

Statement of Commitment

As Passed by the Policy and Planning Committee
Anchorage, Alaska
September 2, 1987

On December 7, 1984 the North Pacific Fishery Management Council adopted nine comprehensive management goals designed to provide a sense of direction for the course of its fishery management decisions over the next decade. The Council's comprehensive goals are consistent with, and supplemental to, the National Standards of the Magnuson Fishery Conservation and Management Act.

By adopting the nine goals, the Council made a commitment to (1) assure future productivity of fish stocks, (2) support the stability and economic well-being of the fish industry and the communities dependent upon that industry, and (3) efficiently manage the resources within its jurisdiction for the benefit of the citizens of the U.S.

Rapid expansion of the domestic fleet harvesting fish within the EEZ off Alaska has made compliance with the MFCMA's National Standards and achievement of the Council's comprehensive goals more difficult, if not impossible, under current management regimes. The North Pacific Fishery Management Council therefore is committed to aggressively pursue implementation of alternate management methods that will support the Comprehensive Goals adopted by the Council and achieve more productive and rational effort and harvest levels in the groundfish fishery.

To fulfill this commitment the Council will:

1. Develop strategies for license limitation or use of individual transferable quotas in the sablefish longline fishery. This will begin at the September 1987 meeting and the Council intends final implementation of the selected management strategy for the 1989 season.
2. Implement a management strategy for the groundfish fisheries of the Gulf of Alaska and Bering Sea by 1990. Concurrent with this effort the Council at the December 1987 meeting will consider a moratorium on new entry into the fishery to address overcapitalization in the harvesting


sector. The moratorium would allow the Council time to develop an overall strategy for groundfish management. At the December 1987 meeting the Council will consider:

- (a) Effects of a moratorium on the fishing industry and on the management process.
- (b) Various criteria for inclusion in the fisheries under a moratorium, including, but not limited to:
 - (1) Harvest and sale of groundfish prior to moratorium date.
 - (2) Keel laid prior to moratorium date.
 - (3) Firm evidence of financial commitment for vessel construction or conversion prior to moratorium date.
- (c) Alternative effective dates, including, but not limited to:
 - (1) December 31, 1987
 - (2) December 31, 1988
 - (3) Date of final Council action.

3. Consider effort management in the halibut and crab fisheries.

MEMORANDUM

TO: Policy and Planning Committee

FROM: Jim H. Branson
Executive Director 

DATE: August 28, 1987

SUBJECT: Future of Groundfish Management

Action Required

1. Review results of Dittman Survey and other surveys as available.
2. Discussion paper on long-range goals, objectives and techniques for managing North Pacific groundfish fisheries.
3. Options paper on limited access in Alaskan fisheries.
4. Review draft statement of commitment to examine alternatives to management measures.
5. Status report on sablefish management proposals.

Background

In June the Policy and Planning Committee said they would develop a statement of commitment for the Council to examine alternatives to traditional management techniques. The final report of the Dittman Survey and a discussion paper on management of North Pacific groundfish fisheries were sent to the Committee on August 19. Dave Dittman will present his report and answer questions. John Harville will review the discussion paper on groundfish management strategies (item D-1). Terry Smith and Ron Miller will review an options paper on limited access in Alaskan fisheries (D-2). These documents can be the basis for a Council plan of action to manage the rapidly expanding U.S. groundfish fisheries.

There seems to be considerable interest by industry in Council action to mitigate the impacts of increasing effort, shortened seasons, over-capitalization, and other symptoms of fisheries open to all comers. If the Committee can develop an action plan it could be reviewed by the AP, SSC and industry and formally approved by the Council in September. A draft statement of commitment and plan of action are under item D-3.

The Policy and Planning Committee also will receive a status report on the sablefish management proposals received during the summer. A summary of those proposals is item D-4 and copies of the 59 individual proposals are available.

July 23, 1987

DISCUSSION PAPER

LONG-RANGE GOALS, OBJECTIVES, AND TECHNIQUES FOR
MANAGING NORTH PACIFIC GROUND FISH FISHERIES

Background: In the course of its June 16-17 review of NPFMC joint venture allocation problems and policies, the NPFMC Policy and Planning Committee came to the realization that problems inherent in application of the "olympic system" to joint venture operations soon would carry forward to the rapidly expanding domestic groundfish fisheries of the North Pacific. Given the obvious finite limits of resources available for harvest, and the past and projected growth rates of domestic fishing capacity, the Committee directed that a discussion paper be developed for Council consideration at the September meeting as basis for a Council decision on the following important question:

Given the rapid expansion and increased fishing power of the domestic fleet targeting fisheries under NPFMC jurisdiction, and given existing management mandates under MFCMA National Standards and the Council's own comprehensive fishery management goals, shall the NPFMC continue to restrict its management of the North Pacific groundfish fisheries to traditional techniques and methods, or shall the Council aggressively explore, and where appropriate, seek to apply innovative techniques for more productive rationalization of effort and harvest levels?

On September 2, the NPFMC Policy & Planning Committee reviewed the attached discussion paper, and recommended that it be provided to the Council as basis for further review and action at its September 23-25 meeting.

- I. Concerns for realization of long-term goals for productive management of North Pacific groundfish fisheries stem principally from two "facts of life":

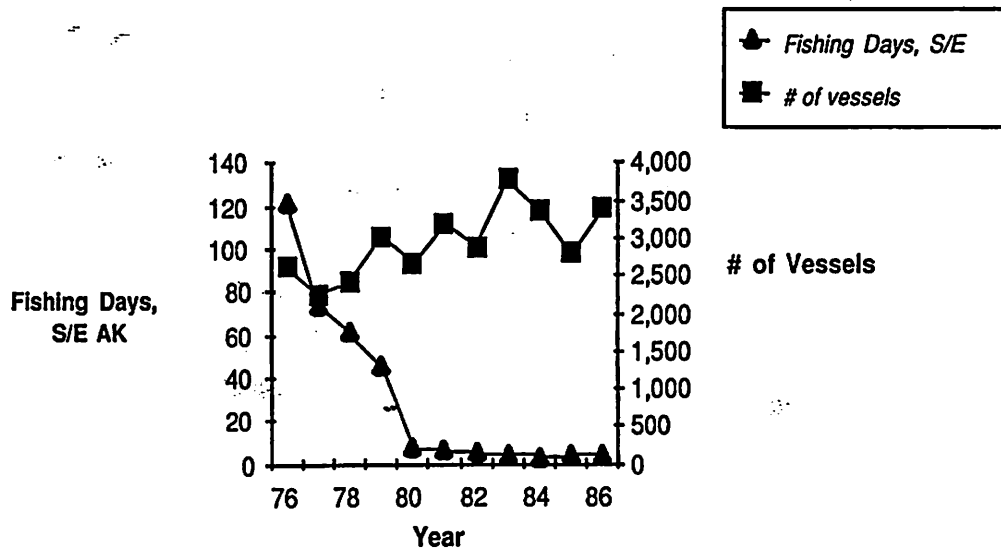
First, recognition that history demonstrates that continued growth in harvesting capacity leads ultimately to overharvesting, declines in stocks, and almost always thereafter to imposition of management measures designed to inhibit the efficiency of the fishery; and second, evidence of the dramatic upward curve of domestic harvesting capacity, toward levels projected to be well above optimal for rational utilization of groundfish stocks under NPFMC jurisdiction.

- A. Effort-harvest relationships in other fisheries--a review of selected relevant examples.

1. North Pacific halibut and sablefish. Over the past decade, both of these important traditional fisheries have attracted increasing numbers of participants, and both have faced progressively shorter fishing seasons, along with other management restrictions variously impacting operating efficiency.

