, will now be available to other predators.

Harvesting less sablefish results in more sablefish fish being left in the ecosystem to consume more prey. More sablefish would also provide more biomass for other predators (including marine mammals and birds) in the system. Less fish offal (fish waste material) would be discharged into the system by floating and/or shorebased processors. Less nutrients from fish waste material would be available for animal life that otherwise would have consumed it. Harvesting more sablefish would result in less fish being left in the ecosystem; thus, fewer prey species would be consumed by sablefish, and less sablefish biomass would be available for other predators. More nutrients from fish waste material would be discharged by floating and/or shorebased processors. More nutrients from fish waste material would be available for animal life that feeds on such material.

Other naturally occurring factors, however, such as (1) subtle physical changes in ocean chemistry, temperature, and weather conditions, and (2) biological changes in animal populations as a result of physical changes, disease, and intra- and inter-specific competition, could well mask the direct effects of any management practice.

5.3.2 Alternative 2: Apply new catch recording requirements on DAP vessels. Catch recording will require a Fishing Logbook and a Transfer Logbook.

This alternative is superior to the others considered, because it would provide data needed for determining the status of stocks through collection of information on effort and discards. It would promote enforcement of catch reporting through collection of information on amounts of groundfish that have been offloaded, thereby promoting credible information on total fish removals.

Therefore, Alternative 2 would best prevent overharvesting fish stocks and thus reduce the risk of overfishing.

5.3.3 Alternative 3: Apply new catch recording requirements to catcher/processor and mothership/processor vessels only. Catch recording will require a Fishing Logbook and a Transfer Logbook.

This alternative would provide lesser amounts of data needed for determining the status of stocks, because it would only apply to catcher/processor and mothership/processor vessels and not to vessels that just catch groundfish. To the extent that fisheries may be mismanaged as a result of insufficient data with possible overharvesting as a result, Alternative 3 is inferior to Alternative 2.

5.4 Socioeconomic Impacts

Under Alternative 1 (status quo), no changes in reporting costs incurred by fishermen or floating processors would occur. No additional administrative, enforcement, or information costs would occur. However, the need for credible information on total groundfish removals would still exist. Other means, such as increased agency vessel research time would be sought, but in view of recent budget constraints, not obtained.

Under Alternative 2, costs that would be incurred by fishermen are those that are associated with completing the Fishing Logbook and Transfer Logbook. Again, this requirement is only for vessels that are 5 net tons or larger. Based on the NMFS database on groundfish permits issued for 1987, there are 676 catcher vessels and 151 catcher/processor vessels, which is a total of 827 vessels that would complete the effort part of the Fishing Log. There is one mothership/processor vessel, which, with the catcher vessels and catcher/processor vessels, results in 828 vessels that would complete the discard log part of the Fishing Log; 152 catcher/processor and mothership/processor vessels would complete the Transfer Logbook if each were to transfer processed product to a cargo vessels.

Costs to respondents (vessels operators or owners) of complying with this information collection requirement are those resulting from having to fill out the logbooks. These costs are derived by estimating the total fleet vessel-days during a year for which records might be required, mulitplying vessel-days by the number of minutes each respondent might spend in filling out a log, and then dividing by 60 minutes to obtain the total number of hours per year that might be spent by DAP fishermen as a result of maintaining these logbooks. NMFS estimates that an average of about 15 minutes and 30 minutes per day would be required for catcher vessels and catcher/processor vessels, respectively, to complete the Effort Log. About 10 minutes per day would be required to complete the Discard Log. About 30 minutes per day would be required to complete the Product Log. About 10 minutes per day would be required to complete the Transfer Logbook. Costs across the fleet to comply with these new requirements are estimated as follows:

Effort log - If catcher vessels spend about 20 days each month for three months, then 676 catcher vessels were to spend 40,560 vessel-days. Completing effort logs, at 15 minutes per log per day would require 10,140 hours per year. If catcher/processor vessels spend 20 days each for six months, then

151 catcher/processor vessels will spend 18,120 vessels-days per year. Completing effort logs by this class of vessels at 30 minutes per log would require 9,060 hours per year. Thus, the total costs on DAP vessels to complete the effort log is about 19,200 hours per year.

Discard log - If 152 vessels that process their catch were to spend 20 days each for six months, then these vessels would spend 18,240 vessel-days per year. Completing discard logs by this class of vessels at 10 minutes per log per day would require 1,824 hours per year. Thus, the total costs on DAP vessels to complete the discard log is about 3,040 hours per year.

Product log - If 152 vessels that process catch were to complete the product log per 20 days for each of six months, then these vessels would also spend 18,240 vessels-days per year.

Transfer Logbook - If 152 vessels that process catch were to transfer that catch at the rate of once every two weeks (bi-monthly) for six months, then these vessels would make a total of 1,824 transfers. Completing transfer logs at 10 minutes per log would require 304 hours.

The amount of time to complete these logbooks is not necessarily an added cost to fishermen. The respondents likely keep these records anyway. Alternative 2 may actually provide a benefit to fishermen by supplying the logbooks that they would use.

Under Alternative 2, certain costs would be incurred by resource agencies in administering and enforcing the data collection program. NMFS estimates that the amount of time to board and inspect a catcher vessel and/or catcher/processor and mothership/processor vessels, including their logbooks is about one hour and two hours, respectively. If 5% of the 676 vessels were boarded and inspected, about 34 hours would be required to inspect 34 vessels. If 50% of the 152 catcher/processor and mothership/processor vessels were boarded and inspected, then about 152 hours would also be required to inspect 74 vessels. Costs are those included in utilizing support platforms, e.g. U.S. Coast Guard vessels. No additional costs, however, are borne by agencies. Enforcement personnel are already hired to support the conservation and management roles of the National Marine Fisheries Service. U.S. Coast Guard vessels are in place to carry out search-and-rescue missions off Alaska.

Depending on the type of program instituted for obtaining and analyzing logbook information, certain costs would also be incurred by the National Marine Fisheries Service. These costs would be those associated with those analyses. However, such programs would likely be less expensive than establishing a program to gather and analyze data on the status of groundfish stocks. The relative value of data from commercial fisheries compared to that obtained from NMFS programs would depend on the types of programs that were established.

Under Alternative 3, costs that would be incurred by catcher/processor and mothership/processor vessels are those that are associated with completing the Fishing Logbook and Transfer Logbook. Based on the NMFS database on groundfish permits issued for 1987, there are 151 catcher/processor vessels and one mothership/processor vessel, or 152 vessels that could complete the logbooks. Costs to respondents of complying with this information collection

requirement are summarized above under alternative 2. Costs for the catcher/processor and mothership/processor fleet to comply with these new requirements are estimated as follows:

Effort log - If catcher/processor vessels were to spend 20 days each for six months, then 151 catcher/processor vessels would spend 18,120 vessels-days per year. Completing effort logs by this class of vessels at 30 minutes per log would require 9,060 hours per year.

Discard and product logs and Transfer logbook - Costs are the same as under Alternative 2.

Under Alternative 3, certain costs would be incurred by resource agencies in administering and enforcing the data collection program. NMFS estimates that the amount of time to board and inspect catcher/processor and mothership/processor vessels, including their logbooks is about two hours. If 50% of the 152 catcher/processor and mothership/processor vessels were boarded and inspected, then about 152 hours would be required to inspect 74 vessels. Costs are those included in utilizing support platforms, e.g. U.S. Coast Guard vessels. No additional costs, however, are borne by agencies. Enforcement personnel are already hired to support the conservation and management roles of the National Marine Fisheries Service. U.S. Coast Guard vessels are in place to carry out search-and-rescue missions off Alaska. As discussed for Alternative 2, certain costs associated with analyses of data from logbooks also be incurred by the National Marine Fisheries Service, and the relative value of data from commercial fisheries compared to that obtained from NMFS programs would depend on the types of programs that were established.

6.0 REVISE DEFINITION OF ACCEPTABLE BIOLOGICAL CATCH

6.1 Description of and Need for the Action

Recent efforts by the Scientific and Statistical Committee have led to a review of terminology and development of new working definitions. Some of this work has already been incorporated in FMPs. A revised definition of ABC has been proposed by the committee to reflect current wording recently adopted by the Pacific Fishery Management Council for use in its groundfish FMP for purposes of conformity. Adoption of the revised definition would standardize this term for groundfish fisheries management along the entire west coast of the United States.

6.2 Alternatives including the Action

6.2.1 Alternative 1: Do nothing - Status Quo.

Adoption of this Alternative 1 would leave the following definition for acceptable biological catch unchanged:

Acceptable biological catch (ABC) is a seasonably determined catch that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years for species with fluctuating recruitments. The Council can set the ABCs for individual species anywhere between zero and the maximum possible removal based on the best scientific information presented by the Plan Team and/or Scientific and Statistical Committee. The ABC may be modified to incorporate safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the maximum sustainable yield exploitation rate multiplied by the size of the biomass for the relevant time period. The ABC is defined as zero when the stock is at or below its threshold.

6.2.2 Alternative 2: Revise the definition for acceptable biological catch to bring it into conformity with the definition used by the Scientific and Statistical Committee and the Pacific Fishery Management Council.

Approval of this alternative would replace the existing definition of ABC with the following:

Acceptable biological catch (ABC) is a seasonally determined catch or range of catches that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years for species with fluctuating recruitments. Given suitable biological justification by the Plan Team and/or Scientific and Statistical Committee, the ABC may be set anywhere between zero and the current biomass less the threshold value. The ABC may be modified to incorporate safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the maximum sustainable yield exploitation rate multiplied by the size of the biomass for the relevant time period. The ABC is defined as zero when the stock is at or below its threshold.

Approval of Alternative 2 would bring the working definition of ABC into conformity with other groundfish FMPs. Since these revision is only descriptive, no implementing regulations or accompanying regulatory analysis is necessary.

6.3 Environmental Impacts of the Amendment Proposals and their Alternatives

6.3.1 Alternative 1: Do nothing - Status Quo.

Under the status quo, confusion within management and the fishing industry with regard to the ABC definition would continue.

6.3.2 Alternative 2: Revise the definition for acceptable biological catch (ABC) to bring it into conformity with the definition used by the Scientific and Statistical Committee and the Pacific Fishery Management Council.

This amendment addresses an administrative revision and will have no effect on the environment. Both the Gulf of Alaska FMP and the Bering Sea/Aleutian Islands Groundfish FMP define a term ABC for use as a biological reference point when making management decisions. Recently the North Pacific Council's Scientific and Statistical Committee has revised the definition of ABC for purposes of clarification. This amendment revises the existing definition to conform with the current interpretation of ABC and with definitions in other groundfish FMPs.

Although the proposed revision to the ABC definition will not cause direct impact on the environment it will require, in order to determine upper and lower bounds to ABC, scientists to identify a population size which represents the undefined term "threshold". This requirement is likely to consume considerable resources as the scientific staff develops a theoretical model or empirical data to identify threshold population levels for the managed groundfish stocks.

6.4 Socioeconomic Impacts

Alternative 2 is an administrative amendment and will have little socioeconomic impact since the amendment only addresses terminology. It is, however, used as a biological reference point when setting quotas so it could have some socioeconomic effects. If the quota were set lower as a result of ABC, then the total groundfish harvest and associated economic value in that year will also be reduced. It should be realized that such a reduction was based on biological rationale and that such a quota reduction in the current year could lead to increased or more sustainable quotas in future years. Any positive benefits of revising the definition will be shared by all who participate in the groundfish fishery. Neither alternative will effect the quality or the price of groundfish products to the consumer.

7.0 INCREASE THE UPPER LIMIT OF THE OPTIMUM YIELD (OY) RANGE

7.1 Description of and the Need for the Action:

The objective of this proposal is to provide for greater management flexibility necessary to more fully utilize groundfish resources in amounts consistent with increases in stock surplus production. Amendment 1 to the FMP established a single optimum yield (OY) for the groundfish complex in the Bering Sea/Aleutian Islands equal to a range of 1.4 - 2.0 million mt, a range defined as equal to 85% of the sum of single species MSY's. The complex has 10 commercial species or species groups of groundfish. Annually the OY is set equal to the sum of the Total Allowable Catch (TAC) for each species, which the Council determines for each species using the best available information concerning the acceptable biological catch or equilibrium yield (EY) for each species and socioeconomic information. The sum of the TACs cannot exceed 2.0 million mt. or be less than 1.4 million mt without amending the definition of OY in the FMP.

Maximum sustainable yield for the groundfish complex is estimated to be 1.7-2.4 million mt. This amount is equal to the sum of the MSYs for the major individual species groups. Ecosystem models, however, indicate that the MSY may exceed 2.4 million mt. These models simulate the dynamics of the principal components of the Bering Sea/Aleutian Islands ecosystem and indicate that the minimum exploitable groundfish biomass may be at least 9.5 million mt. A harvest of 2.4 million mt from an exploitable population of 9.5 million mt represents a 25 percent exploitation rate.

When Amendment 1 to the Bering Sea/Aleutian Islands groundfish FMP was developed and implemented, the sum of EY/ABCs was below the upper end of the OY range. Recruitment of several strong year classes of groundfish has, however, enhanced the condition of several stocks, which have thus increased in biomass. As a result EYs have increased steadily from a sum of 1.5 million mt in 1977 to a peak of 2.25 million mt in 1984. The current upper limit on the OY has constrained the Council during some years from setting a total sum of TAC at a level that would allow for fuller utilization of surplus production. This constraint has occurred during four of the last five years - 1983, 1984, 1985 and 1987 when EY's have exceeded 2.0 million mt (Table 1). Although the sum of EYs has declined slightly in recent years biological indicators suggest that the sum of EYs is expected to continue to exceed 2.0 million mt in future years as a result of conservation and management measures now made possible under the Magnuson Act. An increase in the upper end of the OY range would provide the Council and the Secretary of Commerce broader latitude to fully utilize the groundfish resources.

Table 1. Estimated MSY and EY (1,000s mt) for the groundfish complex in the Bering Sea/Aleutian Islands Area.

Year	MSY*	EY	OY
1977	1,627-2,251	1,486	1,368
1978	1,627-2,251	1,485	1,486
1979	1,627-2,251	1,571	1,486
1980	1,627-2,251	1,791	1,571
1981	1,630-2,307	1,910	1,579
1982	1,677-2,351	1,928	1,579
1983	1,676-2,223	2,127	1,624
1984	2,086-2,212	2,248	2,000
1985	2,095-2,220	2,188	2,000
1986	2,037-2,143	1,912	2,000
1987	2,108-2,163	2,199	2,000

* Note: Total annual MSY fluctuates within the FMP range of 1.7-2.4 million mt to reflect new information obtained about the conditions of various groundfish species.

7.2 Alternative Management Measures

7.2.1 Alternative 1: Do nothing - status quo. Maintain the upper end of the OY range at its current level of 2.0 million mt.

This alternative maintains the conservative management system, limiting OY to 85% of estimated MSY's, that was implemented by Amendment 1 to the FMP. It provides the Council and the Secretary with limited flexibility to make groundfish available for harvest when the status of stocks justify a larger harvest.

7.2.2 Alternative 2: Increase the upper end of the OY range to 2.4 million mt.

This alternative would provide the Council and the Secretary broader flexibility to make groundfish available for harvest during years when the biological status of stocks justify a harvest larger than 2.0 million mt. The upper estimate of MSY's equals 2.4 million mt, forming the justification for an upper OY value of 2.4 million mt.

7.2.3 Alternative 3: Annually set the upper end of the OY range equal to annual estimates of EY/ABC.

This alternative would provide a more flexible definition of optimum yield that would be responsive to actual conditions of changing stock sizes. The status quo limits OY to 85% of the estimated range of MSY, and Alternative 2 limits the upper value of OY to 100% of the high estimate of MSY; however, estimates of MSY are long-term average values and often are not representative of short-term (5-10 year) variations from long-term averages due to the occurrence of exceptionally strong or weak year-classes. Equating the upper

end of the OY range to the sum of annually calculated EY/ABC for the groundfish complex would not only remove artificial biological constraints to annual decisions on OY, but would provide a conservation-based upper limit to OY and subsequent allocation decisions.

The present practice of simply summing groundfish MSYs has no real bearing on allowable harvest during any particular year. Annual harvests are more realistically constrained by annual estimates of stock condition and harvest levels that are established to move stock sizes toward those that will achieve long-term MSY. On an annual basis many fisheries cannot be harvested at MSY because their stock sizes are not large enough to support such harvests and require rebuilding. For example, Greenland turbot stocks are currently reduced so that ABC for 1987 is estimated at 15,000 mt whereas long-term MSY is estimated at 38,500 mt per year. At the other extreme, as in recent years for Pacific cod, stock size may support yields far in excess of MSY for a number of years. Long-term MSY for Pacific cod is estimated at 59,000 mt per year, but EY for 1987 is estimated at 400,000 mt.

7.3 Environmental Impacts of the Proposal and Alternatives

Environmental impacts on the quality of the human environment are categorized as biological, physical, and socioeconomic. Biological and physical impacts are discussed as follows:

7.3.1 Alternative 1: Do nothing - status quo. Maintain OY Range at 1.4 to 2.0 million mt.

Impacts caused by maintaining the upper end of the OY range at 2.0 million mt can be categorized as direct stress to marine mammal and bird populations, changes in predator/prey relations between vertebrates and invertebrates, and changes in status of marine mammals and birds, physical changes as a direct result of on-bottom fishing practices, and nutrient changes due to processing and dumping of fish wastes. These impacts are discussed as follows:

Stress to Groundfish Populations

Assuming results of population models or biological surveys show the total annual harvest should be set at no more than 2.0 million mt, then the same types of impacts on groundfish should occur. These impacts, however, would likely be reduced proportionately. Such a reduction in impacts would be expected, because calculations of the annual OY would already have factored in the biological requirements of groundfish populations. Unpredictable, however, are the following variables in the ecosystem: temperature, currents, light, availability of primary and secondary nutrients, and subtle changes in predator/prey relationships. These variables make accurate predictions of stock conditions on the basis of modeling difficult. If conditions of stocks improved in any one year to justify a harvest of more than 2.0 million mt, then certain amounts of fish will be left on the grounds. This unharvested surplus could be consumed by animals, which would introduce some instability, since the ecosystem would respond by increasing its production until the ecosystem came back into equilibrium.

Stress to Marine Mammals and Birds

As with groundfish populations, the same types of impacts on groundfish should occur. If conditions of stocks improved in any one year to justify a harvest of more than 2.0 million mt, then certain amounts of fish will be left on the grounds. This unharvested surplus could be consumed by marine mammals and birds, introducing some instability until the system responded by increasing its production.

Food Competition with Marine Mammals and Birds

Under this alternative, fishermen would be limited to no more than 2.0 million mt. During some years when the condition of stocks would allow a harvest of more than the upper limit of 2.0 million mt, a surplus of groundfish biomass would be available in the system. Competition between fishermen and marine mammals and birds would be lessened during such years.

Nutrient Changes Due to Processing and Dumping Fish Wastes

Under this alternative, 2.0 million mt of groundfish could be caught. Assuming a recovery rate of 30 percent, this harvest could result in 1.4 million mt of fish wastes, or 0.28 million fewer metric tons, being discarded at sea compared to 1.68 million mt of wastes that could be discarded in association with a 2.4 million mt harvest. Processes of change in the ocean are dynamic given the biological and physical interactions that occur. An assessment of the true effects caused as a result of this decrease are not quantifiable given present technology.

7.3.2 Alternative 2: Increase the upper end of the OY range to 2.4 million mt.

Impacts caused by a change in the OY range are categorized as stress to groundfish populations, stress to marine mammals, stress to marine birds, physical changes as a direct result of on-bottom fishing practices, and nutrient changes due to processing and dumping of fish wastes. These impacts are discussed as follows:

Stress To Groundfish Populations

The EY for the groundfish complex is usually calculated on a species-by-species basis and summed for the groundfish complex. These calculations account for amounts consumed by other groundfish. The EY is the "surplus production" which can be harvested without altering the level of biomass present from one year to another. The harvest of surplus production should not adversely impact the wellbeing of groundfish populations since the fish harvested are those amounts in excess of equilibrium which if unharvested would lead to higher levels of abundance. The species-by-species estimates of EY will continue to form the biological limit for setting of TAC's for the groundfish complex. When OY is set equal to the sum of the individual species EY's the existing multispecies trawl-dominated fishery cannot harvest the entire amount without exceeding the EY of some species in the complex. Consequently, total catches would generally never achieve the combined EY's for the groundfish complex. Thus, the present management system will provide

for the maintenance of a larger resource biomass than otherwise would be the case and a "biological cushion" will exist to compensate for variations and errors in EY determinations.