The current number of U.S. halibut fishing vessels is some 1.5 times that of the fleet in 1975, with fishing power considerably in excess of that factor. Catching power doubled because of the switch from "J" hooks to circle hooks; in addition, the size and efficiency of many of the boats in the fishery have also increased. Over that decade, season length has been reduced drastically. In Southeastern Alaska, for example, three or four days of fishing filled the quota in 1986-87. In 1976 the season lasted 123 days (see Fig. 1).^{1/}

FIGURE 1. Vessel Number and Length of Season, U.S. Halibut Fishery



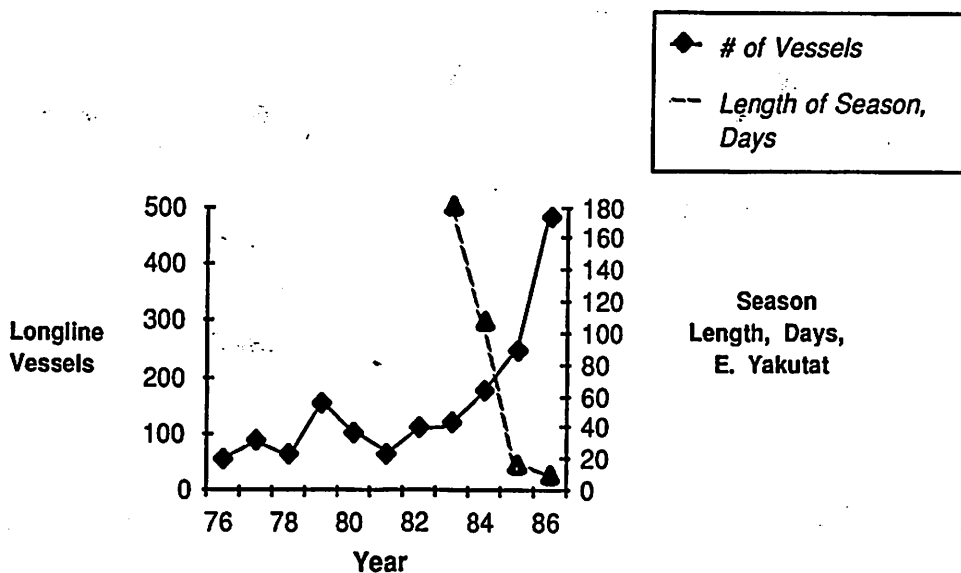
Other regulations have been instituted to spread out harvests among all vessels by reducing opportunities for more efficient operators to increase their shares (e.g., concurrent openings in different areas; split seasons, etc.).

Over that same time interval, the number of boats in the sablefish longline fleet has increased to more than seven times the 1975 number, and trawl and pot fisheries for sablefish have been initiated. Under the impact of this enormous increase in effort, and despite significant increases in allowable catch, the length of the effective fishing season

1. See Appendix I, "Halibut Goes to the Dogs," Alaska Seafood Leader, Vol. 7, No. 3, Spring 1987.

has been severely reduced. In the East Yakutat area, for example, the longline season in 1984 started January 1 and ran through June 29. In 1987, despite a catch quota one and a half times larger than that for 1984 and a season that did not start until April 1, the season closed twelve weeks earlier, on April 9 (see Fig.2), a decrease from 180 days to 9 days of fishing. Even more drastic reduction would probably have occurred had not the NPFMC phased out directed pot and trawl fisheries for sablefish in the Eastern and Central areas of the Gulf of Alaska in 1986.

FIGURE 2. Gulf of Alaska Sablefish Fishery



Thus, for the Alaskan sablefish fishery, progressively more limited seasons, area registration requirements, and gear restrictions (e.g., longlines only in the Eastern and Central Gulf) combine to significantly reduce the options available to fishermen for maximizing their operational efficiency.

2. Joint venture fishery off Alaska: Concerns about the rapid buildup in 1987 of early season fishing effort by joint ventures harvesting Bering Sea/Aleutians pollock caused the NPFMC to institute a split season for the 1988 pollock fishery, based on a fishing industry compromise.

Table 1 demonstrates the increase in joint venture fishing effort and resultant catch of all species for January through April of the years 1984-1987. The 1987 joint venture fishing effort (approximated by summing the vessel-months) increased some 50% over 1984 and 1985 levels. This increased harvest capacity in 1987 took 61% of the anticipated annual harvest, compared to 41% and 38% for previous years over the same January-April time period. Since most of this harvest was of pollock (87% in 1987), the potential impact on that species during its critical spawning period greatly concerned both the Council and the fishing industry.

TABLE 1. Number of U.S. trawlers making joint-venture deliveries, and harvest levels for all species off Alaska, for the first four months (Jan.-April) 1984-1987

Jan-April of the year:	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
trawler-months (cum).	172	229	238	353
catch in 1st 4 months (000 mt.)		362	467	900
catch as % of annual harvest		41%	38%	61%
total annual harvest (000 mt.)	581	884	1226	1466

3. Foreign effort related to TALFF allocations:

In the above-cited examples (halibut, sablefish, and groundfish joint ventures) the annual increases in fleet size and fishing power occur with little or no correlation to the size of the resource available. The results are significant costs in terms of season length, regulated fleet inefficiency, management and allocation difficulties and an increased potential for damage to stocks. Japan, in contrast to our traditional open access system, controls the level of fishing effort permitted to participate in fisheries for TALFF off Alaska. Figure 3 demonstrates a linear relationship between effort and TALFF available for harvest.

In the early years of U.S. control over foreign fisheries off Alaska (1978-1982) initial TALFF allocations to Japan were reduced but final TALFF (bolstered by releases of reserves, etc.) held fairly steady at around 1.3 million mt. Japan's fleet size was maintained at about 320 vessels, operating an average of some 160 days per year. With the explosive growth of U.S. harvesting capacity from 1982-86, however, Japanese TALFF fell sharply (by 98% for initial TALFF, and by 65% for final TALFF). Over that period, Japan proportionally reduced fleet size by a third (from 311 to 208 vessels), thereby greatly slowing the decrease in the harvesting period (reduced from an average of 156 days per vessel in 1982 to 70 days in 1986) and maintaining, even increasing slightly, the catch per unit of effort (CPUE in catch per vessel day).

FIGURE 3. Japan's Effort in Relation to TALFF

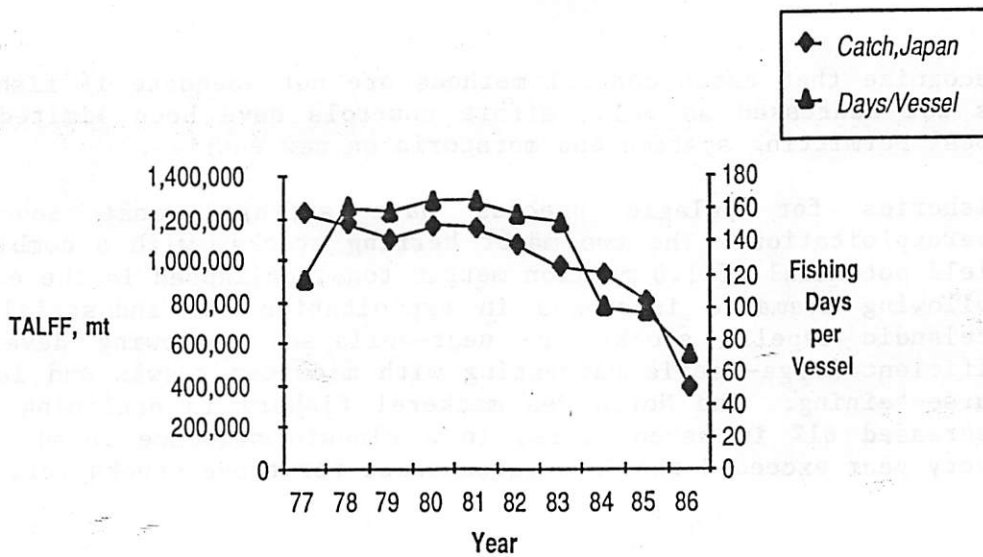
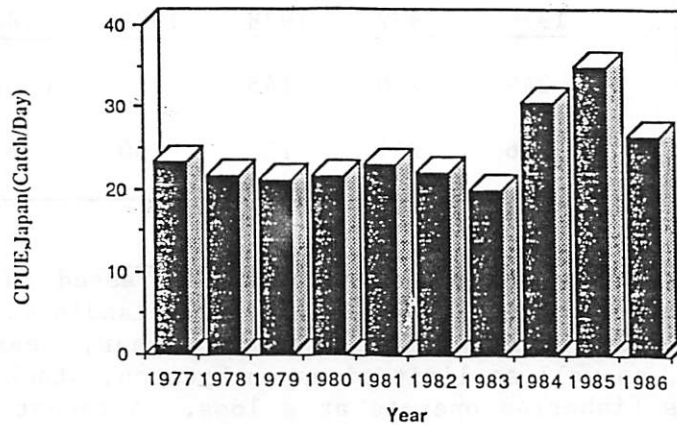


FIGURE 4. Japan, catch per day per vessel.