If the OY range is changed to 1.4-2.4 million mt, the Council would have greater management flexibility to more fully utilize the resource when stock conditions warrant it. The Council could still consider such factors as biological, environmental, and socioeconomic in setting TAC's below, at, or above EY's within the OY range.

Stress to Marine Mammals

Pinniped species found in the Bering Sea/Aleutians are all protected by the Marine Mammal Protection Act of 1972 (MMPA). Permits for incidental taking of these species in groundfish fisheries may be issued under carefully limited circumstances. Because groundfish trawl operations generally involve conflict with pinnipeds, domestic and foreign fishermen proposing to engage in such operations must obtain Certificates of Inclusion under a general permit for the taking of marine mammals incidental to commercial trawling operations. Under the general permit only small numbers of northern sea lions (Eumetopias jubatus), northern fur seals (Callorhinus ursinus), harbor seals (Phoca vitulina), and small cetacean may be killed or seriously injured annually by domestic trawl operations off Alaska.

Numbers of marine mammals taken in the eastern Bering Sea during 1984 were well within the limits provided by the Certificates of Inclusion. A total of 73 and 96 marine mammals were reportedly taken during the joint venture and foreign fisheries, respectively. U.S. fishermen now have several years of experience in the Bering Sea groundfish fishery and are mostly familiar with the protection afforded marine mammals. Because marine mammals are usally highly visible during daytime, fishermen are able to avoid them while trawling, thus minimizing confrontations. Observations by the National Marine Fisheries Service suggest, however, that trawling conducted during periods of darkness is likely to increase encounters with marine mammals. Potential methods to reduce such encounters include scheduling fishing operations to reduce or eliminate the need to trawl during periods of darkness. Fishermen should be encouraged continually to consider and adopt such measures to mitigate the effect of their operations on sea lions in order to enjoy fishing activities without additional measures that could be imposed on them under the MMPA.

Eleven species of marine mammals (Table 2) could be affected by commercial fishing for eight fish species or fish groups in the eastern Bering Sea (Proceedings of the Workshop on Biological Interactions Among Marine Mammals and Commercial Fisheries in the Southeastern Bering Sea, Alaska Sea Grant, University of Alaska 1984). Ecosystem models have been used to examine these interaction that occurs between marine mammals and commercial fishing operations, primarily from the standpoint of the competition for food. The results from these models suggest that marine mammals are not effected by current or proposed levels of OY and increasing the OY or TAC to 2.4 million mt should not deprive marine mammal populations of food.

Table 2. Marine mammals and commercial fish species in the Eastern Bering Sea that interact as a result of commercial fishing operations.

Marine mammals	Fish species
Northern fur seal (Callorhinus ursinus)	Pollock
Steller sea lion (Eumetopias jubatus)	Pacific cod
North Pacific walrus (Odobenus rosmarus)	Yellowfin sole
Harbor seal (Phoca vitulina)	Turbot
Spotted seal (Phoca largha)	Other flounders
Ribbon seal (Phoca fasciata)	Halibut
Bearded seal (Erignathus barbatus)	Rockfish
Beluga whale (Delphinapterus leucas)	Sablefish
Dall porpoise (Phocoenoides dalli)	
Harbor porpoise (Phocoena phocoena)	
Gray whale (Eschrichtius robustus)	

While most species of marine mammals are described to be at optimal sustainable population (OSP), evidence suggests that three species (northern fur seal, Steller's sea lion, and harbor seal) appear to have declined in abundance from levels recorded in earlier periods. Interpretation of how these declines relate to OSP is made difficult by the sparcity of data in earlier years.

Types of interactions between marine mammals and commercial fishing operations are divided into four categories as follows:

(a) Direct effects on marine mammals from shooting, harassment, incidental entanglement during fishing operations, and/or entanglement in lost or discarded fishing gear;

(b) Direct effects on fisheries when marine mammals take or damage caught fish, and/or damage fishing gear;

(c) Indirect effects on marine mammals caused by fisheries reducing the quantity or quality of prey species available to marine mammals; and

(d) Indirect effects on fisheries caused when marine mammals reduce the quantity or quality of fish available to fisheries.

Except for entanglement in lost or discarded fishing gear, direct interactions are reasonably well documented and/or are the subject of ongoing or planned assessment. Categories (c) and (9), indirect ecological interactions as a result of changes in predators and prey species, are less well understood. Many of the marine mammals feed on juvenile and adult groundfish and compete with groundfish for some prey species. Harvesting an increased amount of groundfish should not limit marine mammal forage because the reduction of groundfish stocks should lead to an increased production of juveniles of the exploited species and also an increase in the age - classes and species that marine mammals and groundfish both utilize for food. In the case of fur

seals, it has been shown that individual seals have been well fed and that population declines may not be due to food availability. Theoretically, increases in allowable levels of harvest should have a zero net effect on marine mammals; in reality, predator/prey relationships are not well understood and any resulting changes are not possible to measure against natural perturbations in the ecosystem, given the existing technology to measure them.

Interactions are more likely to occur in the following combinations of marine mammals and commercial fisheries:

Northern fur seal -- pollock/cod
Steller sea lion -- pollock/cod
Harbor seal -- yellowfin sole/flounder

The nature of these interactions are summarized as follows:

Northern Fur Seal and the Pollock/Cod Fishery - Fur seals prey primarily upon one and two year old pollock, whereas the fishery preferentially takes the larger size and older ages of pollock. Ecological interactions likely are greatest in the vicinity of the Pribilof Islands during the fur seal pupping/breeding season. The Pribilof Island fur seal population has been declining since the mid-1950s. The harvest of females in the late 50s and early 60s accounts for much of the decline; and, while not proven, entanglement in lost or discarded fishing gear could be a major cause of the continued decline.

Obtaining the necessary biological/ecological information to predict the probable numerical and functional relationships between the northern fur seal population, the pollock/cod fishery, and the affected fish stocks would be difficult and perhaps impossible. In such cases, baseline/monitoring programs should be conducted to detect and monitor possible harvest-caused changes in key population or system parameters.

Steller Sea Lion and the Pollock/Cod Fishery - Steller sea lions apparently are caught and killed in lost and discarded fishing gear. Unlike the northern fur seal, the Steller sea lion is present in the eastern Bering Sea year-round. The distribution, origins, trends and diet of Steller sea lions in the Bering Sea are not well documented. What little is known about their diet is from outside the Bering Sea and indicates that all sizes of pollock, 5 cm to 60 cm, are eaten. Some dietary information is from animals caught incidentally in the cod end of trawl nets and may be biased since sea lions are known to be attracted to, and feed in, the vicinity of fishing and processing vessels. Too little is known about entanglement in lost and discarded fishing gear and about the distribution, feeding habits, and food requirements of Steller sea lions in the eastern Bering Sea to do more than speculate about the possible direct and indirect effects of the pollock/cod fishery on the eastern Bering Sea population(s) of Steller sea lions.

Harbor Seal and the Yellowfin Sole Fishery - The harbor seal is a coastal species inhabiting nearshore areas where groundfish fishing effort is minor. Thus, harbor seals probably will not be affected by the yellowfin sole fishery unless there is a substantial expansion of nearshore fisheries in the eastern Bering Sea. The nature and size of inshore domestic fisheries; the movements,

feeding habits, and diet of harbor seals; the existence, location and characteristics of definable harbor seal feeding areas; and the genetic relationship between harbor seal colonies in the eastern Bering Sea and elsewhere are not well documented.

Changes in equilibrium yields and the level of optimum yield are calculated to account for amounts consumed by marine mammals, i.e., fisheries are only allowed on surplus production, which should not directly impact marine mammals. On the other hand, certain conflicts occur between marine mammals and fishermen as a result of both "predators" being on the same grounds, sometimes in direct competition with each other.

Stress to Marine Birds

Harvesting operations during the groundfish fisheries may cause marine birds, including those protected by the Migratory Bird Treaty Act, to avoid areas that they might otherwise frequent. Such displacement of these birds would not appear to be a prohibited taking for purposes of the Migratory Bird Treaty Act, but its long-term effect on them is largely unknown. Birds protected under this act could theoretically be captured in trawl gear in the course of their feeding activities. Any such capture that is intentional or negligently caused by fishermen would be a violation of this Act.

As with marine mammals, many of the marine birds that occur in the Bering Sea/ Aleutians feed on juvenile and adult groundfish and also on prey species consumed by groundfish such as copepods. Increasing the upper limit of the OY range should not effect marine birds adversely. Marine birds consume small fish prior to their recruitment to the fishery or species consumed by commercial fish species. Survival rates of nestlings of some species of marine birds has been shown to be highly correlated with the size of pollock year classes. In years of above average pollock year classes bird survival is good and in years with low numbers of age 0 pollock nestling survival is low. The size of pollock year classes has varied enormously in recent years while the spawning stock has not varied greatly, therefore it is not likely there is a strong spawner-recruit relationship evident for pollock. It is not likely that increased removals of pollock or other groundfish species would significantly adversely effect food resources for marine birds. The potential increased groundfish harvests could actually have a net beneficial effect on marine birds through the increased removal of commercial-sized fish which compete with birds for small fish prey. However, these relationships are not well understood.

Physical changes as a Direct Result Of On-bottom Fishing Practices

Under this alternative an additional 400,000 mt could be harvested. Depending on the species, this harvest could entail certain combinations of trawls (on-bottom and midwater), longlines, pots, and gillnets. Only the bottom trawl has been identified as a gear type that impacts the bottom. It may cause abrasion of the bottom as it is pulled along, killing or injuring any animals and plant life that may have been in its path. Most bottom trawls are also equipped with rollers, or bobbins, that protect the trawl from damage, but which may also kill or injure animals and plant life. The actual severity of such impacts are not known, but are largely believed to be insignificant over the long term, given the capacity of the ecosystem to repair itself.

Nutrient Changes Due to Processing and Dumping Fish Wastes

Under this alternative, 2.4 million mt of groundfish could be caught. Assuming a recovery rate of 30 percent, this harvest could result in 1.68 mt of fish wastes, or 0.28 million additional metric tons, being discarded at sea compared to 1.4 mt of wastes that could be discarded in association with a 2.0 million mt harvest. This additional amount represents a 20 percent increase. Processes of change in the ocean are dynamic given the biological and physical interactions that occur. An assessment of the true effects caused as a result of this increase are not quantifiable given present technology.

7.3.3 Alternative 3: Establish upper limit of the OY range as the sum of the annual EY/ABC estimates.

Effects under this alternative are believed to be similar to those caused by the implementation of Alternative 2. In most years the EY/ABC estimates should sum to levels within the range specified in Alternative 2. However, in some years it is possible that the OY may be greater under this alternative than the current OY limit of 2.0 million mt or the proposed 2.4 million mt, but this would be a result of above average levels of abundance in one or more of the species in the groundfish complex. The ability to harvest the additional surplus production would be beneficial to the groundfish complex as well at to marine mammal and bird populations since it would help to return the above average species to normal equilibrium abundance levels and minimize disruption of species and ecological interactions and predator- prey relationships.

This alternative is believed to be the most conservative and protective of the resource since the upper limit of OY is tied directly to the productivity of the groundfish resource. Under the other options OY could exceed EY/ABC since OY is not specifically linked to EY/ABC and can be established anywhere in the present (1.4-2.0 million mt) or proposed (1.4-2.4 million mt.) ranges. Under this alternative OY can not exceed the biological safe level of harvest, however the OY can still be set at less than maximum levels for socioeconomic considerations.

One major difference in this alternative is the lack of a specified upper limit on OY. How high OY could range is only limited by the condition of the groundfish resource. For the near term EY/ABC for the groundfish resource is expected not to exceed 2.0-2.2 million mt (see Table 1.). However, it is possible that potential yield could increase to higher levels at some future time. Analysis of long term pollock yield suggests that MSY yield from this species may be 2.2 million mt. Since pollock represents approximately 80 % of the total groundfish catch, the anticipated upper limit on OY is believed to be about 2.6 million mt.

7.4 Socioeconomic Impacts

7.4.1 Alternative 1: Status Quo.

Maintaining the upper limit on OY at 2.0 million mt. may result in loss of revenue in years when the potential yield is in excess of 2.0 million mt. Under the current OY limit potential harvests of 248,000, 188,000 and 199,000

could not be taken in 1984, 1985 and 1987 respectively. The reduction of yield to the current upper OY limit resulted in possible revenue losses of $34.4, $29.1 and $30.9 million, based on a current average ex-vessel price of $155./t., in 1984, 1985, and 1987 respectively. The actual losses in revenue could be higher or lower depending on the species that are excluded from harvest by the OY limit.

7.4.2 Alternative 2: Increase the upper limit of the OY range to 2.4 million mt.

The primary socioeconomic impact of increasing the OY range to 2.4 million mt. will be the increased revenues available to fishermen and processors from the additional 400,000 mt of OY which is equal to $62 million at an ex-vessel price of $155/mt. Again, actual revenue is dependant on the species included in the 400,000 mt increase in the OY limit.

An increase in the OY limit could possibly have an adverse effect on fishermen and processors though decreases in prices brought about by an additional 400,000 mt of fish. A 400,000 mt addition to the harvest translates into 120,000 mt of finished product at a 30% recovery rate. At these levels however, it is not likely that the additional harvest would have much impact on price structure since the increase is only a small fraction of the world whitefish supply.

An increase in OY may attract additional vessels into the fishery which might not enter the fishery under the current OY limit. If OY remains at or near the upper limit additional vessels will not have a negative impact on vessels currently fishing. However, when OY decreases to lower levels in the range there is no mechanism for removing the increased fishing effort and the lower amount of fish available will have to be shared among more vessels and as a consequence individual vessel revenues will be reduced due to the presence of additional vessels.

7.4.3 Alternative 3: Modify the upper limit of OY to the sum of annual EY/ABC estimates.

The socioeconomic impacts of this alternative would be similar to those of Alternative 2. However, this alternative would produce greater flexibility which would allow OY to be set at higher levels then the 2.4 million t. limit of Alternative 2. If the groundfish resources rose to a point that harvests in excess of 2.4 million t. could be taken it would be possible to utilize all of the harvestable surplus and prevent the loss of harvest and revenues as caused in recent years by artificial upper limits to OY.

8.0 PROHIBIT POLLOCK ROE-STRIPPING

8.1 Description of and Need for the Action

Walleye pollock currently is processed into a suite of products including roe, fillets, surimi, and headed/gutted forms. Pollock roe is a particularly high value product that, during certain times of the year, can be obtained from females caught in spawning condition. Most operations that yield roe do so while producing other products, but some operations utilize only the roe, particularly during intense fisheries at the height of the spawning season (late January through March). By processing only the roe and subsequently discarding the carcasses, processing vessels can increase their total throughput of fish. Roe-stripping, however, has an estimated recovery rate of 3% to 4 % (from females only) whereas fillet, surimi, and headed/gutted products have estimated recovery rates of 20% to 65% of all fish caught. Although stripping for roe may constitute an attractive short-term economic use of the resource, there is concern that roe-stripping without a concurrent use of the flesh constitutes unnecessary waste and should therefore be prohibited.

Since vessels choosing to process for roe only may be able to process an estimated 3 times the number of fish per unit time than vessels that also process the flesh, there is also concern that JVP allocations will be consumed that much faster during an early part of the year. This would preclude other use of pollock at later times of the year for surimi and fillet production. Now that demand for joint venture allocations greatly exceeds the supply, competition within the "olympic" or "common pool" system has intensified and the proportion of the processing fleet practicing roe-stripping may increase. Specific concerns of U.S. harvesters fishing for Japanese joint venture partners center around the potential of several large Korean surimi processing ships to process approximately 400-500 tons of pollock each per day during roe-stripping operations, as opposed to a more normal rate of 200-300 tons per day. Two major issues addressed in this analysis are: (1) considerations of waste, and (2) possible redistribution of catch among foreign nations, and therefore their U.S. partners, participating in the joint venture fishery.

The concept of "waste" is critical to an analysis of the roe-stripping issue. Given that surimi and other processing options do not utilize the entire fish, it is not reasonable simply to characterize the entire unused portion of roe-stripped fish as wasted. Although roe stripping recovers only about 4% of the whole fish, other accepted processes recover 20%, resulting in a difference between only 96% and 80% of the body unused. Moreover, often much of this remainder is processed as fish meal, and therefore not "wasted", although apparently a smaller percentage is processed into fishmeal during roe-stripping operations. Reasonably, waste is defined not in absolute terms but in relative terms, even though the perspective may either be biological or economic in nature.

Possible effects of an intensified fishery early in the year, presumably caused by the "common pool" JVP allocation and perhaps accentuated by roe-stripping, are also discussed in relation to yield and reproduction of pollock stocks. The discussion is general because there is no well established spawner/recruit relationship for pollock, and yield per recruit estimates are difficult to obtain without more information on the intensity of early-year harvests in relation to monthly growth patterns of pollock.

Based upon our analysis described below, it appears that as much as 27,000 mt of pollock may have been processed for roe-only by Korean JV partners in 1986 and perhaps 40,000 mt by Japanese partners. There are no estimates of possible increased incidence of roe-stripping in 1987 over that estimated for 1986, however given the more intense nature of this year's fishery some increase should be expected.

8.2 The Alternatives

Four major alternatives are analyzed to address pollock roe-stripping. The first alternative is the status quo, where there is no regulatory constraint on roe-stripping and discard of carcasses. The second alternative is a prohibition of pollock roe-stripping in joint venture fisheries. The third alternative is a prohibition of roe-stripping in both JVP and DAP fisheries (support of this alternative should lead to consideration of a similar amendment to the Gulf of Alaska groundfish FMP). The fourth is a semi-annual division of the annual JVP allocation for pollock, proportional to historical catch trends, which will not prohibit the stripping of roe, but will limit targeting on fish during spawning seasons.

8.2.1 Alternative 1: Do nothing - status quo.

Under the status quo roe-stripping and discard of carcasses is not prohibited.

8.2.2 Alternative 2: Prohibit pollock roe-stripping in JVP fisheries.

This alternative would prohibit joint venture processors from discarding carcasses after processing only the pollock roe. Such a prohibition would prevent the discard of males and the stripped carcasses of females, requiring that the flesh be further processed into a useable form such as fillet, headed/gutted, or surimi products. This prohibition would not apply to domestic processors.

8.2.3 Alternative 3: Prohibit pollock roe-stripping in both JVP and DAP (all DAH) fisheries.

This alternative would prohibit all roe-stripping (discard of males and stripped females) of pollock, by both domestic and foreign processors. This alternative would more comprehensively address the wastage issue, and would anticipate the transition of pollock fisheries to total domestic utilization. To be truly comprehensive, however, a DAP prohibition would also have to be incorporated into the Gulf of Alaska FMP.

8.2.4 Alternative 4: Establish a semi-annual JVP allocation schedule.

Under this alternative annual JVP allocations would be divided into semi-annual limits proportional to historic catch trends. Such a system would allow continued roe-stripping but could be used to limit future targeting of the fishery solely on spawning fish. This could help mitigate a severe proportional increase in wastage, protect pollock stocks from potential overharvest of spawning fish, and prevent an accelerated "race-for-fish" from preempting a summer/fall surimi fishery, while allowing some short-term profit maximization via roe-stripping. Table 1 outlines percent monthly JVP pollock harvest levels from 1986 and tonnages based on a total allocation of 1 million mt. A semi-annual JVP allocation based upon such a schedule would

Table 1. Alternative 4: Approximate monthly JVP harvests of pollock in the Bering Sea (expanded from monthly JVP harvests in 1986), and application to annual JVP of 1 million mt.

Month	Percent of annual harvest (%)	Amount of harvest (mt)	Semi-annual harvest quota (%)
Jan	0	0	
Feb	10	100,000	
Mar	25	250,000	
Apr	15	150,000	
May	0	0	
Jun	0	0	50
Jul	15	150,000	
Aug	15	150,000	
Sep	10	100,000	
Oct	10	100,000	
Nov	0	0	
Dec	0	0	50
Total	100	1,000,000	100

provide for 50% of the harvest to occur during January through June and 50% during the rest of the year. Such a breakdown divides the annual joint venture pollock fishery into two equal components: (1) a spring roe fishery, and (2) a summer and fall surimi/fillet fishery.