4. Relevant North Atlantic fisheries experiences:^{2/}

The Northeast Atlantic is one of the most productive fishing regions in the world; in 1982 over 25 participating countries caught 11 million metric tons of fish. Most of the numerous separate stocks are fully utilized, many are depressed well below MSY levels, and some have collapsed entirely, with severe social and economic consequences for all concerned.

International cooperative management has depended on traditional techniques--catch quotas (TACs), size limits, gear restrictions, and time and area closures--generally imposed only after significant stock depletions and depressed fisheries have triggered action. While managers

2. cf. Hagen, P.T. and O.A. Mathisen, 1984. Fishery management techniques in the Northeast Atlantic. School of Fisheries and Science, University of Alaska, Juneau, AK. 48 pp. + appendices.

recognize that catch control methods are not adequate if fishing effort is not addressed as well, effort controls have been limited to a few local permitting systems and moratoria on new entries.

Fisheries for pelagic species have suffered most severely from overexploitation. The two major herring stocks, with a combined annual yield potential of 1.8 million metric tons, collapsed in the early 1970s, following dramatic increases in exploitation for industrial purposes. Icelandic capelin stocks are near-collapse, following development of efficient large-scale harvesting with midwater trawls and large vessel purse-seining. The North Sea mackerel fishery is declining as biomass decreased 61% in seven years, in a classic sequence in which harvests every year exceeded the TACs recommended for those stocks (cf. Table 2).

TABLE 2. North Sea Mackerel Stock: TAC recommendations and actual catches (in '000 mt): 1976-1981.

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
TAC	249	220	145	145	0-50	0-40
catch	316	261	153	160	96	76

Many North Atlantic demersal stocks are depressed far below MSY levels (e.g., haddock, Arctic cod, redfish). In Iceland's valuable cod fishery, despite a complex array of size limits, gear, season, and time-area restrictions, as well as limitations on bycatch, stocks remain depressed, and Iceland's fisheries operate at a loss. A recent economic study has suggested that for the cod stocks available current effort levels are some three times those needed.

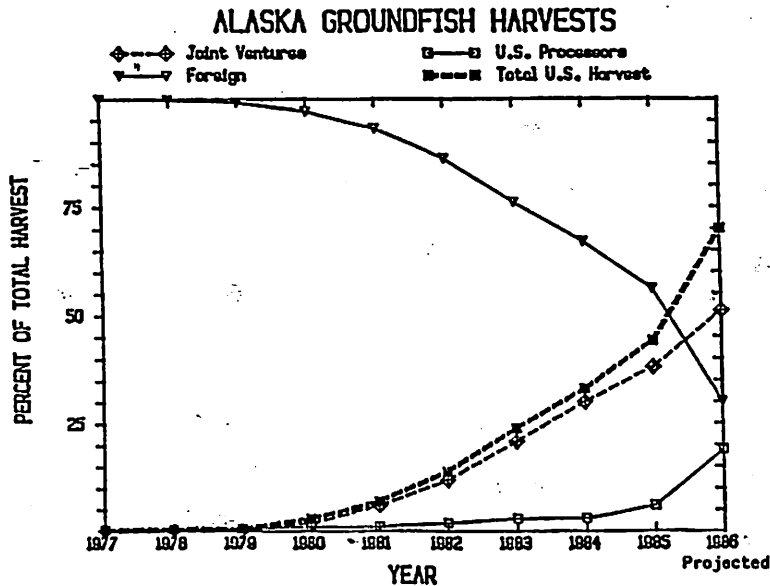
B. Growth of domestic groundfish fisheries in the North Pacific.^{3/}

The rapid growth and phenomenal expansion in fishing power of the domestic fleet operating in the Gulf of Alaska and Bering Sea/Aleutians has been well-documented. In the six years since 1981 groundfish trawling operations in waters subject to NPFMC jurisdiction have expanded from only 39 vessels which caught 116,000 tons of groundfish in 1981 to a sophisticated and highly efficient diversified fleet of some 150 vessels, projected to harvest more than 2 million metric tons of groundfish in 1987--94% of the catch expected to be taken by all nations from these waters.

3. Compiled from the NPFMC Reference Manual, 1987; from the Port of Seattle's Tradelines, May-June, 1987; and from NRC's 1985 report, A strategy for the Americanization of the groundfish fisheries of the Northeast Pacific.

Figure 5 demonstrates the exponential growth of U.S. harvesting capacity. From 0.1% of the total catch a decade ago (1977), the joint venture fleet has expanded to dominate the fishery with a catch estimated at 66% of the total in 1987. Equally impressive, fully domestic operations, led by the new floating processor sector, has grown in only four years (1984-87) from 3% of the total harvest to a 26% share.

FIGURE 5



The financial success of these operations is contagious. The Port of Seattle's Tradelines for May-June 1987 estimates that the 120 joint venture vessels operating off Alaska in 1987 each will average 10,000 tons of catch worth in excess of one million dollars. The publication also cites the explosive growth of American factory trawlers over the past six years, from only a single vessel in 1982 to 14 in 1986--perhaps doubling even that number in 1987. That exponential growth rate is projected to continue through the end of the decade.

Tradelines includes a section entitled "A glimpse into the future", which features an interview with D. L. Alverson of Natural Resources Consultants. That article notes:

The groundfish trawl fleet is growing so fast that fishermen and managers alike already are predicting over-capitalization within a few years--perhaps as early as 1990. Simply put, that means the fleet will launch too many boats for the resource.

It has happened before for the gillnet fishery, the salmon troll fishery, and the halibut and crab fleets. In each case, the fleet grew so large it began to threaten the finite supply of fish. "It's not a risk," Alverson says, "it's a certainty."

Fishermen generally dismiss this problem as a natural side-effect of free enterprise--the survival of the fittest. But critics say the nation's wide-open approach to fisheries management is unnecessarily

wasteful and chaotic, causing fierce conflicts within the industry as fishermen struggle for a larger share of the pie. As a result, government is under constant pressure to allow more and more boats on the water, risking depletion of the resource.

When the trawl fleet becomes too big, fishermen and investors stand to lose millions of dollars, Alverson says. He foresees a revival of a decades-old debate over how to manage U.S. fisheries and the fleets that harvest them.

Tradelines concludes this article with a brief description of alternative methods for effort control--license limitations, individual fisherman share quotas, and governmental auctioning of fishing rights--noting that each is a controversial approach certain to encounter stiff resistance from fishermen, but that:

. . . as competition grows beyond the limited public resource, government managers expect increasing pressure to revamp their approach to fisheries management.

II. RECENT COUNCIL DECISIONS RELEVANT TO THE ISSUE AND PAST NPFMC ACTION ON HALIBUT MORATORIUM.

A. Pacific Fishery Management Council Approval of July 11, 1987 as Groundfish Limited Entry Cut-off Date.

At its July 8-10 1987 meeting, the Pacific Fishery Management Council reviewed a presentation by its Groundfish Limited Entry Committee regarding eligibility cut-off dates, permissible exceptions, and a process for further development of limited entry options after receiving PMT, SSC, AP, and public comments, the Council adopted the following groundfish limited entry cutoff date (subject to certain permissible exceptions):

A vessel will be given priority for future participation if the vessel has made commercial landings of groundfish or shrimp caught off the coast of Washington, Oregon, or California prior to July 11, 1987.

While the Council has adopted this cut-off date for future entry, it has not adopted any specific effort control option.

B. North Pacific Council control date for entry into the Gulf of Alaska sablefish fishery.

At the December 1985 meeting the Council asked NMFS to publish a cut-off date beyond which participation in the Gulf sablefish fishery might not count toward eligibility in any future entry system the Council develops. NMFS did so and the following language appeared in the February 13, 1986 issue of the Federal Register:

. . . anyone entering the commercial sablefish fishery in the Gulf of Alaska after September 26, 1985 (control date) will not be assured of future access to the sablefish resource if a management regime is developed and implemented that limits the number of participants in the fishery.

. . . This announcement does not prevent any other date for eligibility in the fishery or another method of controlling fishing effort from being proposed and implemented.

. . . The NMFS and the Council intend, in making this announcement, to discourage speculative entry into the sablefish fishery while potential entry or access control management regimes are discussed by the Council and possibly developed . . .

C. NPFMC action on halibut limited entry.

The Council has^{4/} a long history of attempts to control effort in the halibut fishery^{4/}, beginning in 1979 with a request from the Petersburg Vessel Owners Association to implement limited entry. Workgroups and two funded studies followed, resulting in a Council vote for a moratorium at the March 1982 Council meeting. That vote was reaffirmed at the July 1982 meeting when the Council stated their intent to issue licenses in 1983 only to prior participants in the fishery.

Hearings were held in 20 communities on the moratorium the following January and on April 22, 1983, a proposed rule for a halibut moratorium with all supporting documentation was sent to the Secretary for review and implementation. The moratorium was disapproved, partially because of intense opposition and resulting political pressure and partially because the proposal itself was flawed.

At the July 1983 meeting the Council asked a new workgroup to again review objectives for the halibut fishery and recommend further action on the moratorium question. The workgroup responded with six new management goals and an amended moratorium proposal. The Council adopted the objectives at the December 1983 meeting but voted to drop the moratorium.

Since then the Council has produced several studies and summaries on the halibut fishery but has not taken an active role in its management. That situation changed with the decision by NOAA/NMFS in early 1987 that allocative decisions in halibut management must be made by the appropriate Regional Council in the future. Access limitation in some form may be the only practical answer to the problems in that complicated area.

The results of nine years of Council attempts to rationalize the halibut fishery include goals and objectives for a limited entry system, goals and objectives^{5/} for management of the fishery, and several useful studies of the industry^{5/} and systems to control effort that might be used by it.

Objectives for Halibut Limited Entry (adopted September 1981):

1. distribute the hook and line fishery, both in time and space, to ensure conservation of the resource;

4. Section 10 of the Council Reference Manual gives detailed information.

5. NPFMC Halibut Reports, Appendix II.

2. avoid further overcapitalization, thus encouraging development of an economically viable and efficient year-round multi-species domestic hook and line fishery that:

(a) is made up of owner/operator rights holders; and

(b) makes it possible for some fishermen to earn a major share of their income from hook and line fishing;

3. make certain costs of administration and enforcement, while effective, are not excessive relative to the benefits of the program;

4. the program would not preclude the extraction of rents or royalties from the fishery at some point in the future;

5. minimize adverse biological impacts of the program on related fisheries;

6. ensure that no particular entity acquires excessive control of rights to participate in the fishery;

7. attempt to be compatible with IPHC objectives;

8. minimize disruption of the present fleet by using past performance to distribute initial rights; and

9. use the market to transfer halibut fishing privileges after initial distribution.

General Management Objectives for the Halibut Fishery (adopted December 1983):

1. ensure survival of the North Pacific halibut resource;

2. distribute the halibut fishery in time and place to ensure the harvest of the available surplus of all components of the halibut population over all areas of the North Pacific Ocean including the Bering Sea;

3. continue to limit the harvesting of halibut to hook and line as the best means of utilizing and maintaining the resource at its highest sustained level of abundance;

4. retain the International Pacific Halibut Commission as the primary management authority over the coastwide range of the halibut population;

5. provide high quality fresh, frozen or preserved halibut to the consumer throughout the year; and

6. strive to reduce incidental halibut mortality by gear that is not legal for a directed halibut fishery.

III. RELEVANT MANAGEMENT MANDATES

Goals presently guiding NPFMC actions and decisions clearly mandate continued review of techniques for rationalizing management of the nation's fishery resources, and use of those techniques which best serve the public interest. Webster defines rational as

"acting in accordance with reason;
not unreasonable or extravagant."

Rationalization of fishery management clearly includes consideration of techniques for controlling effort in ways consistent with MFCMA National Standards and with NPFMC's adopted goals. Relevant Standards and goals are re-stated in the following sections.

A. National Standards

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield for each fishery for the United States fishing industry.

4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

5. Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

B. NPFMC Comprehensive Fishery Management Goals (adopted 12/7/84) Among the "Findings" on which the NPFMC based its comprehensive goals, the following are particularly pertinent:

2. The fishery resources off Alaska are the property of the United States and should be managed for the benefit of everyone in the U.S. in accordance with the provisions of the Magnuson Fishery Conservation and Management Act.

3. The common property nature of fishery resources tends to cause over-capitalization of the industry, increases the chances of resource depletion, and decreases the incentive for conservation of the resource by the users.

4. Because fishery resources are limited, proper management requires allocation of fishery resources among users.

Based on those findings, relevant Comprehensive Fishery Management Goals and issues and concerns deriving from them include the following:

2. ENSURE THAT THE PEOPLE OF THE UNITED STATES BENEFIT FROM OPTIMUM UTILIZATION OF THE NATION'S PUBLICLY OWNED FISHERY RESOURCES.

Relevant issues and concerns include:

- * production of high quality fish products over the maximum season at acceptable prices;
- * economic self-sufficiency and viability of the domestic fishing industry and supporting infrastructure;
- * generation of reasonable economic rent from utilization of publicly-owned resources;
- * positive benefit-cost ratio for public management operations.

3. PROMOTE ECONOMIC STABILITY, GROWTH, AND SELF-SUFFICIENCY IN MARITIME COMMUNITIES.

In the context of this goal, economic conditions will be enhanced by:

- * stabilizing the flow of fishery-related revenues through a community so that revenues occur during longer and more regular periods of time throughout the year. This is more beneficial than short, intermittent bursts of activity.
- * increasing the opportunities for fishery-related economic activity, and thereby
- * fuller and more consistent utilization of fishery resources.
- * extending, within biological limits, the availability of fishery resources to the industry over the longest feasible season. This strategy recognizes that maximum benefits from a fishery may be generated by rationalizing harvest effort and product flow to market, which will tend to:
 - a. discourage overcapitalization;
 - b. minimize waste;
 - c. minimize gear conflicts;
 - d. prevent overfishing;
 - e. minimize cost of management;
 - f. minimize costs of labor and operations;
 - g. encourage wise planning;
 - h. provide a steady supply of high quality/reasonably priced fishery products to consumers;
 - i. stabilize the seafood industry and associated maritime communities.

4. ACHIEVE OPTIMUM UTILIZATION BY THE U.S. FISHING INDUSTRY OF FISHERY RESOURCES IN THE FISHERY CONSERVATION ZONE OFF ALASKA.