8.3 Environmental Impact of the Alternatives

There is no quantitative information specifically detailing the amount of discard associated with roe-stripping operations. Neither the NMFS foreign fisheries observer program nor industry reporting requirements account for discard after fish have been delivered. The estimates used for this analysis are, therefore, based upon assumptions derived from an informal survey of industry complemented by agency fishery statistics.

Prior to 1980 the harvest of pollock was predominantly by the Japanese and most of the annual catch was concentrated during the months June-September, outside of the roe season (Table 2). Since 1981, joint venture harvests have increased, recently exceeding foreign harvest levels, and beginning in 1987 there will be no further foreign allocations of pollock. The monthly distribution of JV harvest has shifted toward earlier portions of the year. In fact, just between 1985 and 1986 there has been a substantial shift in targeting toward February and March (Table 3). Reports for spring 1987 indicate that JV catch rates have exceeded 10,000 metric tons per day, which may result in harvest of the JVP allocation well before the end of the year.

There has been a similar shift in the emerging DAP fishery between 1985 and 1986 (Table 3a), however there was a slightly opposing shift in the declining foreign fishery (Table 3b). Currently there appears to be no roe-stripping by DAP processors, but in the future similar conditions of intense competition and a "race-for-fish" may precipitate DAP roe-stripping. The present targeting of JVP and DAP pollock fisheries early in the year is likely to continue due to higher aggregation of pollock during the spawning season, an initial "race-for-fish" within the "olympic" allocation scheme for JVP, as well as a possible selection toward roe-bearing fish. Implications of the high daily catches for early 1987, due to increased JVP processing capacity, include an accelerated "race-for-fish" and possibly a greater incentive for particular countries or operators to capture higher proportions of the allocation via the high processing rates for roe-only.

Certainly not all fish captured during the spawning season contain sufficient roe content (not even all females) to warrant a roe-only fishery and not all fish processed for roe are discarded without coincident use of the flesh. However, based upon recorded JVP catch distributions for 1986 and assumptions regarding catch, processing and recovery rates (Tables 4 and 5), estimates of discard are derived in Table 6 for JVP-Korea and JVP-Japan. Only the discard of unused carcasses, and possibly the targeting of harvests on spawning fish, are considered under environmental impacts; redistribution of JVP among foreign nations and their U.S. partners is presumed not to affect the environment.

8.3.1 Environmental Impact of Alternative 1 (status quo)

Based upon assumptions derived from 1986 data (Tables 4 and 5), it appears that an upper value of 67,021 mt of pollock was processed for roe-only in the

Table 2. Average monthly proportion of annual pollock harvests by Japan in the Bering Sea/Aleutian Islands for 1971-1980. (Low, L., pers. comm.)

Month	Percent annual harvest (%)
Jan	2.4
Feb	3.1
Mar	5.8
Apr	7.5
May	7.8
Jun	10.7
Jul	17.2
Aug	17.7
Sep	14.9
Oct	7.0
Nov	3.8
Dec	2.2
Total	100

Table 3. Monthly JVP harvests of walleye pollock in the Bering Sea/Aleutian Islands, 1984-1986. (PacFIN)

Month	1984 (mt)	1984 %	1985 (mt)	1985 %	1986 (mt)	1986 %
Jan	52	.0	86	.0	836	0.1
Feb	515	0.2	1,878	0.5	45,178	5.4
Mar	28,805	12.2	48,258	12.8	185,789	22.1
Apr	43,003	18.1	58,715	15.6	102,885	12.2
May	1,668	0.7	6,450	1.7	19,168	2.3
Jun	32,110	13.5	25,380	6.7	47,955	5.7
Jul	73,822	31.1	116,899	31.0	149,775	17.8
Aug	44,278	18.7	70,640	18.7	144,303	17.2
Sep	12,381	5.2	42,298	11.2	78,228	9.3
Oct	329	0.1	5,137	1.4	46,876	5.6
Nov	46	.0	1,798	0.5	13,000	1.5
Dec	0	0.0	0	0.0	6,429	0.8
	237,009	100.0	377,539	100.0	840,422	100.0

Table 3a. Monthly DAP harvests of walleye pollock in the Bering Sea/Aleutian Islands, 1984-1986. (PacFIN)

Month	1984 (mt)	1984 %	1985 (mt)	1985 %	1986 (mt)	1986 %
Jan	0	.0	23	0.1	6	.0
Feb	0	0.0	151	0.4	6,136	12.9
Mar	4	0.1	9	.0	3,881	8.1
Apr	188	2.6	89	0.2	8,401	17.6
May	41	0.6	1,033	2.6	3,838	8.1
Jun	0	0.0	970	2.4	3,970	8.3
Jul	88	1.2	981	2.5	5,169	10.8
Aug	823	11.3	7,451	18.8	3,547	7.4
Sep	90	1.2	5,680	14.3	5,975	12.5
Oct	372	5.1	18,619	46.9	2,991	6.3
Nov	1,145	15.7	1,085	2.7	3,366	7.1
Dec	4,561	62.4	3,579	9.0	378	0.8
	7,312	100.0	39,670	100.0	47,658	100.0

Table 3b. Monthly TALFF harvests of walleye pollock in the Bering Sea/Aleutian Islands, 1984-1986. (PacFIN)

Month	1984 (mt)	1984 %	1985 (mt)	1985 %	1986 (mt)	1986 %
Jan	15,477	1.7	14,816	1.8	16	.0
Feb	66,838	7.2	16,098	2.0	5,864	1.7
Mar	15,491	1.7	18,730	2.3	8,225	2.3
Apr	5,488	0.6	1,500	0.2	1,215	0.3
May	22,140	2.4	4,260	0.5	3,470	1.0
Jun	83,579	9.0	43,657	5.3	36,229	10.3
Jul	144,471	15.5	127,979	15.6	79,591	22.5
Aug	143,348	15.4	151,692	18.5	90,594	25.6
Sep	157,321	16.9	132,892	16.2	74,689	21.1
Oct	102,758	11.0	137,905	16.8	26,876	7.6
Nov	99,638	10.7	94,803	11.5	20,627	5.8
Dec	76,441	8.2	76,940	9.4	5,943	1.7
	932,990	100.0	821,272	100.0	353,339	100.0

Table 4. Assumptions of JVP-Korea pollock processing for the Bering Sea (based on 1986 harvest levels), with two scenarios of roe-stripping.

Product	Percent of harvest (%)	Amount of harvest (mt)	Recovery rate (%)
Block	25	63,371	100
H/G	25	63,371	65
Fillet	5	12,674	20
Surimi	45	114,068	20
	100		
Subtotal	90	253,485	51
Scenario 1			
Roe only Females	50	13,511	4
Discard Males	50	13,511	0
	100		
Subtotal	10	27,021	2
Scenario 2			
Roe & H/G Females	50	13,511	69
Discard Males	50	13,511	0
	100		
Subtotal	10	27,021	35
TOTAL Scenario 1	100	280,506	47
TOTAL Scenario 2	100	280,506	50

Table 5. Assumptions of JVP-Japan pollock processing for the Bering Sea (based on 1986 harvest levels), with two scenarios of roe-stripping.

Product	Percent of harvest (%)	Amount of harvest (mt)	Recovery rate (%)
Block	0	0	100
H/G	0	0	65
Fillet	0	0	20
Surimi	100	465,070	20
	100		
Subtotal	92	465,070	20
Scenario 1			
Roe only Females	50	20,000	4
Discard Males	50	20,000	0
	100		
Subtotal	8	40,000	2
Scenario 2			
Roe only Females	50	20,000	4
Fillet Males	50	20,000	20
	100		
Subtotal	8	40,000	12
TOTAL Scenario 1	100	505,070	19
TOTAL Scenario 2	100	505,070	19

Bering Sea (Table 6). Using further assumptions regarding the amount of the carcasses processed into fishmeal after other production operations, we estimate a possible "worst-case" discard of about 176,610 mt of pollock biomass in the 1986 JV pollock fishery, compared to an estimated 135,376 mt discard if roe-stripping had been prohibited. Therefore, roe-stripping may have accounted for an additional 41,234 mt of discard, an increase of 30%.

Given that processing of pollock for surimi and other accepted product forms already accounts for discard of tens or hundreds of thousand mt, that processing of other groundfish contributes substantial discard, that the incidental catch of prohibited species must also be discarded, and that catches of under-sized or otherwise undesirable fish are often discarded, it appears that the incremental discard of pollock from roe-stripping operations may not be significant compared to other practices common to the groundfish fishery in the Bering Sea. There is no indication that discard causes environmental harm, except in confined areas; it is arguable that discard is actually beneficial since it returns at least a portion of the organic material back into the ecosystem that produced it.

If roe-stripping operations tripled, and other aspects of the fishery remained the same, increased discard attributable to allowing roe-stripping would total an estimated 123,703 mt, causing an 91% increase of discard for the entire JVP pollock fishery over that if roe-stripping were prohibited. Although it is not possible to project the increase in JVP targeting on roe-only, the rapid decline of JVP allocations anticipated in the next few years should preclude the increased wastage of large tonnages of useable pollock by joint ventures.

Targeting of pollock harvests on spawning fish could conceivably have an effect on subsequent reproduction of the population. However, recruitment to the Bering Sea pollock stocks appears to be relatively independent of spawner abundance and may be much more influenced by environmental conditions. No explicit density-dependent or spawner/recruit relationships have been identified for pollock, therefore no explicit impact can yet be attributed to increased proportional harvest of spawning fish. Harvesting of fish earlier in the year does, however, preclude further growth of those fish during summer after which total yield would be higher. Since current yield per recruit relationships used in status of stocks determinations are based upon historic harvest patterns, substantial changes to those harvest patterns may affect the estimates. We cannot yet determine the effects that earlier fishing may have on yield per recruit and subsequent allowable harvest levels; such an analysis may be conducted in preparation for the Resource Assessment Document (RAD) this summer.

8.3.2 Environmental Impact of Alternative 2

As outlined under Alternative 1, the estimated increase of discard in the JVP pollock fishery attributable to allowing roe-stripping is an estimated 41,234 mt. No identifiable environmental impacts have been associated with this increase, therefore no explicit benefit is expected to accrue to the environment due to a prohibition of roe-stripping.

8.3.3 Environmental Impact of Alternative 3

Table 6. Estimates of JVP pollock harvests, processing and discard related to roe-stripping in the Bering Sea (based on 1986 harvests and assumptions outlined in Tables 4 and 5).

Scenario	JV partner	Season	Harvest (mt)	Percent of harvest (%)	Average recovery rate (%)	Amount unprocessed (mt)	Percent unprocessed used for fish-meal (%)	Amount of discard (mt)	Percent of harvest discarded (%)	Increase in discard over that with roe-stripping prohibition (mt)	(%)
Roe-stripping:	Korea	Roe	27,021	10	2	26,481	20	21,184	78		
Roe-only females		Rest of year	253,485	90	51	124,208	75	31,052	12		
Discard males				100							
		Subtotal	280,506	36	46	150,688		52,236	19	17,874	52
	Japan	Roe	40,000	8	2	39,200	20	31,360	78		
		Rest of year	465,070	92	20	372,056	75	93,014	20		
				100							
		Subtotal	505,070	64	19	411,256		124,374	25	23,360	23
	BOTH	Roe	67,021	9	2	65,681	20	52,544	78		
		Rest of year	718,555	91	31	496,264	75	124,066	17		
		TOTAL	785,576	100	28	561,944		176,610	22	41,234	30
Roe-stripping	Korea	Roe	27,021	10	35	17,564	20	14,051	52		
Roe H/G females		Rest of year	253,485	90	51	124,208	75	31,052	12		
Discard males				100							
or		Subtotal	280,506	36	49	141,771		45,103	16	10,741	31
	Japan	Roe	40,000	8	12	35,200	20	28,160	70		
Roe-only females		Rest of year	465,070	92	20	372,056	75	93,014	20		
Fillet males				100							
		Subtotal	505,070	64	19	407,256		121,174	24	20,160	20
	BOTH	Roe	67,021	9	21	52,764	20	42,211	63		
		Rest of year	718,555	91	31	496,264	75	124,066	17		
		TOTAL	785,576	100	30	549,027		166,277	21	30,901	23
Prohibit JV roe stripping	Korea	Entire year	280,506	36	51	137,448	75	34,362	12	0	0
	Japan	Entire year	505,070	64	20	404,056	75	101,014	20	0	0
	BOTH	TOTAL	785,576	100	31	541,504		135,376	17	0	0

The transition of the Bering Sea pollock fishery from joint ventures to wholly domestic operations portends the greatest potential discard due to roe-stripping, but it is as yet not possible to anticipate the incidence of roe-stripping that will occur under DAP fishing. If, however, as much as 30% of an annual allowable DAP harvest of 1.2 million mt were processed for roe-only and the rest processed for surimi or fillets, then the roe fishery would account for 282,240 mt of discard compared to the remainder of 168,000 mt of discard for a total discard of 450,240 mt. If roe-stripping were prohibited for DAP fisheries, then discard from DAP surimi and fillet operations on 1.2 million mt would equal 240,000 mt. Therefore the increase in discard attributable to 30% roe-stripping in DAP pollock fishing in the Bering Sea, above that for a fishery with no roe-stripping, would be 210,240 mt, an 87.6% increase. As outlined under Alternatives 1 and 2, it is not possible to identify environmental impacts associated with such an increase in discard, particularly when it is compared to other discards associated with the Bering Sea groundfish fishery.

8.3.4 Environmental Impact of Alternative 4

Given that the discard of roe-stripped pollock under this alternative would likely be intermediate between that under Alternatives 1 and 2, we cannot identify any environmental impact.

8.4 Regulatory Impact of the Alternatives

There is concern that roe-stripping constitutes an unconscionable waste which violates policy considerations of full use of fish resources. Under our analysis of environmental impacts we identified incremental increases in the discard of flesh from roe-stripping versus other forms of processing (Table 6). In Table 7 the amounts and percent decrease in processed products (other than fishmeal) attributable to roe-stripping are also calculated. Under our worst-case scenario, approximately 20508 mt of product were foregone in 1986 compared to a total of 244,773 mt of product (not including roe) that would have been produced under a roe-stripping prohibition, resulting in an 8% presumed forfeiture of product other than roe (and fishmeal). Since this forfeiture of product affected the foreign supply of product, a prohibition of roe-stripping can be expected to cause an increase in the amount of foreign pollock products competing with those produced domestically.

National Standard #5 of the FCMA requires that "Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measures shall have economic allocation as its sole purpose". Given that this analysis has identified no environmental impacts attributable to roe-stripping, the major issue remaining, in addition to an increase of foreign-produced JV pollock products, is the redistribution of JVP harvest between foreign processors, and consequently their U.S. partners. Such economic considerations obviate the requirements of the national standard. This amendment proposal is not a policy consideration or a comprehensive approach to the management and control of waste in the groundfish fishery, but only addresses a small component of that waste attributable to one fish processing procedure.

The following regulatory analysis of alternatives will address fishery costs and benefits; reporting costs; administrative, enforcement, and information

Table 7. Estimates of JVP pollock harvests, processing and production related to roe-stripping in the Bering Sea (based on 1986 harvests and assumptions outlined in Tables 4 and 5).

Scenario	JV partner	Season	Harvest (mt)	Percent of harvest (%)	Average recovery rate (%)	Amount of product (mt)	Percent of product (%)	Decrease in product from that with roe-stripping prohibition (mt)	(%)
Roe-stripping: Roe-only females Discard males	Korea	Roe	27021	10	2	540	0		
		Rest of year	253485	90	51	129911	100		
				100			100		
		Subtotal	280506	36	47	130451	58	-13308	-9
	Japan	Roe	40000	8	2	800	1		
		Rest of year	465070	92	20	93014	99		
				100			100		
		Subtotal	505070	64	19	93814	42	-7200	-7
	BOTH	Roe	67021	9	2	1340	1		
		Rest of year	718555	91	31	222925	99		
		TOTAL	785576	100	29	224265	100	-20508	-8
Roe-stripping: Roe H/G females Discard males	Korea	Roe	27021	10	35	9322	7		
		Rest of year	253485	90	51	129911	93		
				100			100		
or		Subtotal	280506	36	50	139233	59	-4526	-3
Roe-only females Fillet males	Japan	Roe	40000	8	12	4800	5		
		Rest of year	465070	92	20	93014	95		
				100			100		
		Subtotal	505070	64	19	97814	41	-3200	-3
	BOTH	Roe	67021	9	21	14122	6		
		Rest of year	718555	91	31	222925	94		
		TOTAL	785576	100	30	237047	100	-7726	-3
Prohibit JV roe stripping	Korea	Entire year	280506	36	51	143759	59	0	0
	Japan	Entire year	505070	64	20	101014	41	0	0
	BOTH	TOTAL	785576	100	31	244773	100	0	0

costs and benefits; impacts on consumers; and redistribution of costs and benefits associated with an increase in foreign production of products other than roe and the possible redistribution of JV pollock delivered to participating foreign nations.

8.4.1 Fishery Costs and Benefits

It is apparent that increased effort earlier in the year is caused by a race for the JVP allocation, moreso than by a preference for roe. Although the Japanese roe market has been strong in recent years, it has weakened in 1987 due to oversupply and a higher proportion of lower quality product. In contrast to the roe market, however, the demand for fillets has been strong due to a worldwide shortage of cod. Given a strong fillet market and the weakened roe market, it is doubtful the roe-stripping is the impetus behind the large increase in effort thus far in 1987.

Alternative 1: Status quo

In 1987, JV harvesters are being paid a constant price for pollock deliveries, regardless of the eventual product form. Therefore, it does not appear that allowing or prohibiting roe-stripping would have any impact on total revenue paid to domestic fishermen except to the extent that foreign processors factor the higher value of roe into their initial price negotiations with their U.S. partners. There is the possibility, however, of an allocative effect between vessels fishing for different countries or companies. If the practice of roe-stripping increased, the quota could be reached earlier, therefore U.S. harvesters delivering to roe-stripping processors could enjoy increased deliveries at the expense of those catcher vessels which delivered to processors that do not strip the carcasses.

Domestic processors may be benefitting from the practice of roe-stripping by foreign processors, since those countries are forfeiting a commensurate amount of other pollock products which could compete with domestic production. In 1986, Japan exported 76,356,000 pounds of pollock products to the U.S. at a value of $113,132,000. Korea exported 47,795,000 pounds at a value of $36,157,000. Potential increases in production and consequent export of foreign products caused by a prohibition on JVP roe-stripping are discussed below.

Alternative 2

JV harvesters are paid a set price for pollock regardless of eventual processing form. Therefore, no explicit impact is expected to those harvesters due to a roe-stripping prohibition if the full JVP apportionment is taken during the year. If, however, such a prohibition were to preclude taking of the full apportionment, then U.S. harvesters would suffer a loss equal to the value of the remaining uncaught balance. Given the demand for JVP allocations, and our estimates that only 67,000 mt is stripped, it does not appear likely that a prohibition of roe-stripping would prevent full harvest of the JVP allocation.

Domestic harvesters and processors could, however, be indirectly affected by a roe-stripping prohibition due to increases in the amount of other pollock products processed and marketed by the foreign companies. While any final

market impact is uncertain, Table 7 provides estimates of the amount of pollock products that may have been foregone due to the practice of roe-stripping; scenarios are presented for both Korea and Japan. Assuming that Japanese production is 100% surimi there would have been an estimated additional 7,600 or 3,200 mt of surimi produced in 1986 if roe-stripping had been prohibited. Given that 27,000 mt of surimi was exported from Japan to the U.S. in 1986 out of their total production of 400,000 mt, then we can expect that approximately 6.75% of Japanese-produced surimi may be exported back to the U.S. Such a percentage of 7,600 or 3,200 mt of added surimi from JVP pollock might, then, add 513 or 216 mt to exports to the U.S. These added exports would have an estimated value of $1,996,000 and $824,000, respectively, equalling 3.6% or 1.5% of the total 1986 Japanese exports of surimi to the U.S. For Korea, similar calculations yield an estimated possible increase of 1082 mt of pollock fillet blocks exported to the U.S. at a value of $1,569,000. This increase is equal to 5.9% of total 1986 Korean pollock fillet block exports to the U.S.

If the prohibition of roe-stripping results in an increase in pollock products exported to the U.S., the effect would be an outward shift in the supply curve of these products. Other things remaining constant, this increase in supply would cause a decrease in the U.S. market price. If the U.S. firms face higher costs (i.e., labor, insurance), they may find it uneconomical to produce pollock given the reduced price and therefore cut back production. If this occurred, domestic producers would suffer an economic loss. The extent of that loss is dependent upon a number of unquantifiable factors, most importantly the domestic demand and foreign and domestic supply elasticities.

In contradistinction to possible negative impacts associated with increased foreign exports to the U.S., a prohibition of JV roe-stripping may benefit an apparently growing U.S. export of pollock roe. In 1985, domestic exports of roe totalled 144,540 pounds at a value of $166,322 to Japan. In 1986 this quantity increased over ten-fold to 1,772,727 pounds worth $2,282,444. It appears possible for the domestic industry to fill any market void created by a reduction in pollock roe produced by Korea and Japan from U.S. waters.

Alternative 3

Impacts of this alternative would include those specified under Alternative 2 plus any additional impacts resulting from prohibiting roe-stripping by domestic processors. At this time we are not aware of any domestic operations that strip for roe-only and discard carcasses. However, eventually, limits to DAP roe-stripping may alter both the amount of roe produced and exported from the U.S. as well as the U.S. supply of other product forms.

Alternative 4

If the shift in effort toward the beginning of the year continues, domestic harvesting and foreign processing vessels will complete their pollock operations early in the year, and would have an extended period during which they would need to find alternative activities. Under Alternative 4, the pollock harvest would be split into two distinct components, requiring harvesters and processors to find alternatives for two, presumably shorter, periods of the year. If the January-June quota is taken before the end of June, then joint venture operators would need to seek alternative activities.

The foreign processing vessels could cease processing until the second allocation is released, move into the "doughnut hole" and process pollock harvested by their own fishing vessels, or reduce their number of processing vessels and thus overall effort in the Bering Sea.

Domestic harvesters would also need to seek alternative activities during periods after the JVP allocations are captured. Options include participation in other joint ventures or fishing for domestic processors. Availability of domestic harvesters could benefit domestic processors attempting to increase DAP utilization of the pollock resource, however it is not clear that domestic harvesters can wait for domestic processing to come on line.

8.4.2 Reporting Costs

All of the alternatives other than the status quo will require some additional reporting costs to maintain records of discard associated with roe-stripping. Currently no records are required for amounts of fish discarded in the groundfish fishery, and no reporting is required specifically related to discard associated with roe-stripping.

8.4.3 Administrative, Enforcement, and Information Costs and Benefits

Again, all of the alternatives other than the status quo will involve additional costs. Additional administration will be required to track the occurrence of discard or to administer monthly allocations and subsequent closures, if necessary. Enforcement efforts would be intensified to focus on a minor portion of the fishery, specifically segregating the discard of fish from one portion of the processing sector (roe-stripping) from all of the others. Information costs will increase to keep track of data associated with observations of discard or monthly harvests.

8.4.4 Impacts on Consumers

As the quantities of pollock affected by roe-stripping are currently small relative to the total landings, consumers should not be affected by a prohibition on roe-stripping in terms of quantities of product available or prices paid. However, if worldwide demand for pollock roe increases enough to direct larger and larger amounts of pollock to a roe fishery which discarded carcasses, then consumers could witness a decrease in the amount of fillets and surimi. This decrease could not be recaptured unless consumer demand for fillets and surimi increased the prices of these products. Such a redistribution of pollock processing would be eliminated or reduced under Alternatives 2,3,and 4.

8.4.5 Redistribution of Costs and Benefits

Under the status quo, increased effort in the pollock fishery will increase the amount of pollock harvested and processed earlier in the year. Although we cannot estimate the loss in total revenue paid to joint venture harvesters, there may well be an increasing redistribution from those vessels that fish for processors which do not strip for roe to those harvesters for processors that do strip and discard carcasses.

Under Alternative 2, vessels fishing for processors that did not strip for roe would gain in relation to those harvesters fishing for processors that previously stripped roe. There might also be increased product exported back into the U.S. due to increased utilization of pollock carcasses for fillets and surimi by foreign processors, although such an increase would not likely be substantial.

Alternative 3 would likely include those redistributional effects of Alternative 2 plus any effects of a roe-stripping prohibition on the domestic processing sector.

It is not clear what redistributional effects Alternative 4 would have; however, given that the proposed semi-annual allocation schedule is based on the 1986 JVP harvest levels, the redistributional effects should be even less than those expected under the status quo.

9.0 EFFECTS ON ENDANGERED SPECIES AND ON THE ALASKA COASTAL ZONE

None of the alternatives would constitute actions that "may affect" endangered species or their habitat within the meaning of the regulations implementing Section 7 of the Endangered Species Act of 1973. Thus, consultation procedures under Section 7 on the final actions and their alternatives will not be necessary.

Also, for the reasons discussed above, each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Zone Management Program within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

10.0 FINDINGS OF NO SIGNIFICANT ENVIRONMENTAL IMPACT

For the reasons discussed above, neither implementation of the status quo nor any of the reasonable alternatives to that action would significantly affect the quality of the human environment, and the preparation of an environmental impact statement on the final action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

_____

Date

11.0 COORDINATION WITH OTHERS

The Bering Sea/Aleutian Islands Groundfish Plan Team consulted with representatives of the Alaska Department of Fish and Game, National Marine Fisheries Service, members of the Scientific and Statistical Committee and Advisory Panel of the Council, and members of the academic and industrial community.

12.0 LIST OF PREPARERS

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**North Pacific
Fishing Vessel
Owners' Association**

March 12, 1987

Agenda D-4

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

RE: DAP Preference Zone; GOA Pollock JVP

Dear Jim:

In December two proposals aimed at forcing United States trawlers to deliver fish to shoreside processors were presented to the Council. One would close thousands of square miles of rich fishing grounds in the Bering Sea and Gulf of Alaska to joint venture processing; the other virtually eliminates joint venture processing in the Gulf of Alaska. Events over the last three months have demonstrated that such negative measures are not likely to succeed, and that shoreside processors and joint venture harvesters can and should co-operate in resolving their mutual problems without regulatory interference.

At the December meeting joint venture representatives made it clear that the missing link between domestic harvesting and processing capacity is transportation. Factory trawlers resolve the problem by taking the processing equipment to the fishing grounds; shore-based processors must devise efficient methods to have fish delivered to their processing facilities - a cost of doing business. Joint venture operators offered to facilitate the full development of United States groundfish fisheries by providing fish to DAP processors on the grounds on a priority basis, under normal contractual terms and conditions (please see attached Advisory Panel minority report).

Pursuant to that offer, Westward Trawlers and Alyeska Seafoods are co-operatively developing a tendering operation to assure a supply of raw pollock to the Alyeska surimi plant at Dutch Harbor. While the tenders are being converted and moved to Dutch, the production of one of the few joint venture trawlers capable of shoreside delivery has been dedicated to the Alyeska plant. The plant is running at full capacity, and the trawler is obliged to deliver part of its catch to other markets (please see the Westward Trawlers letter of February 18, 1987, attached). Obviously the exclusion of 130 joint venture trawlers from the Dutch Harbor area is not necessary so that three or four can meet the needs of shoreside plants.

On March 5 and 6, 1987, the Bering Sea groundfish Plan Team examined the analysis of the closure and of alternatives such as fees and seasons. They offered the opinion that none of the alternatives would assure delivery of fish shoreside, and recommended maintenance of the status quo. They observed that the industry is developing fast, and that businessmen are now taking steps to accommodate shoreside needs.

With regard to the elimination of JVP for pollock in the Gulf of Alaska, NMFS Alaska Regional Director Bob McVey re-examined his DAP survey and concluded that DAP claims were overinflated. He recommended that 21,900 mt of pollock be apportioned to JVP, and that 16,800 mt be apportioned to Reserves. In the course of his re-evaluation he determined that certain start-up operations could not achieve their requests. This apportionment is necessary for the achievement of OY and the maximization of benefits from the resource to the nation.

The great irony of this latter circumstance is that most of the effective trawl harvesting capacity has left Kodiak for the Bering Sea, where adequate joint venture markets are available. Two shore-based processors in Kodiak have called for the return of the joint ventures, so that they can tender fish to their plants.

These negative measures are clearly flawed. It is our sincere hope that the Council will recognize the obvious and promote joint venture efforts near Dutch Harbor and Kodiak for the benefit of the United States harvesters and processors alike.

Sincerely,

Thorn Smith

Thorn Smith, Executive Director

North Pacific
Fishing Vessel
Owners' Association

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL - JANUARY 1987

ADVISORY PANEL MINORITY REPORT - PROPOSED DUTCH HARBOR DAP PREFERENCE ZONE

Joint venture operators have made a positive and practical business offer to resolve the shoreside delivery problem - they will provide fish to DAP processors on the grounds, on a priority basis, under contracts incorporating normal commercial terms and conditions.

There are many incentives towards this co-operative approach.

U.S. JOINT VENTURE HARVESTERS NEED NEW MARKETS

JVP will diminish as the DAP factory trawl fleet grows, and factory trawlers are not buying fish at sea; JV seasons are growing shorter, and year 'round shoreside markets are attractive; the JV fleet has tremendous harvesting capacity (4 or 5% of its daily output will meet the demands of the surimi plants at Dutch Harbor), but cannot process at sea.

U.S. SHORESIDE PROCESSORS NEED THE HARVESTING CAPACITY OF THE JV FLEET

No alternative harvesting fleet is available; there are few vessels now capable of shoreside delivery; factory trawlers do not deliver raw fish ashore; short of new trawler construction or conversion, there is nowhere else to go.

There is great incentive to work together.

TRANSPORTATION IS THE MISSING LINK

Most of the JV harvesters are converted crabbers, borrowed from the crab fleet; the added weight of trawl gear above deck makes them unstable if their holds are filled; they do not have adequate hold capacity; most lack cooling systems to hold fish during long trips; they are worth $3 - 4 million, and harvest very efficiently - but they are not designed for transportation and storage.

Building C-3, Room 218 Fishermen's Terminal Seattle, Washington 98119 Telephone 206-285-3383

TENDERS ARE THE SOLUTION

They are used successfully in anchovy and menhaden fisheries; they are relatively inexpensive:

- oil mud boats are available for conversion at relatively low prices;
- salmon tenders may be refitted (Westward Trawlers plans to supply the Alyeska seafood plant this way);
- Tampa ship plans to build tenders to supply its surimi barges.

Processors, harvesters, or third parties are free to supply transportation, which is a normal cost of doing business.

THE PROPOSED CLOSURE WON'T WORK

It will not force U.S. fishermen now engaged in joint ventures to deliver to shoreside plants - it will drive harvesting capacity away, to large joint venture markets. The 8,000 square mile proposed closure is excessively burdensome - it would cause substantial economic harm to U.S. fishermen, without a corresponding benefit to processors.

THERE IS A STRAIGHTFORWARD SOLUTION TO A BUSINESS PROBLEM (OR OPPORTUNITY) - FEDERAL REGULATION IS NOT NEEDED

The current demands for shoreside delivery can be met by transporting a small portion of JV output to the plants. Businessmen are now taking the initiative, planting the seed - the Council should let it grow. Adoption of a closure would send the wrong signal to industry - that it should come to the Council and seek artificial constraints on competition, rather than develop practical solutions to business problems . . . - a dangerous precedent.

CONCLUSION

It is our hope that the Council will turn down this proposal, and encourage the U.S. industry to take the next step towards full development co-operatively - the elements of a prompt resolution are at hand.

Respectfully,

Thorn Smith, North Pacific Fishing Vessel Owner's Association
Al Burch, Alaska Draggers Association
Cameron Sharick, Attorney At Law

WESTWARD TRAWLERS, INC.

15 N.E. Northlake Way Seattle, Washington 98105 phone: 206-547-6840

18 February 1987

Dr. Anthony J. Calio, Administrator
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Room 5128
Hoover Commerce Building
Washington D.C. 20230

2/19/87

Re: Proposed DAP Priority Zone
Dutch Harbor, Alaska

Dear Dr. Calio:

We are writing to reaffirm our opposition to the proposal of Pacific Seafood Processors Association (PSPA) and the Mayor of Unalaska Island for a 100 mile exclusively DAP fishery zone around Unalaska Island.

The regional process of review of this proposal is still in process however, in their letter to you of February 10, PSPA elected to escalate the discussion to the national level. Regretably, it is necessary for us to respond.

We have expressed our opposition to this proposal in testimony presented to the NPFMC on January 21; copy of the testimony of the undersigned was provided to you with a letter dated February 10 from Mr. Thorne Smith of NPFVOA.

We hope you will review that testimony, in which we described the Pollock tendering operation that is being developed between Alyeska Seafoods and Westward to supply raw material to the Alyeska surimi plant in Dutch Harbor. The first of the tenders is nearing completion of modifications necessary to receive trawl-caught Pollock at-sea; it will be departing Seattle for the fishing grounds within the next week. The second tender will be close behind.

In the meantime, we have committed one of our twelve U.S. catcher-boats to the harvest and delivery of Pollock to the Aleyeska surimi plant——construction of which was completed late in January——until the first tender arrives.

The F/V SHARON LORRAINE has been delivering Pollock to Alyeska for nearly three weeks. The first week was marked by understandable start-up problems at the new plant; the past two weeks, the new surimi plant has been able to maintain it's design capacity of about 400,000 lbs of round Pollock per day. The success of the SHARON LORRAINE in meeting that raw material demand is particularly illustrative of the absurdity of the proposed 100 mile closure.

Over the past two weeks, the SHARON LORRAINE, the only vessel delivering Pollock to the Alyeska plant, has consistently delivered fish in excess of the plant's capacity to process. The plant has dealt with these excesses by:

1) diverting fish to the competing surimi plant of Nippon Suisan/Great Land Seafoods

2) operating the Alyeska fish-meal plant at capacity

3) requesting less frequent deliveries from the SHARON LORRIAINE

In addition to the tremendous tonnages delivered into Dutch Harbor by the SHARON LORRAINE, the vessel has made periodic deliveries to processing ships operating at-sea in our joint-venture fishing operations.

Currently, therefore, the two new surimi plants in Dutch Harbor could not support the harvesting ability of even two U.S. fishing vessels! We expect this situation will continue until after completion of the Pollock spawning cycle in April.

Despite this fact, the proponents of the 100 mile closure would evict the more than 100 U.S. fishing vessels which are presently harvesting Pollock and Codfish within the proposed zone.

No longer can they honestly claim that they are unable to get fish "because of the joint-ventures"; properly managed and motivated, there is U.S. harvesting capacity many times that necessary to meet the needs of the Dutch Harbor plants.

And any arguments that there is not sufficient Pollock to support both DAP and JVP operations in the vicinity of Dutch Harbor border on the absurd.

We are dedicated to the continued economic & commerical solution of the Pollock requirements of the new Surimi plants in Dutch Harbor. We are vehemently oppose to legislated solutions——which make no more sense in the fishing industry than they do in any other industry. And we wish to caution the NPFMC and the Administration of the established folly of an industrial policy in which the government tries to pursue a role of selecting an industry's winners and losers. That is the function of the marketplace!

In closing, we would like to come to the defense of Mr. McVey in his reasoned and appropriate stand on this issue.

Yours Very Truly,
WESTWARD TRAWLERS, INC.

Hugh Reilly
President

cc:
Capt. John Dooley - F/V SHARON LORRAINE
Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Dongressman Don Bonker
Congressman Rod Chandler
Congressmen Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

bcc Thorne Smith
Mark Peterson

MARINE RESOURCES COMPANY INTERNATIONAL
A Washington Partnership

2/20/87

February 18, 1987

Dr. Anthony Calio, Administrator
National Oceanic and Atmospheric Administration
Hoover Commerce Building, Room 5128
Washington, D. C. 20230

Dear Tony;

I am writing with regard to the proposed amendment to the Bering Sea/Aleutian Islands Groundfish FMP which would establish a "DAP Priority Zone" around Dutch Harbor, and specifically with reference to the Pacific Seafood Processors Association letter of 28 January to you.

First, I want to take issue with PSPA's condemnation of Bob McVey's position on this issue. I cannot recall a single instance (including several in which his position was contrary to my Company's best interests) in which Bob has acted irresponsibly or in a manner inconsistent with the MFCMA or NMFS' policy regarding MFCMA. Too often, Council members blithely vote in favor of "further analyses" or "continued studies" as an easy way out of taking substantive action on sensitive issues. However, those analyses and studies take Council and NMFS staff time, neither of which are in long supply, and require the concerned and potentially affected industry to keep its oar in, just in case.

With regard to the "DAP Priority Zone" proposal, a great deal of testimony was available to the Council, and the probability of new information coming to light over the next few months is negligible. In my view, to have argued and voted against putting this issue to bed at least for the current FMP cycle (as, unfortunately, the majority of Council members did), only begged the question and added unnecessarily to the cost (both to

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dom 134
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Primorski Kra
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government and industry) of managing the Bering Sea/ Aleutian Islands Groundfish Fishery.

With regard to the proposed amendment itself, it was particularly irksome that at an otherwise well-attended Council Subcommittee meeting, which was called to thoroughly air the issue and attempt to develop a broadly acceptable compromise, representatives of the processing sector were noticeable by their absence. Furthermore, the "DAP Priority Zone" Amendment's sponsor flatly refused to consider <u>any</u> change or compromise in the proposal as submitted. Accordingly, through no fault of the Council, the process resulted in a considerable waste of time by those who were committed to working with the Council.

Finally, with regard to the substance of the "DAP Priority Zone" issue, my views are contained in the attached letter to the Council (a procedure I prefer to circumventing the Council system and going directly to you).

Most sincerely,

Bert

H. A. Larkins
Vice-President and
General Manager

Attachment

HAL/pmn

MARINE RESOURCES COMPANY INTERNATIONAL
A Washington Partnership

2/20/87

February 18, 1987

Dr. Anthony Calio, Administrator
National Oceanic and Atmospheric Administration
Hoover Commerce Building, Room 5128
Washington, D. C. 20230

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dom 134
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The difference between 5.7 and 10.5 cents/lb is simply the cost to the catcherboat of transporting its catch to the shore plant. Whether or not there is a "development zone" does not change the mathematics. If a shoreside plant will pay the higher price, it will get fish delivered to it; if a shoreside plant arranges to pick up its fish on the fishing grounds it will only have to pay the lower price. Given the same annual gross stock potential, there is no doubt in my mind that most U.S. trawlers will sell "American"--they have so testified time and again.

If, however, there is an expectation on the part of shoreside processors that a development zone will result in their being able to buy at their dock for the lower price, then clearly they are expecting the fishermen to subsidize those shoreside operations. Surely, that cannot be an acceptable fix, either on the part of the Council or under the terms of MFCMA.

Unless documentation can be shown of significant competitive effects on CPUE within any proposed zone, and if there is no intent to force U.S. fishermen to absorb the transportation cost from the grounds to the beach, then I fail to see how a "development zone" of any dimension can benefit shoreside processors or local communities.

One final note regarding the "level playing field". In MRCI's joint fisheries, the cost of Federal observers, as billed to the USSR, now averages about $4.00/MT. This is about 3 percent of the ex-vessel value of our joint-venture catch, and about the same as the State of Alaska landing tax which applies to shoreside landings.

Best personal regards,

/s/

H.A. Larkins
Vice President & General Manager

cc: NPFVOA
Reilly
Block
Pereyra
Tasker

HAL/fst

ProFish International, Inc.

PROFISH

February 12, 1987

Dr. Anthony J. Calio
Director
NOAA
U.S. Department of Commerce
Room 5128
Herbert C. Hoover Building
14th and Constitution Avenue, NW.
Washington, DC 20230

2/20/87

RE: Proposed Dutch Harbor DAP Priority Zone

Dear Dr. Calio:

On behalf of our company and the fishermen who fish for us, we want to express our strong opposition to the proposed DAP preference zone around Dutch Harbor. In this regard we endorse the arguements made in recent letters addressed to you by the Midwater Trawler Cooperative, The Highliners Association and North Pacific Fishing Vessel Owners Association in opposition to this discriminatory proposal to amend the Bering Sea groundfish plan.

The proponents of the DAP preference zone have failed to recognize the substantial adverse impacts that this and similar measures such as J/V processing fees and closed seasons would have on domestic fishermen who fish in joint ventures and the allied U.S. service industries which are economically dependent on a strong domestic trawler fleet. For example, if this measure were implemented, our company alone would experience at least a $15 million reduction in markets we could make available to domestic fishermen. This reduction in markets would not be offset by corresponding increases in the capability of DAP shore-side operations. Futhermore, it would force us to conduct our reduced J/V operations at considerable distance off shore during the stormy winter period and thereby subject our catcher fleet to a much higher safety risk to the vessels and crews.