Relevant issues and concerns include:

- * domestic processing capabilities and economic incentives;
- * fluctuations in employment in maritime communities;
- * equitable allocation among domestic user groups;
- * tax incentives or disincentives;
- * capabilities of domestic fleets;
- * open entry vs. limited access.

7. TO THE EXTENT CONSISTENT WITH OTHER COMPREHENSIVE GOALS, PROMOTE THE ECONOMIC HEALTH OF THE DOMESTIC FISHING INDUSTRY; ENCOURAGE THE PROFITABLE DEVELOPMENT OF UNDERUTILIZED RESOURCES; DISCOURAGE UNNEEDED INVESTMENTS IN FISHERIES WITH EXCESS HARVESTING CAPACITY.

Relevant issues and concerns include:

- * fishery management strategies shall consider harvesting and processing capabilities and market demands.
- * a tax incentives and subsidy programs should be examined and coordinated to guard against overcapitalization. . .
- * evaluation and employment of appropriate management strategies, such as reduction of regulated inefficiencies, control of investment incentives, and limited entry as a means of effort management.

In the context of the above considerations, it should be noted that Comprehensive Goals 1 and 8 (not included in this paper) concerning assured long-term productivity of fishery stocks and habitats, and an improved research and information base for management decisions also would be better served by rationalization of fishery effort and supply.

C. NPFMC Gulf of Alaska Groundfish Fishery Management Goals
(adopted June 1986)

Recently approved goals and objectives for management of Gulf of Alaska groundfish fisheries include two relevant commitments:

- * Management will conform to MFCMA National Standards and to the NPFMC Comprehensive Fishery Management Goals.
- * The principal management goal is stated as follows:
Groundfish resources of the Gulf of Alaska will be managed to maximize positive economic benefits to the United States, consistent with resource stewardship responsibilities for the continued welfare of Gulf of Alaska living marine resources. Economic benefits include, but are not limited to, profits, benefits to consumers, income, and employment.

Objective 5 under this principal goal specifically addresses the issue of effort control:

The Council will develop measures to control effort in a fishery, including systems to convert the common property resource to private property, but only when requested to do so by industry.

IV. NATIONAL RECOGNITION OF PROBLEMS OF EFFORT MANAGEMENT

A. NOAA Fishery Management Study.

The Executive Summary recommends that:

Any impediments to limited entry in the Act (MFCMA) be removed. Limited entry should be considered by the Councils as a management tool for both commercial and recreational fisheries, where necessary and useful.

That recommendation is amplified significantly in the body of the document (pp. 21-22), and in Appendix E summarizing methods for effort control. Particularly relevant comments are as follows:

p.22). . .the Councils should be encouraged to judge the need for restricting access and to choose the most practical device to suit local fisheries and their circumstances. The result should be:

- * reduction of conflicts over quota and allocation, and therefore reduction of regulations and enforcement and associated costs;
- * reduction of pressure on overfished stocks;
- * an equitable means of providing for the user to contribute to the costs of conservation and management;
- * greater economic stability in the fishing industry, and improved competitive position for the U.S.
- * incentive for fishermen to report important catch data which are not now being reported (recognizing their stake in the future well being of the resource).

As background for its recommendations, the NOAA Fishery Management Study offered the following rationale (p. 21):

The key to management in many fisheries is effort control. Too many fishermen--commercial and recreational--are trying to catch too few fish. In addition, technological improvements increase catching efficiency. Limited entry, rights to the opportunity to fish through individual share quotas, bidding on the availability of such quotas, lotteries or some other means must be implemented . . .

The results of open access/entry are excessive pressures on limited stocks, chronic economic instability, and severe allocation problems. Ordinary management systems and elaborate regulations (restricting gear, kind of catch, areas and seasons) have served to protect some fish stocks, but have not stopped overfishing or reduced economic inefficiency.

The root of the problem is that, unlike other natural resources which belong to the United States (minerals, timber, inland game and fish) in which the user has to pay for the privilege of use, marine fish are treated as free, belonging to anyone who can catch them. This is an anachronism, because the United States has claimed an EEZ and applied very effective limited fishing privileges to foreigners. This special attitude toward

fish of the sea is based on the sea's history of inexhaustibility, and the historical insignificance of the fisherman's harvest.

Today we have a sharply different situation. Capital and technology have, under the pressure of short-term economic efficiency, combined to end the age of inexhaustibility of many stocks, and put them at the mercy of the fishermen, both commercial and recreational. This means that the practice of free access to the living marine resources of the EEZ is obsolete for the same reason that it has been declared obsolete for the hunting of migratory waterfowl, or grazing on public lands, or indeed, for most of the world's commercial fishing.

B. Report and Recommendations of the American Fisheries Society Committee on Federal Fisheries Responsibilities (publ. 1986).

This ad hoc professional committee comprised of 20 senior fisheries scientists was charged in 1984 to define the mission and goals of a federal fishery-related program for the United States, examine the present organizational structure and practices in both federal and state management, and finally, recommend ways and means to strengthen and improve federal programs and federal-regional-state interactions for conservation and management of the nation's fishery resources.

Issue 4 of the 11 identified by the Committee identifies the common property problem besetting provident fishery management at all levels of government, and offers relevant recommendations.

Free and unlimited access to economically valuable publicly owned and managed fishery resources ultimately results in the "tragedy of the commons", with economically disastrous over-extension of user operations and production, adverse impacts on fish stocks and habitats, and excessive public management costs.

Recommendations:

1. Because free and open access to the nation's fishery resources have escalated negative impacts on both the resources themselves and on their optimal use, the American Fisheries Society should endorse the concept of controlled access for fisheries, to include use where appropriate of such management tools as license limitation, individual fisherman quotas, or other measures designed to avert the "tragedy of the commons".
2. National actions to be encouraged and supported include:
 - a. Federal administrative and legislative action where necessary to encourage and facilitate development of regionally applicable management programs for controlling access to publicly owned fishery resources where appropriate to conserve the resource and achieve its optimum use.

- b. Federal support for initiatives by the Regional Fishery Management Councils, the states, and the tribes, to use available authorities and techniques to develop regionally appropriate limited access mechanisms and programs for fisheries in need of such management, including (but not limited to) license limitation, individual fisherman share quotas, or other suitable management measures.
- c. Governmental action where necessary to authorize collection of user-fees or royalties designed to recover management costs, including costs of administering access limitation programs; with consideration also for fee schedules designed to collect a reasonable economic rent from users of publicly owned resources as an equitable return to the public treasury.
- d. Given the above actions, phase out federal subsidies for commercial fisheries.

In the body of its report, the Committee provided an extensive background overview, which includes the following reference to earlier studies and recommendations:

National policy recommending bodies repeatedly have advocated access control as a means of better managing the Nation's fishery resources. In 1969, the National Commission on Marine Science, Engineering, and Resources--the "Stratton Commission"--urged improvement of economic return from fisheries through curtailing excess effort. Similarly, a 1976 GAO report recommended effort limitation to help conserve the resource, increase efficiency of fishermen, improve return on investment, and encourage development of underutilized species. A recent (1984) presentation before MAFAC by NOAA Planners listed this issue as one of three or four most pressing fishery related problems for the next decade. . .

The AFS ad hoc Committee on Federal Fisheries Responsibilities is convinced that proper conservation and management of the Nation's fishery resources requires the inclusion of effort management as a means of controlling excessive pressures on stocks and habitats, bringing down the overall costs of management and enforcement, and accomplishing the objectives listed in the 1976 GAO report.

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(International issue)

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From the Editor**Halibut Goes to the Dogs**

Per capita consumption last year wasn't as high as a lot of people had hoped. True, it was another record, but fresh and frozen consumption was flat. So why is consumption stalled when consumers are clamoring for seafood? Two reasons: Demand has driven prices of many species through the roof—and there's still a lot of lousy fish around. The second reason we can do something about.