657 North 34th Street, Seattle, WA 98103 USA, 206-547-6800, Telex: 320355 PROFSH

It appears to us that the proposed preference zone is nothing more than a veiled attempt to force domestic fishermen to deliver fish to shore-side operations irregardless of whether or not it makes economic sense to do so vis-a-vis off-shore market opportunities. As such this measure would discriminate between classes of fishermen in a manner contrary to the letter and intent of the MFCMA. The architects of the Magnuson Act intended for the priorities embodied in the three-tiered allocation system to operate in response to the marketplace, not according to the discriminatory and political objectives embodied in the proposed DAP preference zone.

The proponents of this measure have shown an unwillingness to consider other alternatives such as carrier vessels for supplying fish to shore plants in Dutch Harbor. Recently, our company along with other companies managing off-shore deliveries of fish to foreign processors have offered to deliver fish to DAP processors or carriers on the fishing grounds on a priority basis under terms and conditions similar to those in our present operations. Even though not required under the law, we made this good faith offer to assist DAP shore-side operators in exercising their priority access to the resource. The proponents of the DAP preference zone, though, rejected our offer outright without any consideration of its merits or alternatives. In light of this response, one has to question the true motives of the subject proposal--is it intended to truly get fish to shore-side operators or is the long-term objective to establish an exclusive economic zone for DAP shore-side processors to give them an advantage over other domestic interests?

The present rapid expansion in domestic harvesting and processing certainly underscores the fact that the Magnuson Act is achieving one of its stated purposes--"to encourage the development by the United States fishing industry of fisheries which are currently underutilized or not utilized by United States fishermen, including bottom fish off Alaska, ..." Now is certainly not the time to introduce discriminatory measures that will disrupt this basic tenet of the Act.

In conclusion, we urge NOAA/NMFS to continue to oppose efforts to establish exclusive DAP preference zones or other measures designed to reduce the economic viability of one segment of our industry over another. The marketplace, not government, should be the decision-maker regarding how and when the available fishery resources are allocated among competing users within the priority allocation system established under the MFCMA.

Sincerely,

Walter T. Pereyra
President

lb

cc Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
Congressman Gerry Studds
Congressman Mario Biaggi
Congressman Walter Jones
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

Northern Deep Sea Fisheries, Inc.
927 NORTH NORTHLAKE WAY, SUITE 110, SEATTLE, WASHINGTON 98103
TEL (206) 545-7271 FAX (206) 547-4968 TELEX 320036 NISSUI SEA

February 18, 1987

2/19/87

Dr. Anthony J. Calio, Administrator
National Oceanic and Atmospheric Administration
Hoover Commerce Building, Room 5128
Washington, D.C. 20230

Dear Dr. Calio:

Northern Deep Sea Fisheries (NorFish) is in receipt of a letter to you from the Pacific Seafood Processors Association on the proposed 100 mile exclusive fishery zone around Dutch Harbor. NorFish is strongly opposed to this idea and supports the position taken by the NMFS Alaska Regional Director at the January Regional Council Meeting - that this proposal is "so extreme that it is not appropriate to use it as a basis for examining the basic question of DAP priority".

NorFish is a joint venture management company which last year employed twenty American catcher vessels which harvested 242,000 metric tons of groundfish and which, in 1987, will employ some twenty-two American catcher vessels with a target quota of 370,000 metric tons. Last year NorFish also was the exclusive vessel fleeting agent for Great Land Seafoods (GLS), one of the two new groundfish shore plants located in Dutch Harbor, which would be a purported beneficiary of this proposal.

As NorFish testified at the January council meeting, our association with GLS last year strongly suggested that the solution to the supply problem was a matter of fishing vessel economics and the recognition by the plant of the additional costs of vessel operation in a shore side delivery mode. Once the appropriate compensation differential has been established, between the at sea and shore side delivery operating modes, the shore plants will be successful in solving their supply problems. This year, as in 1986, the competition for U.S. catcher vessels is keen, with the joint ventures providing the alternative market opportunities. NorFish views the 100 mile exclusive zone as a veiled attempt by its proponents to create a market void by forcing diseconomies into the JV operations which, by default, would hope to make the shore markets more attractive. We don't believe this approach will achieve the desired result of increasing the supply of fish to the shore

plants. The zone would only serve to move the joint venture operations further off shore.

In conclusion, the Americanization process is working under the MFCMA and the priority provisions under the law are adequate. Joint venture operations have been and should continue to be allowed to be a major contributor to the Americanization process.

Sincerely yours,
NORTHERN DEEP SEA FISHERIES, INC.

Peter Block,
President

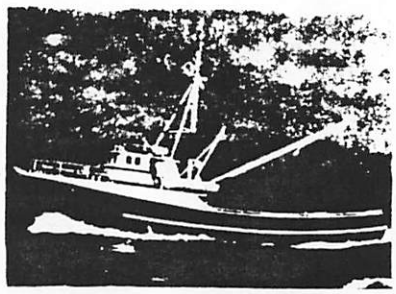
PB/jas

cc: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

LETCALIO/TXTJAN

Ocean Spray Fisheries, Inc.

4315 11TH AVENUE NORTHWEST
SEATTLE, WASHINGTON 98107
Harvesters of The North Pacific Fisheries since 1968
Member of North Pacific Fishing Vessel Owners Association



789-2033

2/20/87

(206) 789-2033
Eves: 782-0694
282-9100

Dr. Anthony J. Calio,Administrator
N.O.A.A.
Hoover Commerce Bldg., Room 5128
Washington D. C. 20230

Re: Dutch Harbor 100 Mile DAP Zone

Feb.19,1987

Dear Dr. Calio:

The proposed P.S.P.A. 100 mile DAP priority area closure around Dutch Harbor is another example of what shoreside processors say they need to give them a "level playing field." Such is not the case and I would refer you to the testimony offered by Mr. Hugh Reilly at the January N.P.F.M.C. meeting.

Mr. Reilly's contentions echo exactly what I find so onerous with the proposal. Given the recent history of the American-ization process of the bottomfishery and its tie-in with the tenets of the Magnuson Act, it is clear that industry, in its market oriented drive to develop the fishery off Alaska, is proceeding very expediously both at sea and ashore, without the imposition of stilited, restricted regulatory schemes. An example of this is the Francis Miller operation where his large floating processor(which is usually anchored in protected waters) is being supplied with fish by his own fleet of smaller catcher vessels. Mr. Miller, recognizing that to get fish on a continuing basis, bought and outfitted his own boats to deliver to this basically stationary floater and this has remedyed his own supply problems. Given that the shoreside processors interested in something other then squelching the competition and returning to the "company Store" concept,they could do well to emulate Mr. Miller's success. In fact, the Aleyeska shore plant in Dutch, too, should be commended for stepping up and bringing on line tender vessels to supply their product needs. To expect outside vessels to make the economic sacrifices that are inherent in catching, transporting and storing a highly perishable fish is totally unreasonable. A good example of what would happen economically to a three million dollar trawler was offered in testimony by Captain Harold Jones, a respected Kodiak boat owner and fisherman,

at the January N.P.F.M.C. meeting. It was stated that if he had continued delivering to the shore plant in Dutch Harbor, he would have gone broke. It is also interesting to note that Captain Jones is also a partner in shoreside processing and a floater, so his bias ,one would think, would be towards the proposal. His honesty is to be commended.

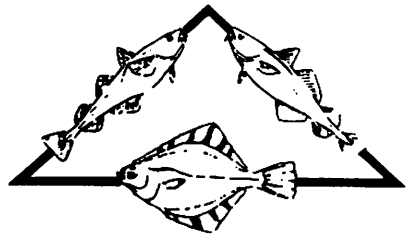
My conclusion, I hope, is obvious. Give innovative business people time to come up with solutions to a problem and they will. The proposed closure of this extremely productive area and its tremondous impact on American fishermen is fraught with negative implications when, in fact, there are positive and constructive things happening by innovative processors that should negate any need for this type of overburdensome proposal.

Respectfully submitted,

Dennis Petersen

Dennis Petersen, President
Ocean Spray Fisheries Inc.

cc:
Senator Brock Adams
Senator Dan Evans
Senator John Breaux
Senator Ted Stevens
Senator Frank Murkowski
Congressman Thomas Foley
Congressman Mike Lowry
Congressman Norm Dicks
Congressman John Miller
Congressman Don Bonker
Congressman Rod Chandler
Mr. James Campbell
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
Mr. William Evans
Mr. Rollie Schmitten
Mr. Robert McVey
Mr. Thorn Smith



February 16. 1987

Dr. Anthony J. Calio, Administrator
National Oceanic & Atmospheric Administration
U.S. Department of Commerce
14th and Constitution Ave. N.W.
Washington, D.C. 20230

Dear Dr. Calio:

RE: Pacific Seafood Processors Association letter to you, Jan. 28, 1987.

While PSPA is certainly entitled to press hard in their efforts to close the waters within 100 miles of Dutch Harbor to all but eight or nine vessels, we felt PSPA's personal attack on Alaska Regional Director Bob McVey, as the result of his negative vote on the PSPA proposal, was uncalled for and merits a response.

I was present at the North Pacific Fishery Management Council meeting during the debate on the 100-mile closure proposal, and have since reviewed the tapes of that discussion. Neither during the original discussion nor during the review of the tapes did I have the impression that "Mr. McVey spoke strongly opposing further consideration of this proposal or any alternatives by the Council staff and/or the public."

The discussion over how to handle priority access revolved around whether the proposal backed by PSPA could be used as the basis for a discussion of alternative methods to achieve priority access or whether the topic should be referred to a committee.

It was noted that the council staff really did not have time to fully develop the priority access proposal if they were to also work on sablefish limited entry, size limit restrictions, etc.

There were councilmen who felt it would be best to get a discussion on the table, those who felt the subject would be more profitably handled by a committee and those who felt industry itself was on its way to developing its own methods of guaranteeing priority access.

North Pacific Fishery Management Council executive director Jim Branson noted that it would be "difficult to do the analysis this requires prior to the March meeting."

Councilman Bob Mace stated that time would be needed to develop an approach.

Councilman Don Collinsworth called the 100-mile closure proposal "a vehicle to get this moving forward."

Mr. McVey said he felt the proposal was "so extreme it is not appropriate to use it as a basis for DAP priority" and noted that "solutions are already underway."

The only problem identified was that Dutch Harbor processors weren't getting enough groundfish and the proposal was simply to close so much area vessels would "be forced" to deliver shorebased.

"Forcing vessels" is a dangerous precedent and certainly not one suggested when floating processors in Kodiak deprived the shorebased plants of substantial amounts of king crab, nor will it be a viable solution as the growing fleet of U.S. floating groundfish processors and factory trawlers begin to compete with shorebased plants for vessels and product.

Mr. McVey has enough experience to know that when serious and complex problems, particularly problems that involve economics and allocations, are treated hastily and simplistically the result is chaos which ends up delaying reasonable action.

To chastise him for suggesting that "just getting something on the table" might not be the best approach seems inappropriate.

We hope that the council and NMFS will give the serious problem of priority access the attention it deserves rather than apply a temporary bandaid for public relations purposes and that future correspondence addresses issues, not people.

Sincerely,

Chris Blackburn, director
Alaska Groundfish Data Bank

CC: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Roland Schmitten NMFS
James Campell, NPFMC

907-486-3910
Box 991

Alaska Draggers Association

Kodiak, Alaska
99615

February 18, 1987

Dr. Anthony Calio, Administrator
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
14th and Constitution Ave. N.W.
Washington, D.C. 20230

Dear Dr. Calio:

Alaska Draggers Association has years of experience with all sorts of exclusive registration areas, exclusive areas, closed areas and every other imaginable method designed to make one group competitive at the expense of another group. The proposed 100-mile closure around Dutch Harbor is just another in a long string of efforts to promote inefficiency under the guise of equalizing competitiveness.

It's our experience that anti-competitive measures only result in assuring that the U.S. industry doesn't develop the resources to be competitive.

The proposed 100-mile closure around Dutch Harbor will only force the trawl fleet offshore where the shorebased plants can't develop methods of using joint venture vessels as a source of product by tendering.

There may be legitimate priority-access concerns which could be addressed and there may be ways of assuring U.S. processors (which includes floating processors and factory trawlers as well as shorebased processors) a competitive edge over foreign processors, but a sweeping, large area closure is more likely to retard U.S. development than help it.

We find Pacific Seafood Processors Association's Jan. 28 letter which criticizes Bob McVey for his vote on the 100-mile closure an unfair attack on a member of National Marine Fisheries Service.

We feel McVey, like most of us with a long history in the Alaska fishing industry, understands that quick and dirty fixes seldom work and often hinder fisheries development.

The issue of priority access deserves reasoned and sincere consideration, not just a sweeping proposal "to hold their feet to the fire."

Neither the council staff nor the council itself has the time and resources to develop alternative approaches before the March meeting.

We don't understand why the processors who say they will benefit from priority access insist on pushing an ill-considered quick fix and criticize those like Mr. McVey who take the Federal Standards, council process and staff time seriously enough to demand a more considered approach.

The proposal, as presented, isn't priority access, but exclusive access which attempts to force one group of independent business to serve a second group of independent businessmen.

If the federal government tries to regulate for whom a vessel may fish, we can expect the secondary processors to demand regulations requiring U.S. processors to produce and sell a certain amount of fish blocks without regard to profitability.

It's our own feeling that, like legislated phase out of foreign fishing, the priority access issue will be and should be solved by industry itself.

Sincerely,

Al Burch

Al Burch, executive director
Alaska Draggers Association

CC: Senator Brock Adams
Senator John Breaux
Senator Dan Evans
Senator Frank Murkowski
Senator Ted Stevens
Congressman Don Bonker
Congressman Rod Chandler
Congressman Norman Dicks
Congressman Thomas Foley
Congressman Mike Lowry
Congressman John Miller
Congressman Sid Morrison
Congressman Al Swift
Congressman Don Young
William Evans, NMFS
Robert McVey, NMFS
Rolland Schmitten, NMFS
James Campbell, NPFMC

Hugh Reilly

THE AMERICAN HIGH SEAS FISHERIES ASSOCIATION

Mr. Chairman, members of the Council, we thank you for the opportunity to introduce the American High Seas Fisheries Association—— in formation since late 1986 and organized to promote the interests of the owners and crewmen of U.S. fishing vessels which deliver their harvests at sea.

The first official meeting of the association was held March 9th at which a board of directors of eleven was elected from the four states of Alaska, Washington, Oregon and California. The officers and directors are:

Mr. Hugh Reilly	-	President/Director
Mr. Frank Bohannon	-	Senior Vice President/Director
Mr. Trefon Angasan	-	Vice President-Alaska/Director
Mr. Cary Swasand	-	Vice President-Washington/Director
Mr. Fred Yeck	-	Vice President-Oregon/Director
Mr. John Dooley	-	Vice President-California/Director
Mr. Henry Swasand	-	Secretary-Treasurer/Director
Mr. Dave Harville	-	Director
Mr. Peter Block	-	Director
Mr. Bob Watson	-	Director
Mr. Phil Werdal	-	Director

To date, thirty-one (31) vessels from the four states have joined the association. Those vessels fish primarily for Japanese interests, but fishermen and other vessel owners who also deliver their catches at sea share our goals and we welcome their participation.

The organization was formed to promote:

* Americanization of the U.S. bottomfish resource off Alaska;
* Sound conservation and management of the resource within the U.S. 200-mile zone;
* Preservation of the American fisherman's freedom to sell his catch, at sea or ashore, wherever he expects the best return.

The members of the association are businessmen and fishermen, all with a substantial investment in their vessels and a tremendous

need for continuity of employment. The 125 U.S. vessels engaged in joint-venture activities represent investments of from $1 million to $3 million each. Collectively, they will bring some $225 million of badly needed export earnings to the U.S. economy this year. The owners of these vessels oppose efforts to restrict their access to fisheries resources surplus to DAP needs or to disrupt their current markets when domestic markets do not exist for their substantial harvests.

The association will also be addressing the popular perception that joint-ventures are an evil enterprise, giving fish to foreign processors, smuggling the riches of the North Pacific and Bering Sea into foreign hands. Those who describe U.S. fishermen who deliver to foreign processors as enemies of Americanization ignore the substantial contributions which joint ventures have made to the Americanization process:

- -they have been the driving force in development of the extraordinary U.S. bottomfish harvesting fleet that exists today;
- -they have restored employment to fishing vessels and Alaska coastal communities that were reeling from the collapse of the crab fisheries;
- -they have initiated the processes, through the industry-to-industry negotiations, which led to:
  - -construction of the two surimi processing plants in Dutch Harbor
  - -opening of foreign markets for a wide range of domestically harvested and processed bottomfish products
  - -recent negotiations to open herring and pollock IQ's for U.S. produced products
- -and recently, joint ventures have committed to support, on a priority basis, domestic tenders engaged in pollock transport to shore plants.

The Americanization process is well underway; thanks to the joint ventures, U.S. harvesting has virtually replaced all directed foreign fishing in the 200-mile zone; significant new bottomfish

processing capacity has developed in Kodiak, Akutan, and Dutch Harbor; and some twenty (20) American factory trawlers are harvesting and processing at sea, with more in the offing.

The transition to maximum Americanization will continue; it is a goal shared by members of the Association. But a capable and fully employed harvesting fleet is an important element of this process, one that must not be jeopardized in the transition.

There won't be any overnight results; we don't have a monopoly on bottomfish and must remain competitive in world markets if we want to develop a healthy domestic bottomfish industry with solid, long-term prospects.

The American High Seas Fisheries Association is committed to the goal of Americanization of the fisheries, and we view our $225 million harvesting industry, the emerging factory trawlers fleet, and the domestic shoreplants in operation to date as points of departure for further Americanization. The members of the association hope for continuing and constructive dialogue between all members of the industry and in the Council process towards that end.

Crutchfield's testimony

STATEMENT TO THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL ON THE DAP-PRIORITY ACCESS PROPOSAL

1. Objective

The stated objective of the proposed action is to assist the plants at Dutch Harbor/Unalaska and Akutan to obtain enough fish for full capacity operation. The way to achieve this goal is apparently to shift fish from JV's to shoreside processors by raising costs, reducing catch rates and lowering returns to JV vessels. The ultimate effect, if not the purpose of the proposed action, is to eliminate competition for fish in the closed area and allow shoreside processors in the area to pay prices low enough to make their operations profitable.

2. CPUE Effects

The report emphasizes, properly, the importance of the potential for reduction in costs for vessels that would continue fishing within the closed area as a result of lower fishing effort. The discussion acknowledges the difficulty of measuring this effect, but still implies a substantial lowering of costs for the favored vessels as a result of improved CPUE.

Actually, the analysis of CPUE effects seems much more complex. For example, what if pollock are extremely abundant in the area in one period and scarce in another (a realistic picture)? When fish are concentrated, a reduction in effort might have little or no perceptible effect on CPUE; the boats are already filling cod-ends with short tows. Even at lower densities CPUE effects might not be significant (and certainly would

not increase in linear fashion with a reduction in effort) if the distribution of the available biomass is not uniform. I.e., at lower biomass levels, fish may be equally densely bunched, but with different spatial distribution. Regression analysis may be further complicated by the normal tendency of fishermen to move to the most productive areas, in which case CPUE may show a positive correlation with effort.

There is a substantial literature dealing with the problems in relating changes in CPUE to changes in biomass. Exactly the same difficulties will be encountered in estimating the effects of reduced effort on biomass and the consequent impact on CPUE. The implication that a simple regression analysis of data now 6-7 years out of date will provide even a rough approximation of the "CPUE effect" is not warranted.

The picture is further clouded by the use of 1984-85 data on the area distribution of the fishery. The impact of the proposed action would be far greater on the basis of 1986 atual and 1987 anticipated fleet distribution.

The report also acknowledges the uncertainty about the extent to which negative CPUE effects may be felt by excluded boats. The larger, more mobile boats may indeed be able to redeploy to other areas and reduce this effect, but a substantial part of the JV fleet may not have that option; and all would face increased operating costs. If redeployment does not affect catches and/or costs significantly the boats will continue to

choose JV operations and the proposed actions would not achieve stated objectives.

It should also be obvious that if the proposed action brings in new plants and new vessels, the assumed CPUE effect will decline or disappear. In addition, the present constraints imposed by limited infrastructure would mean higher operating costs for new plants and vessels in the part areas concerned.

In short, it is going to be very difficult to quantify CPUE effects, if any, and it seems intuitively unlikely that it will produce the desired effect.

3. Impacts on Quality

Only brief mention is made of the effect of forced delivery of pollock to shore plants in product quality. The at-sea processors have had a difficult time persuading U.S. marketers that pollock fillets frozen at sea were quality products that could substitute for cod. That hard-won position can only be maintained by a flow of consistently high quality product; and it could be eroded quickly by the introduction of large quantities of pollock fillets of uneven quality.

It is difficult to see how shore plants in the area concerned can meet those standards throughout the year. There is simply no way pollock can stand extended transport and one or two handlings without some loss of quality (or, equally important, uniformity of quality) relative to at-sea production. It may still be a good marketable item, but it will inevitably lower returns to fishermen.

Quality of raw fish inputs is also important to surimi producers. The Japanese market has always shown a premium for surimi from at-sea processors.

4. Enforcement Costs

Whenever lines are drawn that define different fishing opportunities, enforcement problems and costs will rise. This proposal is no exception.

5. "Equalizing" Fees

Of the restrictive measures that might be taken to improve the competitive position of the shore plants at Dutch Harbor and Akutan, this is the least justifiable in terms of sound economics.

First, the "equalization" concept is inappropriate and unworkable. The concept originated in the desire to protect U.S. producers from imports whose prices were lowered artificially by subsidies or by deliberate dumping below production costs. In this case, however, the tax or fee would be established to eliminate real economic cost advantages of at-sea delivery and processing. If it were set at levels that offset only legitimate claims of discriminatory treatment of U.S. shore processors, it would accomplish little or nothing.

Moreover, the whole concept has no empirical footing. Whose costs are to be equalized--U.S. shore processors, U.S. at-sea processors, foreign processors (Japanese, Korean)? Unit costs vary even for companies in the same category--depending, for example, on the other processing activities carried on by the

same firm. They would also vary from year to year with changes in abundance of fish or from changes in U.S. regulations.

Perhaps most important, the real cost differences lie not in plant operations but in harvesting and delivery costs. The proposed fee then becomes a way of eliminating the most efficient way of catching and handling the raw product.

Suppose that by some miracle, a fee could be set that did "equalize" costs. The objective of the proposed action would still not be met for certain, because the vessels would be indifferent as to delivery to joint venture or shoreside buyers. In short, the fee could only achieve the desired result if: (a) it could not be passed on to the consumer, in whole or in part; and (b) the resulting decline in what could be paid to fishermen is large enough to make shore delivery more attractive.

6. Secondary Economic Effects

There would be no real difference in effects on suppliers of services and goods to the individual vessel. But if 3-6 boats benefit from the action and 100 or more boats are driven out of the fishery or severely limited in earnings, the total secondary effect would be significant--and negative.

The report is silent on the effect of the reductions in JV activities on local income and employment in the Dutch Harbor/Unalaska area. NRC estimates, on the basis of data from several JV operators, that about 30 percent of the estimated $210-$220 million of gross JV revenue from Bering Sea operations in 1986 was spent in Alaska. These operations are staged largely

out of Dutch Harbor. Thus most of the $60-$70 million spent in the state of Alaska was a direct addition to the local economy. For example, one company alone, operating only three JV venture vessels, calculated its 1986 Dutch Harbor expenditures at more than $1 million. The whole group of fishery-related industries in the area is heavily dependent on the JV operations.

It should also be noted that profits and interest payments from two of the local processing plants would accrue in part to Japanese owners rather than to local or state of Alaska residents.

If all the JV vessels could simply redeploy and maintain their earnings the action would be totally ineffective. Fishermen would still prefer to deliver at sea because it is more profitable. It can only achieve its stated purpose by lowering overall returns to the vessels now fishing pollock. The direct and indirect effects of that reduction would mean severe economic losses to the very community the proposed action is designed to help.

7. Alternatives

The most telling argument against the proposed action is the absence of any need for it. Fish can easily be supplied the shore plants at any level desired, presumably at the JV price plus tendering costs. Alternatively, the plants could operate their own boats. If these alternatives are not acceptable, it can only be because the shore plants cannot presently meet the going ex-vessel price for pollock and operate at a profit. The

question then arises in clear-but form: should U.S. fishermen be forced to accept lower prices to subsidize less efficient processors?

Conclusion

The pace of Americanization of Alaska's bottomfish operations has been extraordinary. Except for the stimulus provided by preferential U.S. access to the resource, that development has been driven by market forces and competition.

The proposed action will not contribute the overall goal of Americanization; it is simply an arbitrary reallocation among American producers. It would cause a serious amount of disruption, without any assurance that its own objectives would be achieved. While the report authored by Staff and NMFS quite fully discusses the costs and benefits of the DAP priority proposal, it has not had the time or resources to quantify either. It is difficult to see how the Council can assess the action with that much uncertainty about whether or not it would be effective and at what cost to other U.S. fishermen and processors. If expenditures in Dutch Harbor by JV operators are taken into account it seems highly likely that even local economic effects may be negligible or even negative.

It is also critically important to distinguish between benefits and costs to the U.S. and to individual U.S. groups. It is extremely doubtful that the proposed action would bring net benefits to the U.S. fishing industry as a whole, particularly since two of the plants which might benefit are Japanese-owned.

What is involved is not a comparison of real economic benefits and costs but rather of transfers of fishing and processing opportunities and incomes between groups of U.S. citizens.

It would seem far more desirable to let market forces and efficiency considerations dictate how and by whom the Americanization process is to be achieved.

James A. Crutchfield
Natural Resources Consultants
March 16, 1987

NORTH PACIFIC LONGLINE ASSOCIATION

ADDRESS: ZENKEIREN BLDG.
2-7-2, HIRAKAWACHO,
CHIYODAKU-KU, TOKYO,
JAPAN
PHONE: 03 (264) 5671
TELEX: 232-2620 NPLA J
FACSIMILE: 03 (262) 9767

Pacific Cod IQ Program

As of Feb.18 1987.

Name of Buyer	U.S.Seiler	Date of Import	Volume
Icicle Janpan	Icicle Seafood.	Feb.17,1987	18M/T
Nihon Hogei	Jubilee Fisheries Inc.	Jan.20,1987	16M/T
Aburai Kabo	Arctic Alaska Seafood Inc.	Feb.20,1987	86M/T
Aburai Kabo	Arctic Alaska Seafood Inc.	Feb.26,1987	50M/T

D-3

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

March 13, 1987

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

Dear Mr. Campbell:

The Senate Community and Regional Affairs Committee held a public hearing on March 12 regarding SJR 24 "Relating to the establishment of a domestic fishery zone for Unalaska." The resolution, which I sponsored and which was co-sponsored by nine other senators, urges the North Pacific Fishery Management Council to create a DAP Priority Access Zone around Unalaska.

The resolution received support from Paul Fuhs, Mayor of Unalaska; Glenn Boledovich, City Councilman from Unalaska; Ericka Tritremmel, City Administrator from Akutan; David McGlashan, President of the Akutan Village Corporation; and Rick Lauber of the Pacific Seafood Processors Association. There was no oral testimony in opposition of the resolution; although a letter was received from the Alaskan Joint Venture Fisheries, Inc. in opposition.

There were some technical amendments made to the resolution and I have enclosed a copy for your information.

Sincerely yours,

Arliss Sturgulewski

Senator Arliss Sturgulewski
Senate District F

Enclosure

cc: James Branson

Introduced: 3/5/87
Referred: Community & Regional Affairs & Labor & Commerce

5-0723A

BY STURGULEWSKI, ZHAROFF, JONES, ELIASON, FISCHER, DUNCAN, COGHILL, HENSLEY, FAIKS AND BINKLEY

IN THE SENATE

SENATE JOINT RESOLUTION NO. 24

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - FIRST SESSION

Relating to the establishment of a domestic fishery zone for Unalaska.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS the 200-mile exclusive economic zone was established to encourage the development of the domestic ~~fishing~~ SEAFOOD industry; and

WHEREAS the allocation of fish in the 200-mile exclusive economic zone is granted on a priority basis, with domestic fishermen and processors given first preference; and (DAP)

WHEREAS the Magnuson Fishery Conservation and Management Act is intended to stimulate new jobs and new sales for the domestic ~~fishing~~ SEAFOOD industry; and

WHEREAS foreign processors operating in the Bering Sea and Aleutian Islands are restricting the growth of the domestic industry; and

WHEREAS on-shore processing plants provide employment opportunities for Alaska workers, contribute to the state through the payment of taxes, and stimulate economic growth in coastal communities; and

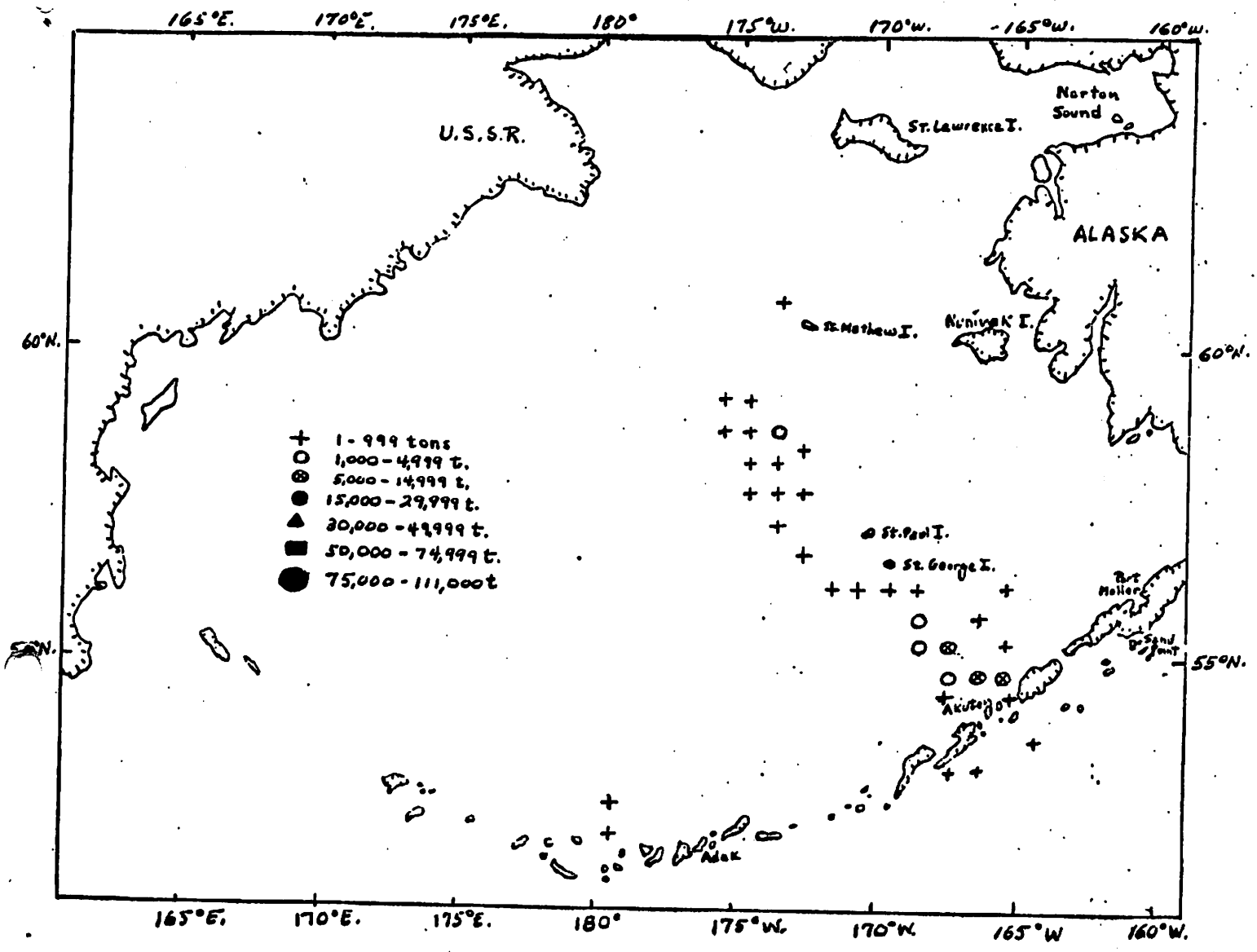
WHEREAS the establishment of the domestic fishery zone for the Unalaska area will encourage the development of on-shore processing plants; and

WHEREAS the cities of Unalaska and Akutan have requested that the North Pacific Fishery Management Council establish a ~~domestic fishery zone~~ DAP Priority Access Zone covering the area within a 100-mile radius of the City of Unalaska;

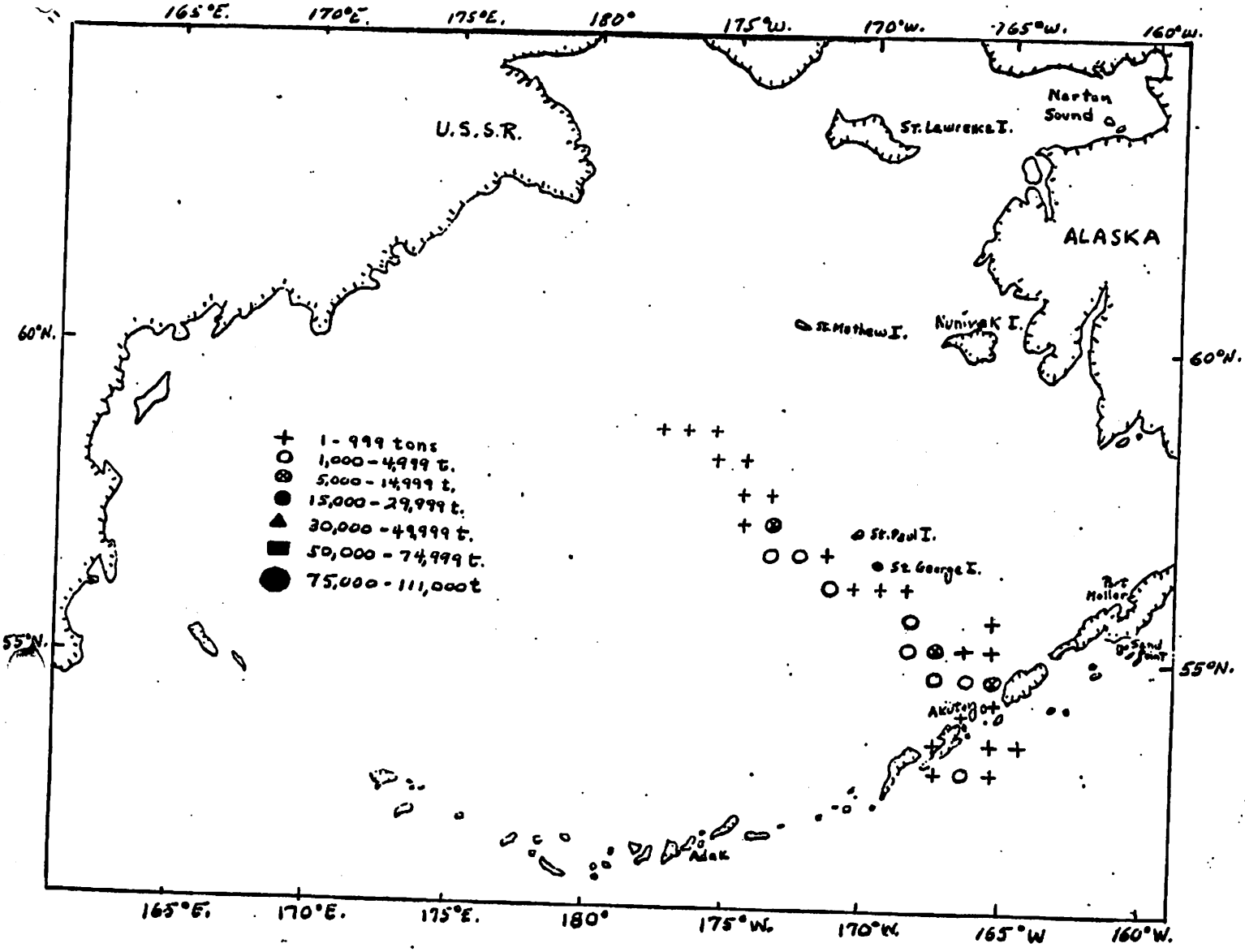
BE IT RESOLVED that the Alaska State Legislature respectfully requests the North Pacific Fishery Management Council to create a ~~domestic fishery zone~~ DAP Priority Access Zone covering the area within a 100-mile radius of the City of Unalaska.

COPIES of this resolution shall be sent to the Honorable Malcolm Baldrige, Secretary of Commerce; to James Campbell, Chairman, North Pacific Fishery Management Council; and to the Honorable Ted Stevens and the Honorable Frank Murkowski, U.S. Senators, and the Honorable Don Young, U.S. Representative, members of the Alaska delegation in Congress.