Here's a case in point: the Pacific halibut fishery. While it's easy to blame fishermen and processors for bad fish, sometimes the managers give them little choice. The way halibut is managed now, fishermen lose money if they take good care of their fish. With only two or three short openings a year, all within a few weeks of each other, catching as many fish as possible is what counts. Taking the time to gut, bleed and ice fish properly can cost a boat tens of thousands of dollars in fish it didn't catch. Fishermen fish for money, and the way this fishery is managed, quality doesn't pay.

It wasn't always so. Until a few years ago halibut fishermen fished halibut, salmon fishermen fished salmon and so on. Seattle-based schooners fished throughout the spring and summer and iced their fish well. Now any fisherman that can bait a skate in the spring finds halibut worthwhile: The fishery's only open a day or two at a time and demand for fresh halibut has driven the ex-vessel price up to almost \$2 a pound in Seattle. Decent boats gross close to \$100,000 in 24-hour openings.

With so much at stake the idea is to load your boat to the gunwales and toss back dead halibut to make it safely back to port if the weather comes up. (By some estimates more than a million pounds of dead halibut were tossed back in just one 24-hour opening.) Unfortunately, though, some fishermen guess wrong: Four boats sank in a single 24-hour opening this May, claiming the lives of five fishermen (see page 11).

No one is happy with the way halibut has gone. Processors don't like handling all that fish at once. It overloads their freezers and subjects the fish to a damaging slow freeze. Marketers in the Lower 48 would rather see more fresh fish over a longer period instead of just a few days a year. Halibut is, after all, one of the finest-eating fish in the sea. So while the market cries for more fresh, a mountain of mediocre frozen halibut piles up in Seattle's cold storages.

It's time to help the marketers out a bit and restore some sanity to the halibut business. Why not open the halibut fishery at the same time the salmon fishermen are fishing salmon and reduce the effort? Or auction off quotas so fishermen can catch the fish whenever they want, i.e. when the market wants the fish? The seafood business has come a long way in the past few years, but the halibut fishery is going backwards. This is not the way to get people to eat more seafood.

Peter Redmayne

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The Applicability of Limited Entry to the Alaska Halibut Fishery, Council Doc. 14, April 1981.

Limited Entry in the Pacific Halibut Fishery: The Individual Quota Option, Council Doc. 20, June 1983 (synopsis - Document 20a).

Social and Cultural Characteristics of the North Pacific Halibut Fishery, Council Document 25, May 1984 (executive summary - Document 25a).

The North Pacific Halibut Fishery: Options for Realization of Management Goals, August 1, 1984 (updated October 31, 1984).

[NOTE: THESE ATTACHMENTS WILL BE DISTRIBUTED TO COUNCIL AND COMMITTEE MEMBERS DURING THE MEETING.]

Limited Access in Alaskan Longline Fisheries:
Some Options

Terry Smith
Ron Miller
Discussion Paper 87-1
North Pacific Fishery Management Council
August 1987

LIMITED ACCESS IN ALASKAN FISHERIES: SOME OPTIONS

I. INTRODUCTION

The Policy and Planning Committee of the North Pacific Fishery Management Council, in consideration of the rapid Americanization of groundfish fisheries off Alaska and recent problems with the "olympic system" for joint ventures, wishes to reexamine long-term management strategies. The committee is conducting this re-examination to avoid some of the problems that have occurred in fisheries around the world as an ever-increasing number of vessels compete for finite amounts of fish.

The committee directed that, prior to the Council's September 23-25, 1987, meeting, a discussion paper or papers be prepared which would 1) outline the foreseeable difficulties in continuing the status quo; 2) examine future management in light of the Council's goals and objectives and the National Standards of the MFCMA; and 3) present, for discussion purposes, some examples of alternative management strategies.

This paper is the second of two discussion papers prepared by direction of the committee for September Council review. The first, "Long-range Goals, Objectives, and Techniques for Managing North Pacific Groundfish Fisheries" addresses items 1) and 2) while this paper focuses only on alternative management strategies. The scope of the paper is further narrowed to concentrate primarily on describing limited access management, not because conventional management measures are inappropriate for future management, but because limited access is less well understood by the fishing industry and the public.

Organization of the paper is as follows. Section II presents definitions and Section III discusses the use of conventional management measures in an open access fishery. In this section is presented the argument that the problems that have occurred in fully developed fisheries are often a result of the open access nature of the fishery. Section IV considers management using nonconventional methods. The first of the approaches is the use of license fees, taxes or royalties on fish landed, the second is limiting access through license limitation, and the third controlling the fisheries via individual transferable quotas (ITQ).

License fees or taxes on fish or fishermen are dismissed as administratively impractical and unauthorized under current law. Therefore, the bulk of this paper is a discussion of license limitation and ITQ approaches, particularly the "nuts and bolts" of each. For each method, strategies for initial allocation of fishing rights, questions of program administration, approaches to buy-back programs (license limitation) and quota adjustment (ITQ), and issues of enforcement are addressed.

Although examples focus on particular fisheries, such as the sablefish fishery, it should be noted that the issues, problems and questions to be resolved are generally applicable to any fishery where management by limiting access is contemplated.

II. DEFINITIONS

Common property, common resources, property rights and use rights

In discussions of open access fisheries and the need to limit access, the terms "common property resource," "privatized resource," and "property rights to the resource" are often used. These terms may be misleading since it is a well established precept in U.S. common law that migratory or free roaming wild animals such as fish or birds cannot be considered property, and therefore cannot be owned by anyone until "reduced to possession by skillful capture."¹ Although fishery resources in public waters are not property before capture, the states and federal government may regulate the harvest of the resources found within their respective boundaries as trustees of the common resource. In this position as trustee, a state or the federal government may grant use rights or harvest rights to a fishery resource.

It is important to recognize that property and use rights are the core issues of open or limited access. The Magnuson Fishery Conservation and Management Act (MFCMA) declares that the United States will exercise control over the ocean's fishery resources within 200 miles of the U.S. coast and, by inference, that those resources are to be managed for the benefit of the whole of society. The position of the United States with regard to fishermen's rights to use these resources determines the kind of access (open, limited) and rules (fees, taxes, etc.) that may occur.

Open access fishery

An open access fishery is one in which anyone with a registered vessel may participate. Normally, annual harvest amounts are limited by use of quotas, e.g. total allowable catch (TAC). Other measures often employed for limiting catch, in conjunction with quotas, are short openings, time/area restrictions, gear restrictions and gear allocations. These traditional management methods tend to raise fishermen's costs by limiting efficiency or restricting freedom of action, however, there is no barrier to new entrants to the fishery. In the context of use rights discussed above, there is no assignment of rights by the management authority.

Limited access fishery

Technically, limited access imposes some barrier to entry into a fishery. The two general methods of limiting access are individual transferable quotas (defined below), and license limitation (defined below). A third approach, license fees, taxes or royalties, does not formally limit access at all although the fees or taxes may be set so high as to restrict access, but rather, is a method to correct the open access problem, by forcing fishermen to recognize the cost their fishing activity has on other fishermen and society.

1. Douglas v. Sea Coast Products, Inc., 431 U.S. 265, 284 (1977); Missouri v. Holland, 252 U.S. 416, 434 (1920).

License limitation

Under this type of management regime, participation in a fishery is limited to those owning a license or permit. On the western coast of the United States this limited access scheme has become synonymous with the term "limited entry".^{2/} Traditionally, at start-up, licenses are granted based upon a history of participation in the fishery. No additional licenses are granted, and new entrants must purchase an existing permit in order to participate. It has often been the case that, after initial issuance of permits, a future reduction in permit holders is prescribed through a buy-back program.

Individual Transferable Quotas

Management by individual transferable quota (ITQ) is a limited access approach to fisheries management based on the principle that the available catch (annual quota) is allocated to individual users (usually a vessel owner, a vessel captain, or a vessel). The quota holder may harvest this amount of the resource and the owner may trade quota shares on the open market. Traditionally, when an ITQ system is put in place, fishermen who have established historical participation in the fishery are given an initial allocation of some share of the overall quota. The allocation may be a certain share of the overall quota (e.g. 1%) or an absolute amount (e.g. 100 mt). That quota amount is available to the fishermen in perpetuity but the individual's share may, of course, be augmented through purchase or lease or decreased through sale or lease to others. Thus, the ITQ system may not limit participants per se but only the initial distribution of quota. After start-up the ITQ may be traded freely. The development and nature of the market for quota will be discussed below.

III. CONVENTIONAL MANAGEMENT MEASURES AND THE OPEN-ACCESS PROBLEM

The open-access problem, as it applies to fisheries, was first described more than thirty years ago (Gordon, 1954; Scott, 1955). The problem is, since no use rights are assigned to the fishery, anyone may participate, and a "race for fish" develops since there is no incentive to preserve any part of the common pool of fish for future harvesting because to do so would likely lead to someone else catching the fish. Participating fishermen are then forced to invest in increasing their ability to catch fish quickly, by purchasing larger vessels, more gear, better technology, etc. Fishermen who wish to compete in the race must also get on the grounds earlier to insure a share of the catch. In the absence of a restricted fishing season, this means the fishermen must fish regardless of weather, thereby leading to increased safety and operational costs.

From an economic perspective, an open access fishery is characterized by increasing costs for the fishermen as more and more capital is invested so that the participant may hold his ground in the face of increasing numbers of participants, quota reduction, or both. If the fishermen passes these costs

2. Therefore, to avoid confusion, we will not use the term "limited entry" in this paper, but, instead, rely on the generic term, "limited access," or the specific term, "license limitation."

on to the processor, wholesaler and retailer the price of fish to the consumer increases. This is undesirable from a national perspective since the consumer could, in the absence of these increased costs, purchase fish more cheaply and use remaining income for other purchases. Increased prices are undesirable also from a marketing perspective as buyers will reduce or eliminate their purchase of fish if prices become too high.

Of course, not passing on the cost increases due to the "race-for-fish" reduces the profits of the fishermen. In the long run, if profits continue to decline, only the largest and most efficient operations will be able to survive.

It is not necessarily this end result that troubles resource users and managers (although the capital and labor resources of the fishery may be more efficiently used elsewhere in the economy) but rather the disruption that occurs in arriving at the reduced fishery (i.e., the "shakeout" that occurs with attendant economic dislocations and bankruptcies). In the process of rationalization much capital and labor will be needlessly wasted, fishermen will face business failure and career changes, the economies and social structures of fishing communities may be adversely affected, and, from a management perspective, there will be increased pressure to raise quotas, thereby increasing the likelihood of overfishing and stock collapse.

Traditional management measures used to control the fisheries harvest around the world and in Alaska (short openings, time/area closures, gear limits/allocations) are measures designed to slow or prevent this costly transition. Generally, these measures have not worked as increased pressures on the resource (more boats, more gear, more efficient gear, more effective political pressure) have either led to an overfishing situation or to a situation where the risk of a stock collapse has increased.^{3/}

That is not to say conventional management measures should not be used in fisheries management; however, when practiced alone, they fail to adequately protect the economic, and sometimes biological, well being of fisheries. This discussion paper considers nonconventional management methods, specifically limited access methods.

IV. LIMITED ACCESS OPTIONS

License fees, taxes or royalties

Theory

Fishermen are motivated in part by economic objectives. For example a harvester may try to minimize cost, maximize profit or maximize revenue. In an open access fishery, a fisherman will consider only his own economic position and will tend to ignore the costs and revenues of others. However, one fisherman's operation may increase the costs to another fisherman. An obvious example is that of gear conflict where one harvester's activity leads to gear damage or loss on the part of another fisherman. Another example is

3. See the discussion paper, "Long-range Goals, Objectives and Techniques for Managing North Pacific Groundfish Fisheries."

the incidental catch of a species other than the target species; this bycatch has negative consequences for the fisherman who wished to target on that species.

In more general terms, in an open access system all harvesting activity raises the cost to all other harvesters simply because the removal of some portion of the stock makes it harder (i.e., more expensive) for others to catch fish. In the extreme, where a serious "race-for-fish" has developed, all operators must get on the grounds and fish with the maximal amount of the most efficient gear in order to compete. Each year they are forced to spend more to catch the same amount of fish.

The rationale for imposition of a fee or taxation system is that since fishermen do not recognize these external costs they fish in a suboptimal way (they are making decisions without all available information). Therefore, if the magnitude of these external costs can be determined and the fishermen made to pay a tax equal to the costs, these previously hidden costs will be revealed to the fisherman and the fisherman held accountable. In sum, fishermen will be made to absorb the costs of stock declines or stock deterioration and will therefore account properly (through the tax) for the fishing activity of others.

Administrative and legal problems of fees

Although taxes or royalties on landings or license fees levied on vessels, gear, or fishermen could limit entry into a fishery since those who are unable to or did not wish to pay these costs would be discouraged from participating, the primary impact of the method is an increase in operating costs. Since the royalties go to the managing agency (in this case the Federal government), the public would benefit from the reduced public outlay.

Fishermen may not be in a noticeably better position under a fee system in terms of greater profits, but their situation in the long term would not be worse than under an open access system. This is because, in the long term, increased benefits to society are generated in the form of resource royalties and greater availability of fresh product. Therefore, there is a reduction in the need to subsidize fisheries through externally financed management costs. Also, since marginal operations may be forced out of the fisheries the annual catch would be taken over a longer period of time, using less overall harvest effort, thereby decreasing costs and increasing profits to the remaining fishermen.

While landing taxes, royalties, or fees may have some attraction from a societal perspective, that is, the generation of revenues from the use of a common resource, their negative administrative and legal aspects may well serve as roadblocks to implementation. Because of natural fluctuations that occur in any fishery, a fishery management regime must be flexible to be effective. It could, therefore, prove to be a difficult administrative task to constantly adjust tax or royalty schedules to reflect changes in exvessel fish prices, supply, demand, and resource conditions. If these adjustments were not made, product price increases or cost decreases could be an incentive to new entry into the fishery. Conversely, price decreases, a cost increase (perhaps due to stock decline) would leave the fee too high.

The discretionary authority to charge fees to domestic fishermen under a fishery management plan is clearly set out in Section 303(b)(1) of the Act; however, the Act also limits the level of those fees to the administrative costs of issuing domestic fishing permits.^{4/} Fees at a level above those administrative costs would only be possible with an amendment to the law; a change that would be widely opposed by the harvesting industry.

A system of taxes or royalties on landings is therefore: 1) administratively burdensome; 2) inflexible and unfair in that inflexibility; and 3) illegal under the current language in the MFCMA. For these reasons, fees or royalties are dismissed as currently impractical.

License Limitation

The most commonly employed form of access limitation has been license limitation. The initial step in establishing such a plan is determining who will have access to the fishery and what is the optimum harvest level. The issues to be resolved in establishing such a system are 1) access (grandfathering, historical participation, etc.); 2) license reduction (buy back) to optimal effort level; and, 3) the use of other conventional management methods (quota, gear restrictions, etc.).

Access

One way of deciding the access question is to grant a limited access license to all those current participating in the fishery. This is a form of moratorium on new entry. This type of system usually requires a subsequent reduction in units of gear to an optimum level of effort. This reduction is generally through a buy-back program often funded by a government entity. A freezing of the fleet at its current level and buyback may be more politically acceptable to fishermen than many other forms of access limitation since no current participant is excluded outright and the fishermen, as beneficiaries of the subsequent fleet reduction, do not bear the costs of the buyback program. However, for the reasons stated elsewhere, this system has failed to prevent further overcapitalization and has not led to fleet rationalization.