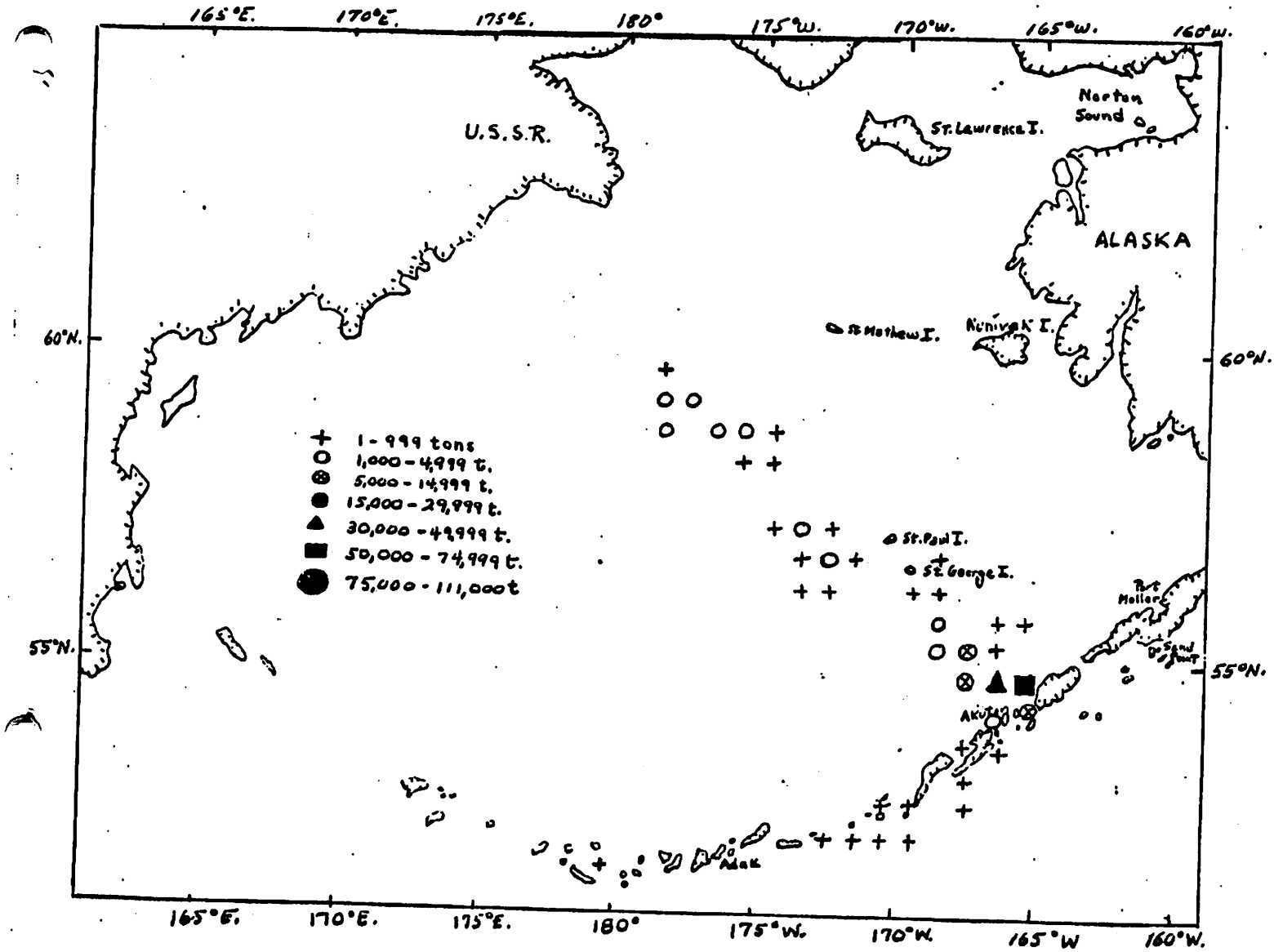
Steve Hughes' testimony



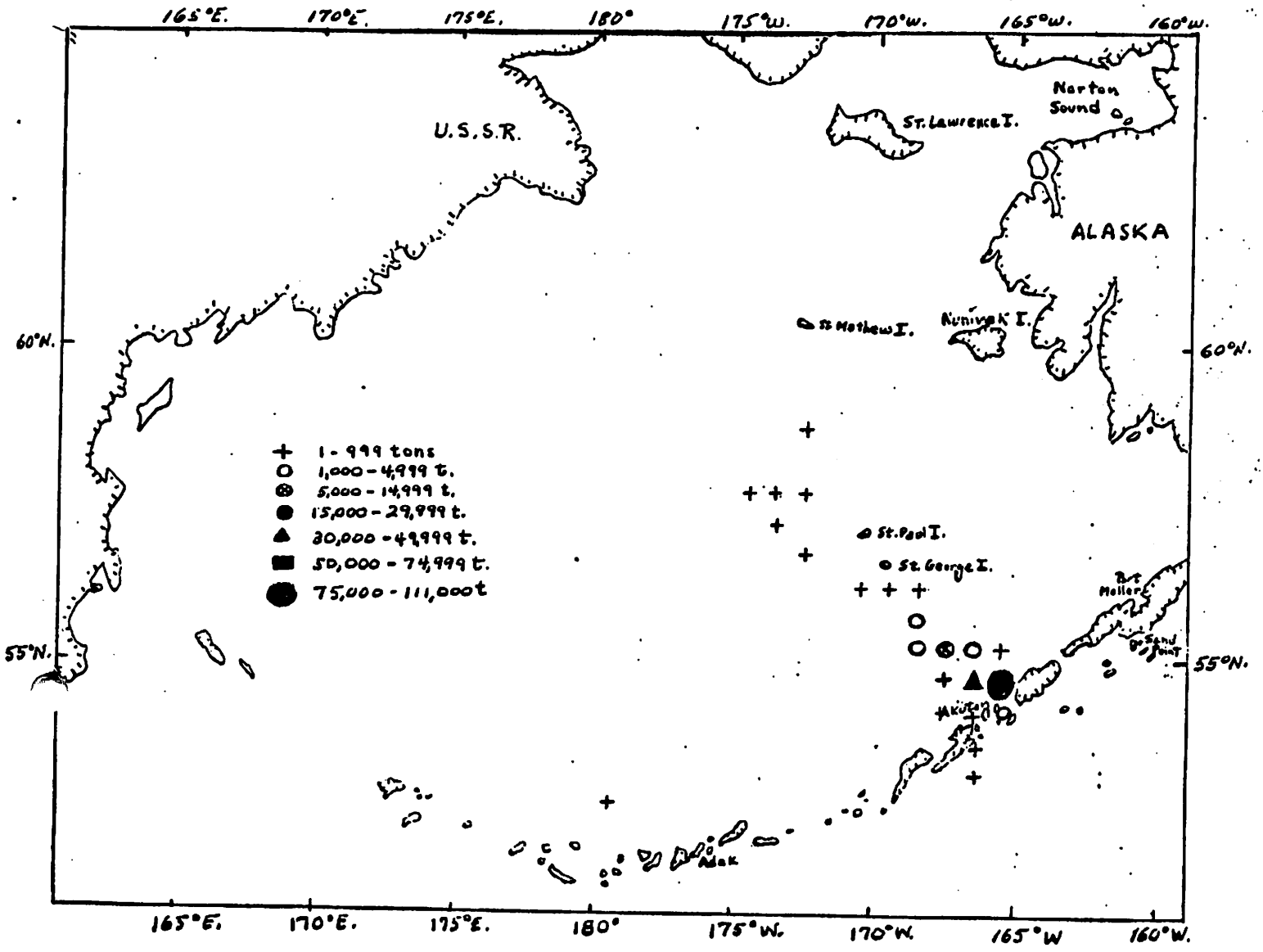
Location and size of foreign catches of pollock in January 1972 (all nations and all gear).



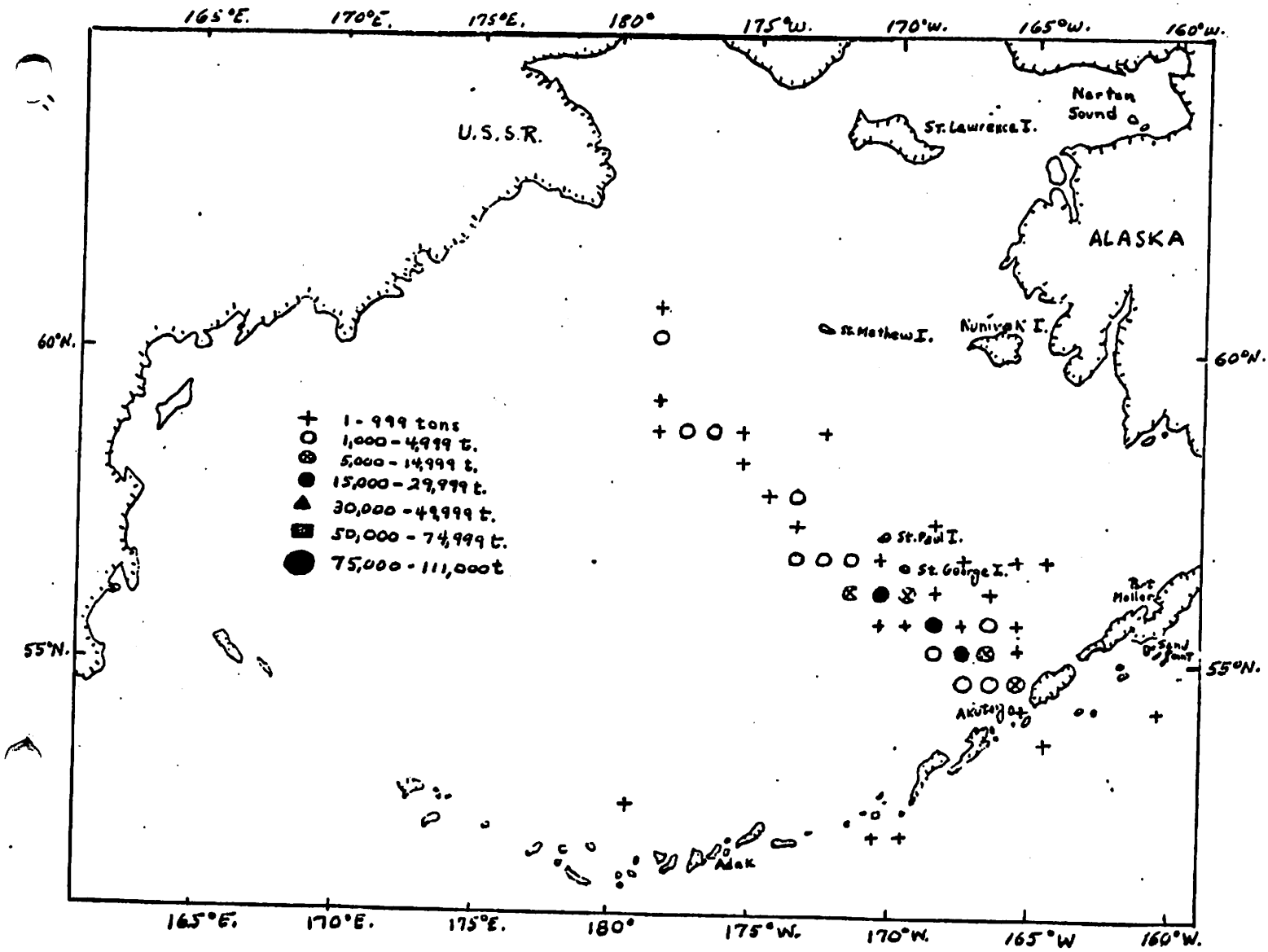
Location and size of foreign catches of pollock in February 1972 (all nations and all gear).



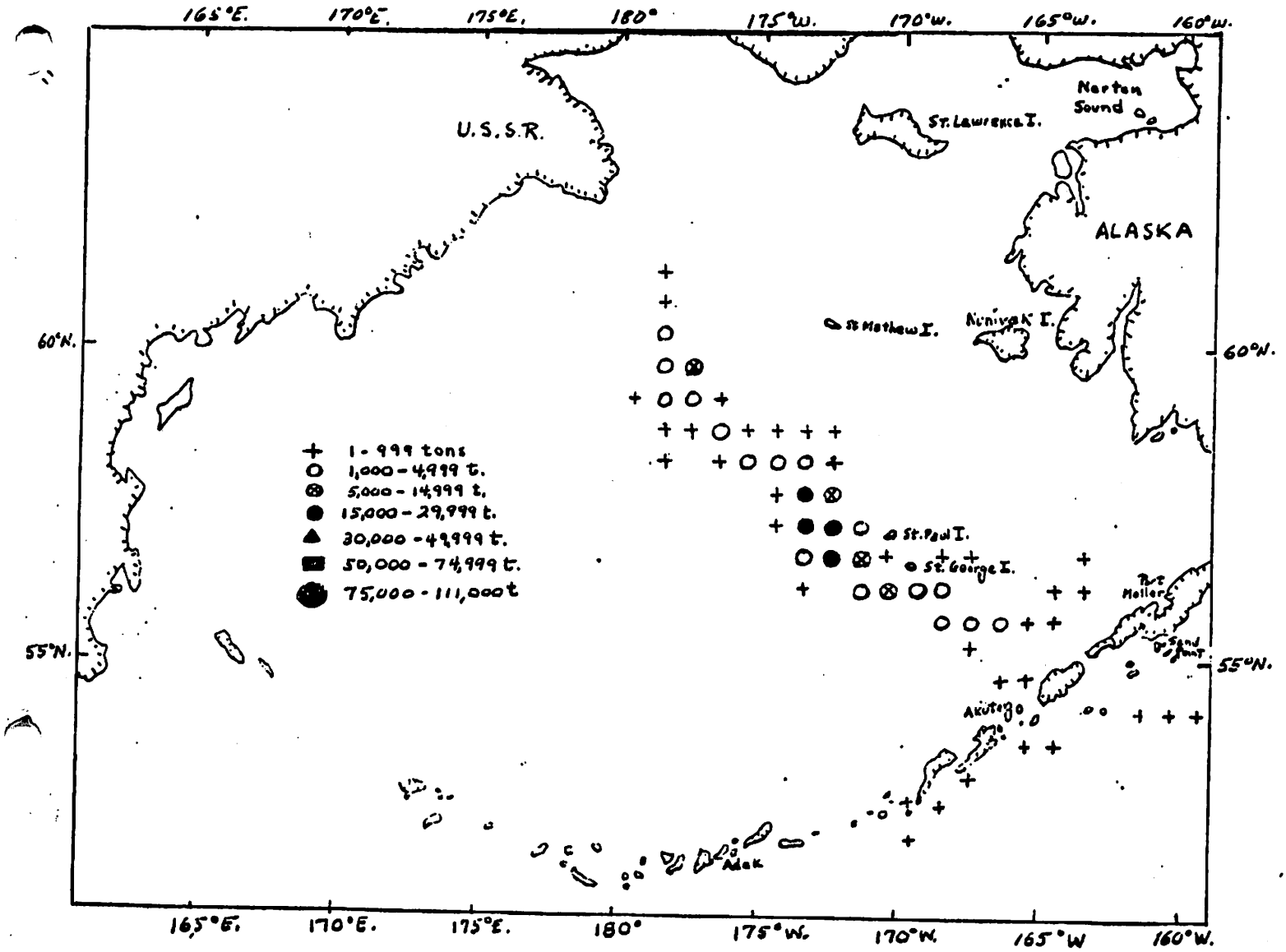
Location and size of foreign catches of pollock in March 1972 (all nations and all gear).



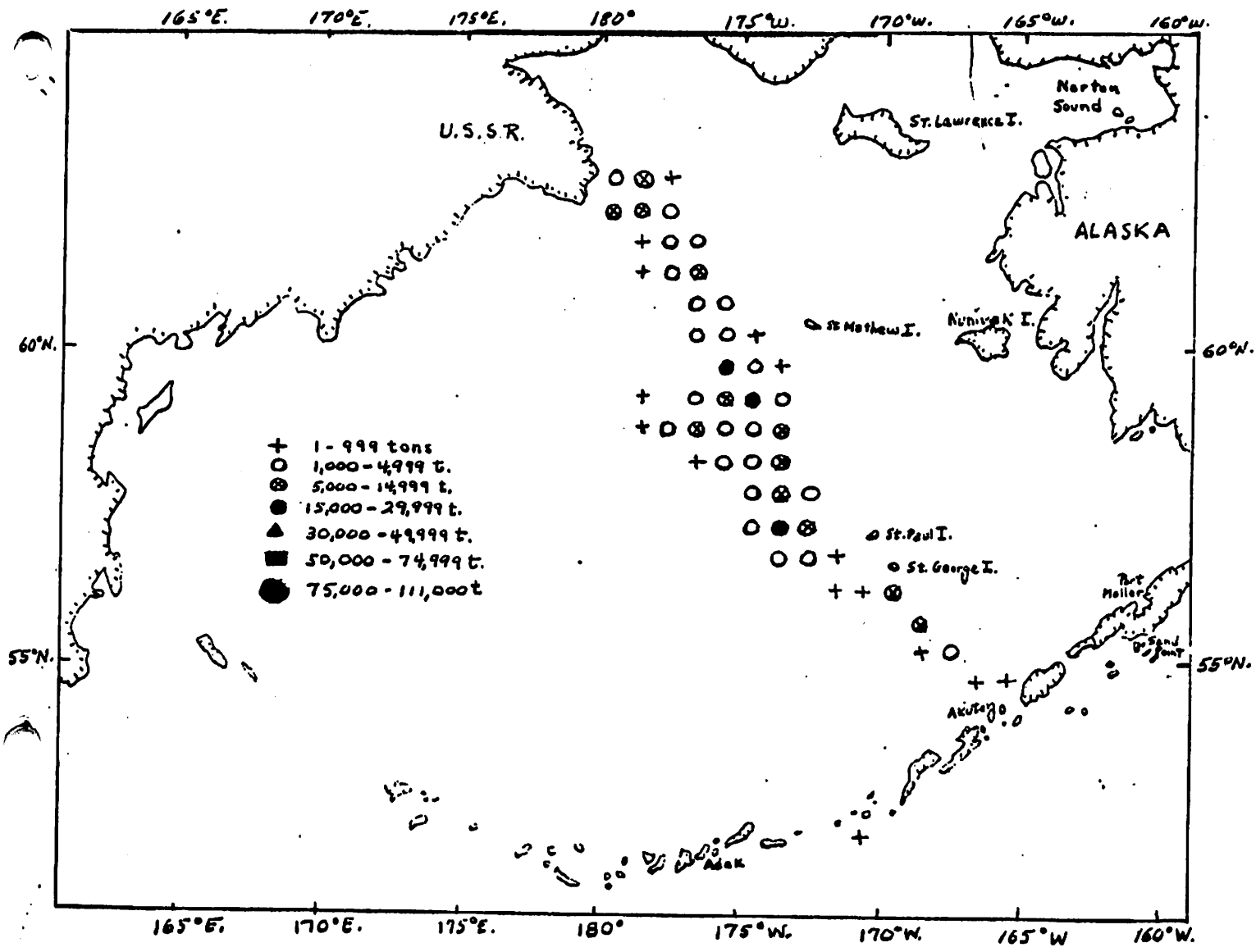
Location and size of foreign catches of pollock in April 1972 (all nations and all gear).



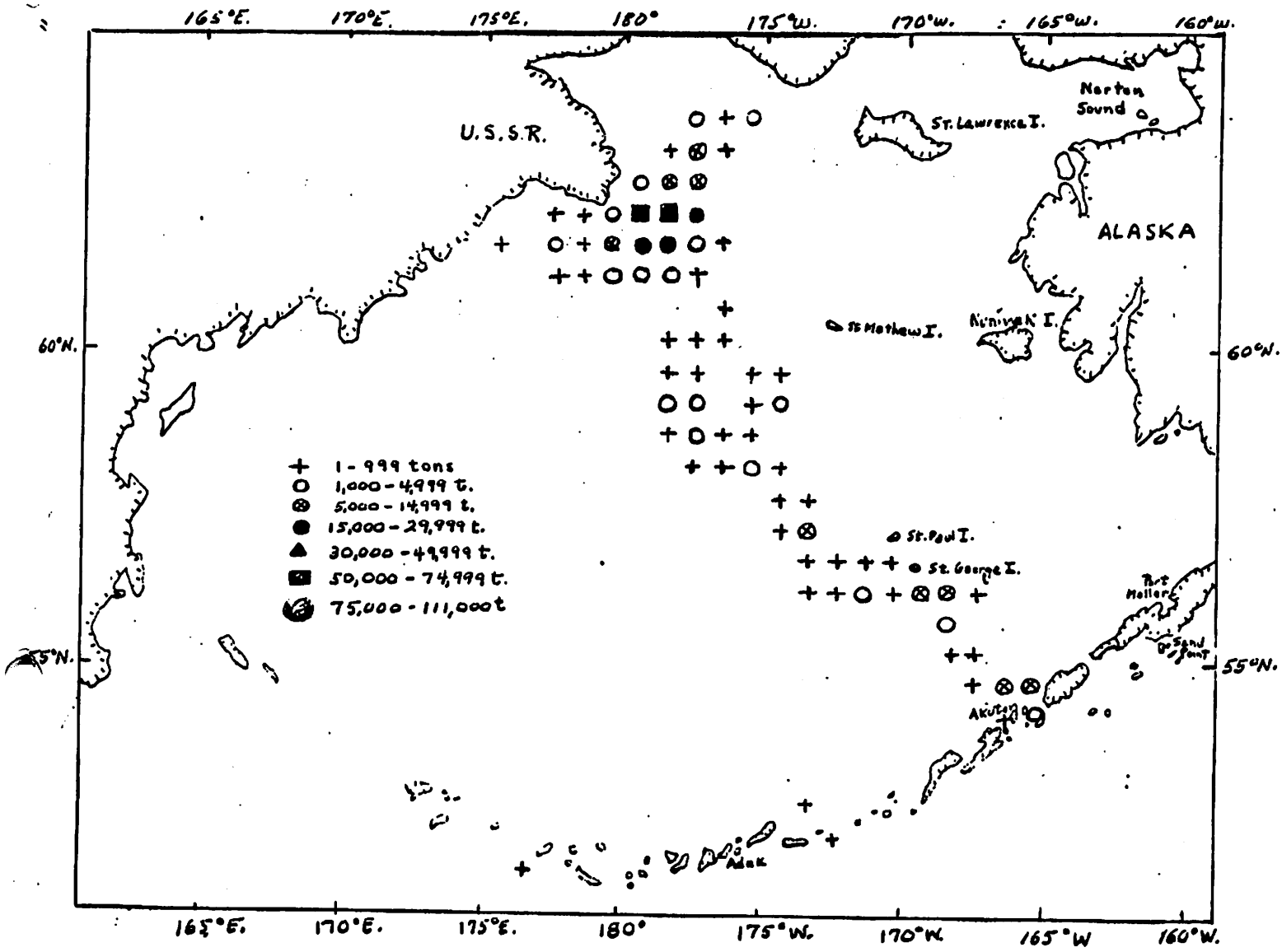
Location and size of foreign catches of pollock in May 1972 (all nations and all gear).



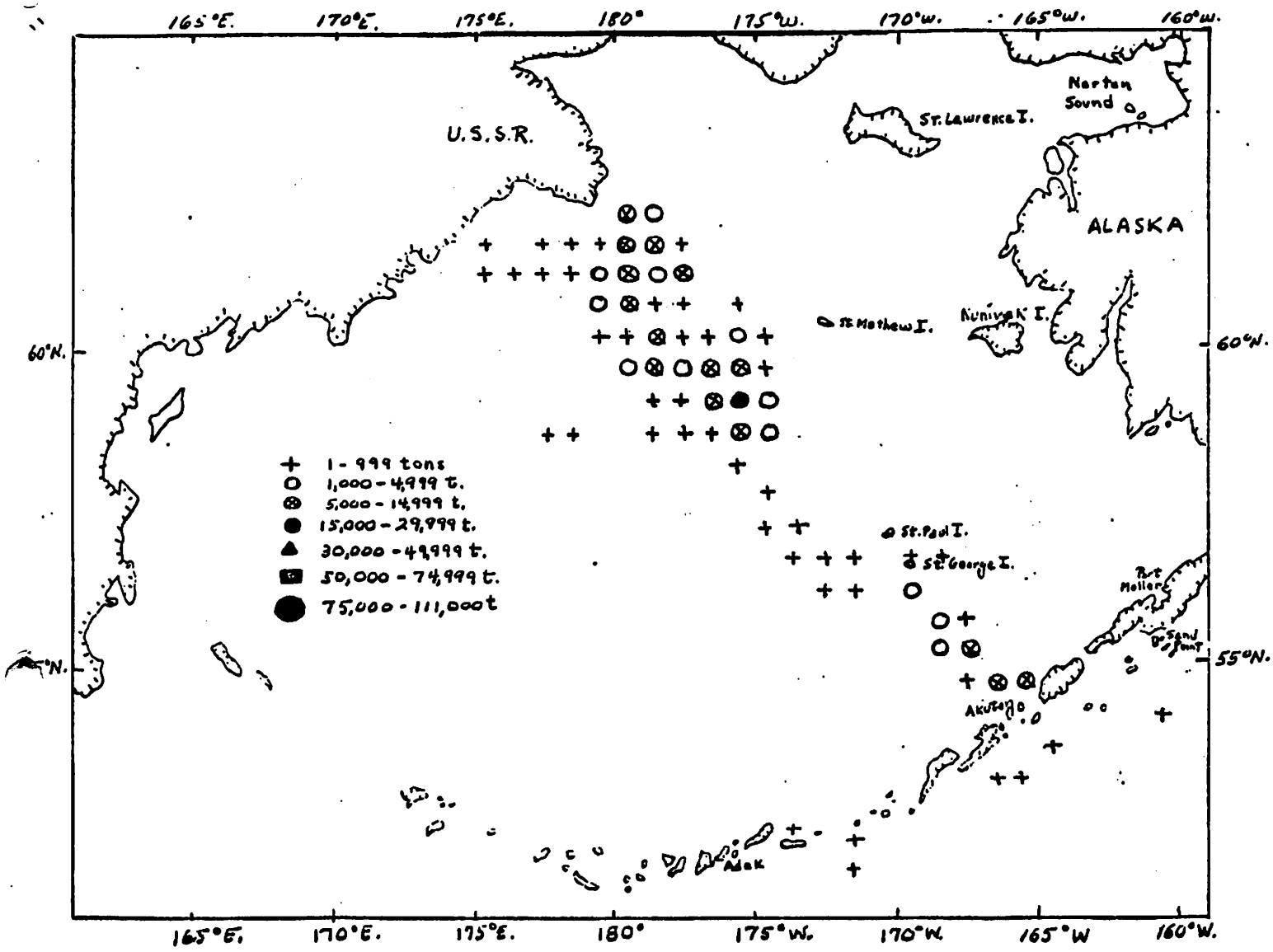
Location and size of foreign catches of pollock in June 1972 (all nations and all gear).



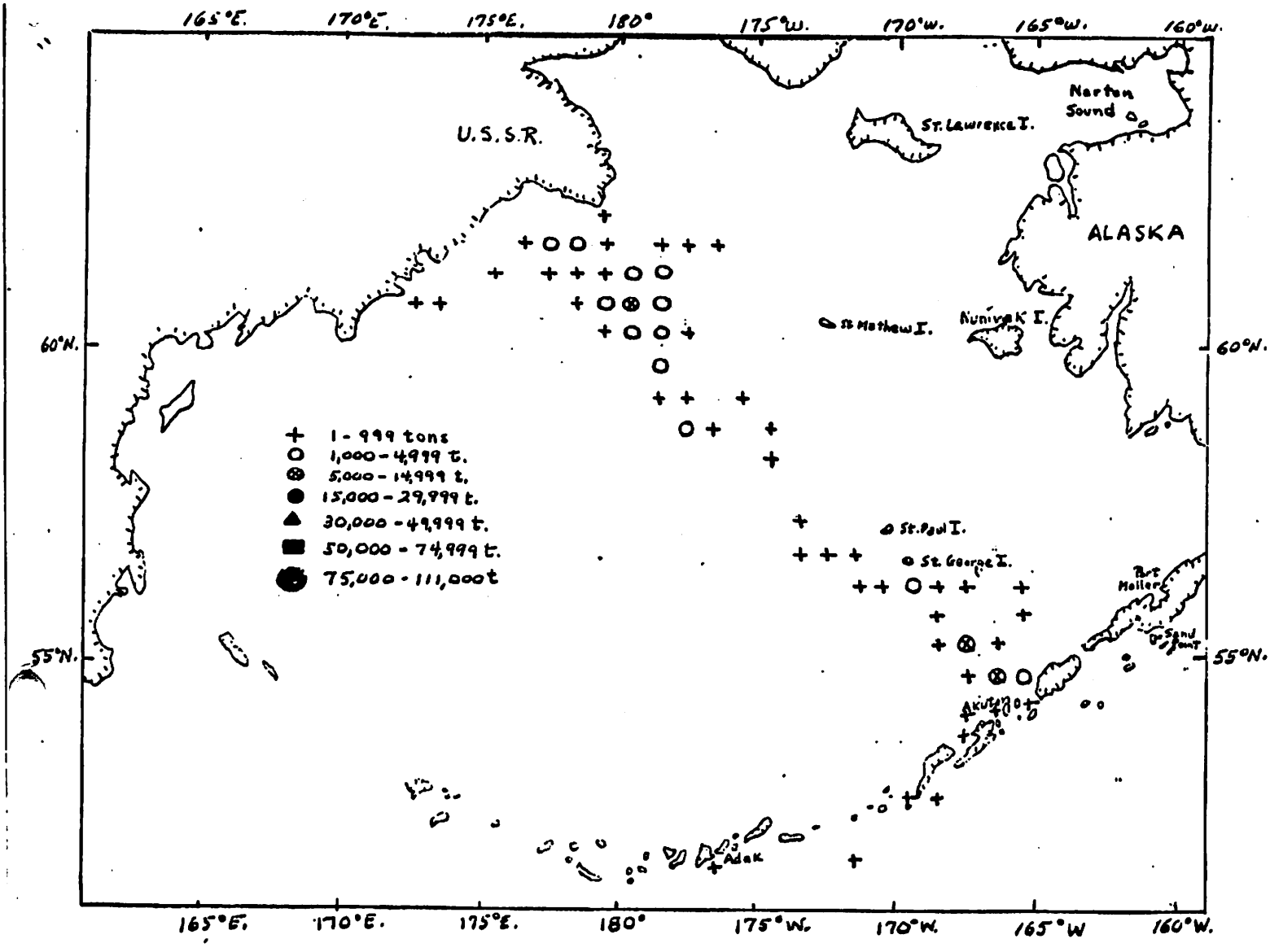
Location and size of foreign catches of pollock in July 1972 (all nations and all gear).



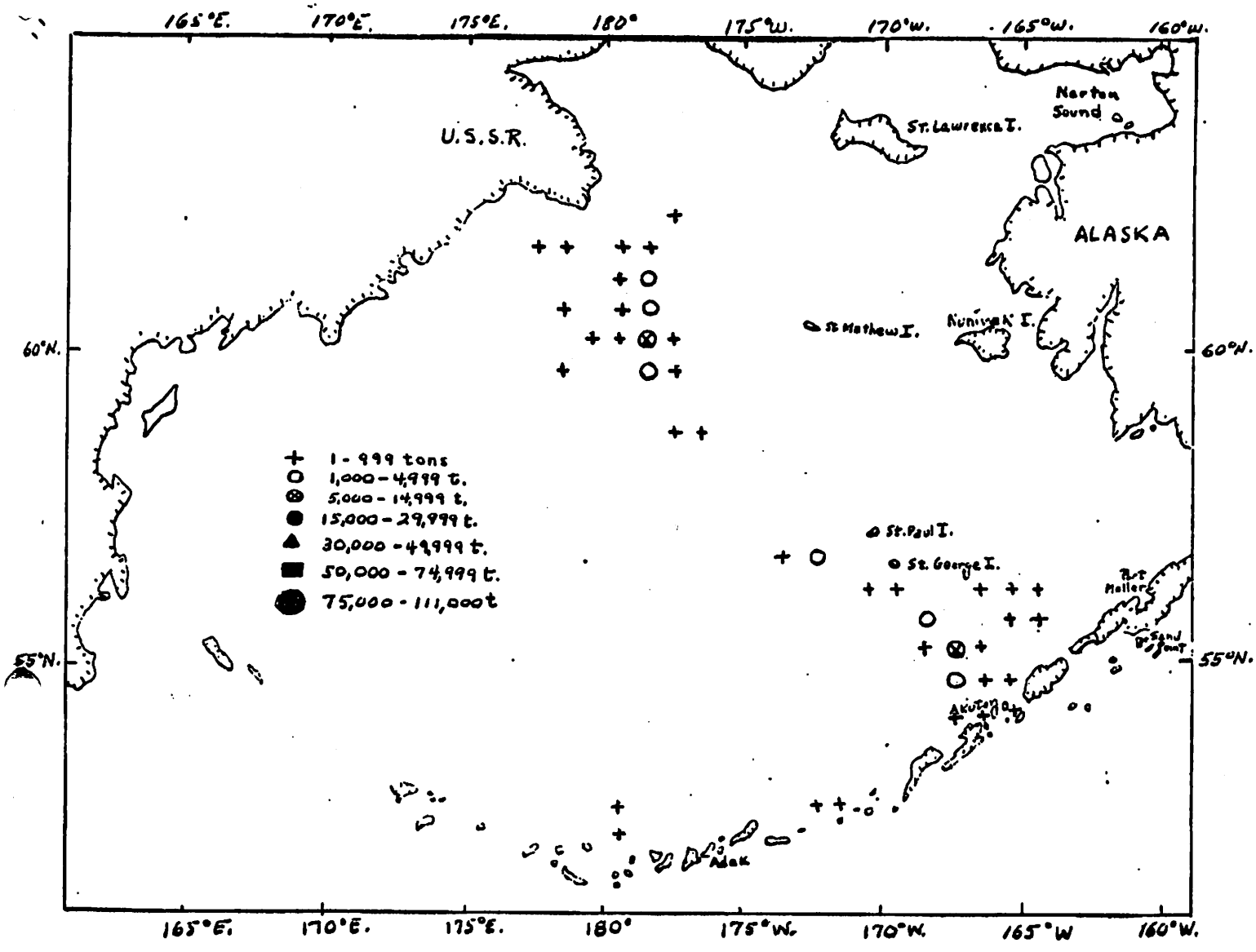
Location and size of foreign catches of pollock in August 1972 (all nations and all gear).



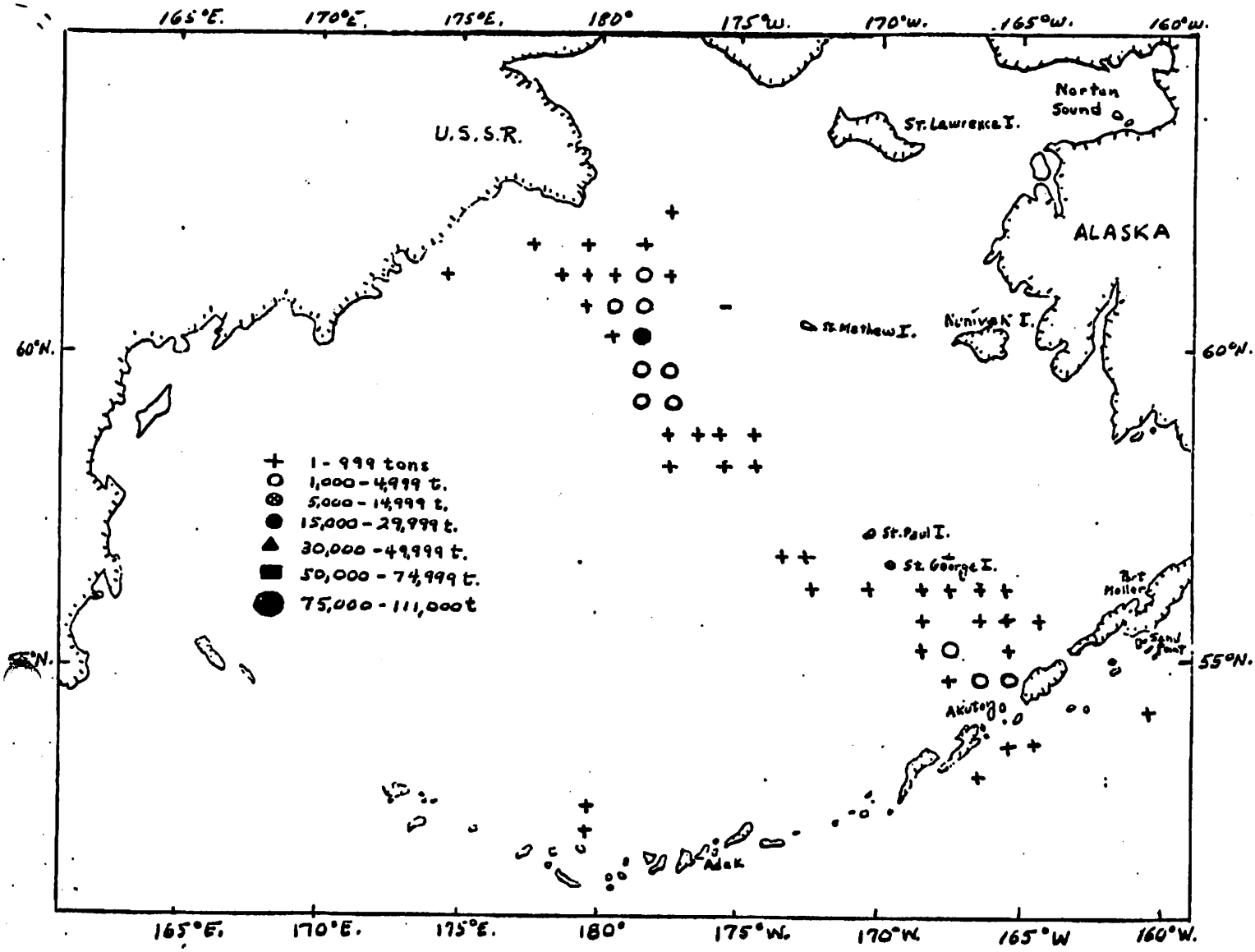
Location and size of foreign catches of pollock in September 1972 (all nations and all gear).



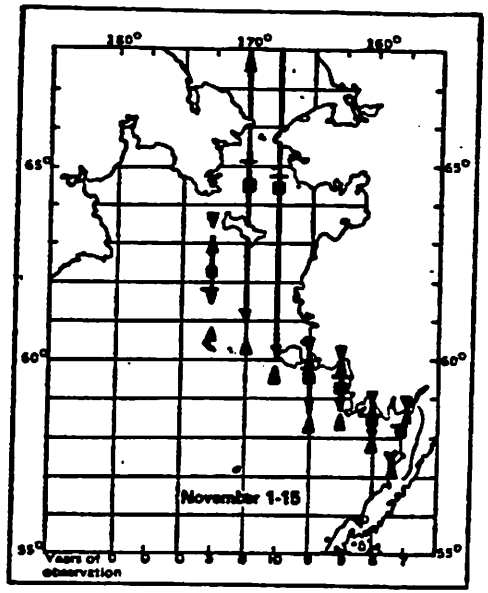
Location and size of foreign catches of pollock in October 1972 (all nations and all gear).

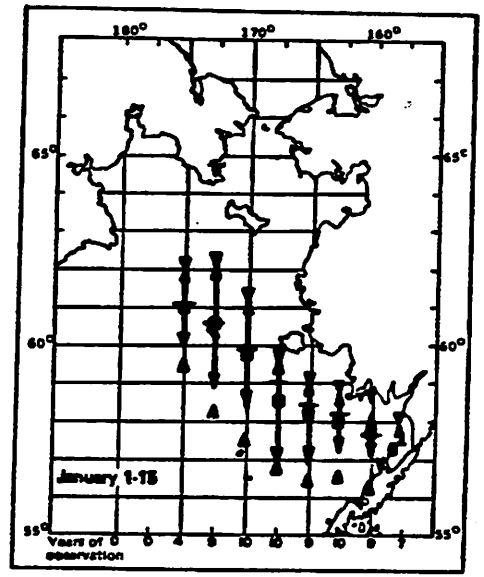


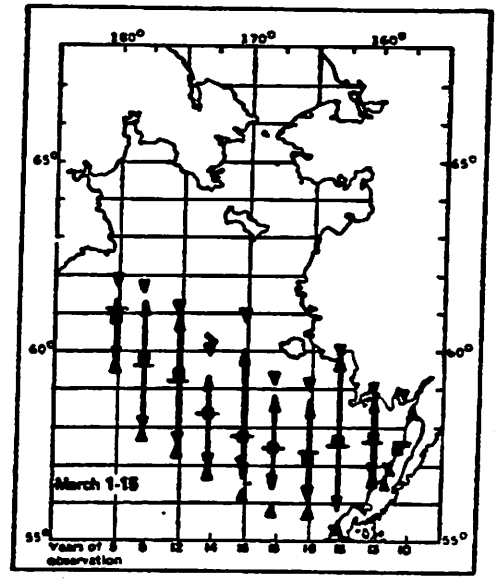
Location and size of foreign catches of pollock in November 1972 (all nations and all gear).

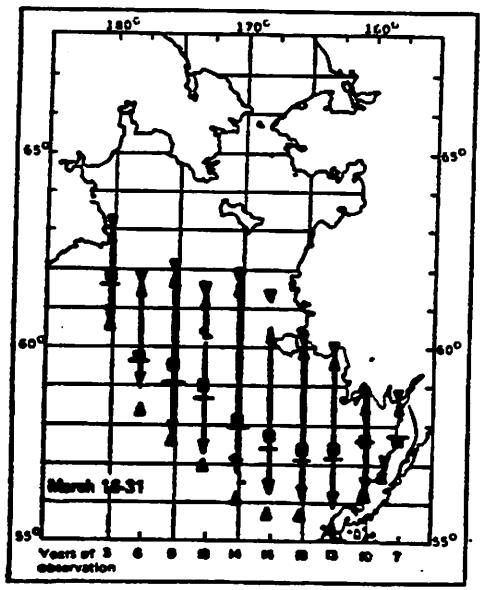


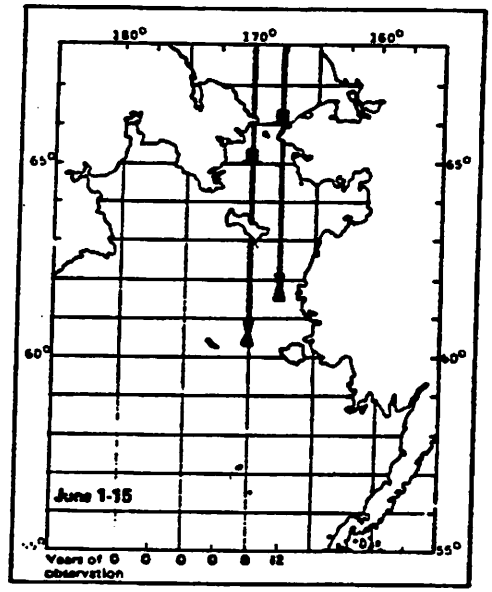
Location and size of foreign catches of pollock in December 1972 (all nations and all gear).

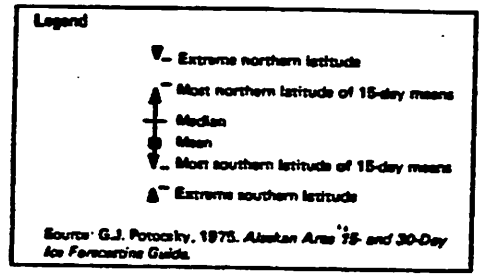












Distribution of pack ice in the Bering Sea during selected periods of the year.