In the existing Alaska license limitation system for salmon and herring, access is predicated upon the degree of economic hardship a person would suffer if excluded from a fishery. Applicants are ranked according to a point system based upon their history of participation in, and economic dependence upon, a fishery. A maximum number of permits are established for each fishery based upon recent participation patterns in that fishery. After the applicants are ranked, permits are issued, first to the highest ranked and then down the list until all permits are issued with enough reserved to accommodate any applicants challenging their rankings. If more applicants are ranked at a particular point level than there are permits available, those permits are to be issued under a lottery system.^{5/}

4. See Section 304(d) of the MFCMA.
5. A.S. 1643.010, et seq. and Title 20, Alaska Administrative Code, Chapter 05.

Permit Reduction

The Alaska system also provides for reduction in permits after initial issuance through a buy-back program. After the maximum number of permits for a fishery are issued the law requires the state to establish an optimum number of permits for a fishery based upon a "reasonable balance" of economic considerations and the effort level needed for an orderly and efficient harvest of the resource.^{6/} If the optimum number is less than the number of permits issued the state is to initiate a buy-back of permits down to the optimum level. The buy-back is to be funded by an assessment of up to 7% of the gross fishing income for each permit holder in the relevant fishery.^{7/} The State of Alaska has yet to initiate a buy-back program, since it is still issuing permits for most fisheries placed under limitation in 1973.

Because the Alaska license limitation system does not attempt to control harvest effort at the individual level, there is still a need for conventional efficiency limitations such as time and gear restrictions. These gear regulations are adopted by the Alaska Board of Fisheries and implemented by the Alaska Department of Fish and Game.

License limitation under the MFCMA

While the Alaska system may serve as an example for the Council in considering the mechanics of establishing an access limitation regime, the MFCMA lists certain criteria that must be considered during the development of such a system. Under Section 303(b)(6) of the Act, before establishment of limited access, a Council or the Secretary of Commerce must, "take into account -

- (a) present participation in the fishery,
- (b) historical fishing practices in, and dependence on, the fishery,
- (c) the economics of the fishery;
- (d) the capability of fishing vessels used in the fishery to engage in other fisheries,
- (e) the cultural and social framework relevant to the fishery, and
- (f) any other relevant considerations. . ."

These criteria need not be accommodated by a limited access system established under the Act if there is a reasonable basis for basing the system upon other criteria.^{8/}

Disadvantage

One of the advantages of a license limitation system is its similarity to the traditional method of management in most fisheries in this country, i.e., the licensing of fishermen and vessels. There is a basic weakness in this system, however, that renders it useless in reducing overcapitalization and spreading fishing effort over time. License limitation, alone, provides no direct

6. A.S. 16.43.290

7. A.S. 16.43.290

8. Travers, 1983.

control of harvest effort by those with licenses. Since fish harvesting is multi-faceted, restrictions on one dimension of effort would not halt an expansion in overall harvest capacity. If fleet prices rise or harvesting costs decrease, there will be incentive to increase harvest capacity through substitution of unrestricted dimensions for restricted dimensions. An example of this may be seen in the British Columbia salmon fishery. A licensing and buy-back system in the fishery initially limited the number of vessels participating. The fleet responded by replacing older vessels with newer, larger vessels. This move led to a new restriction allowing vessel replacement on a ton-for-ton basis only. The harvest effort continued to grow through improvements in gear and the fleet called for a second buy-back program.

Recent developments in other Canadian fisheries further demonstrate the inability of a license limitation system to prevent a "race for fish". The British Columbia sablefish fishery was placed under limitation in 1979. The season length has decreased from 246 days in 1981 (catch - 3,830 mt) to 64 days in 1986 (catch - 4,460 mt). In 1979 the British Columbia halibut fishery was also placed under license limitation. In 1980 the Canadian halibut fleet harvested 5.2 million pounds in 61 days with 360 vessels. In 1986, 11.2 million pounds were harvested off British Columbia halibut in 15 days with 355 vessels. Even with a form of limited access, the British Columbia fishermen saw a contraction in season length at a time of expanding quotas. A major contributing factor to this contraction was the introduction of an unrestricted input -- the highly efficient circle hook. Further shortening of seasons may be expected if the B.C. fleet adopts other gear efficiencies, such as auto-longlining, on a large scale.

It might be possible for a license limitation system to restrict all inputs or dimensions of harvest effort, but such a system would have to limit the number of licenses issued, the size of vessels, engines and crews, restrict the time and area of harvest, and regulate harvesting and electronic gear. Administration and enforcement of such a regime would be prohibitively expensive.

Conclusion

A license limitation system, therefore, has the following advantages: It is well understood by the industry and there is precedent in the Alaskan fisheries for imposition of such a system. A cap on licenses will potentially "freeze" the rate of overcapitalization and prevent the worsening of the difficulties arising from the open access nature of the fishery. Under a successful buy-back program fleet overcapitalization will be reduced and an orderly rationalization of the fishery may occur. Enforcement of the permit system is straightforward.

License limitation has the major disadvantage, however, that a cap on licenses (or even a reduction in licenses) may not correct the fundamental problem motivating imposition of limited access since harvesters may add gear, invest in more efficient gear, or otherwise increase catching capacity; in short, overcapitalize the individual fishing operation instead of overcapitalizing the fleet. Controls on other inputs such as gear, vessel size, horsepower, etc., create an administrative system which is burdensome and impractical.

Individual Transferable Quotas

There are several issues relating to the establishment and administration of the system of management by individual transferable quota which must be resolved. Initial concerns are determination of the scope of the system and the mechanism for determining the initial allocation of quota. Also, questions of administration -- how the overall quota level is established, how it might be adjusted, and how the market for quota would be expected to develop -- need to be addressed. Last, problem areas specific to an ITQ system need to be discussed.

Scope

The first decision to be made is one of participation, that is, what fishery or fisheries will be placed under the system. For example, two well known southern hemisphere ITQ systems are the Australian southern bluefin tuna fishery and the New Zealand groundfish fishery. The first is limited in scope to bluefin tuna while the latter encompasses all marine species. The examples presented at the end of this section assume that the scope of the system is the British Columbia sablefish fishery.

Initial allocation

The next question, and certainly the most difficult and controversial, is how an initial allocation of quota (a distribution of quota shares) is to be made. Shares may be based on historical catches, investment, years of participation, other measures of past fishery performance, or some combination of these factors. In practice it may be useful to explore several options for initial distribution with allowance made for public review and comment. One particularly effective method has been to solicit the industry's preferences, determine the "best" set of alternatives, and, for each of those alternatives, for each potential participant in the program, calculate the initial quota. The potential participants are then mailed the results of the simulation for review (D.F.O., 1987).

Since the initial allocation is the only time that management intervenes in the individual allocation process and since an initial allocation is in itself an assignment of rights or "wealth," the allocation process involves much public discussion and debate. That process may, therefore, last a year or more.

The market for quota

Once initial assignment of quota occurs management plays no role in individual quota adjustment. Rather, a market where quota is traded will develop. If an operator determines that his initial allocation is insufficient relative to his current needs he will attempt to purchase or lease quota from an operator who has excess quota for a species. Conversely, if, during the fishing year, the fisherman discovers that he has quota in excess of his needs for a target species, or because of "clean" fishing that he holds excess quota for a species taken incidentally to the target fishery, he may offer that quota for sale or lease.

Given that quota needs to be traded in an orderly and timely basis some system of exchange will develop. One possibility is that fishermen will organize to create a market for quotas. Another is that some third party will create (and charge for) a quota exchange. A third possibility is that the government or the management agency will develop a trading system where individual shares may be bought, sold, and leased.

A government trading system has been developed in New Zealand. In that country the system is much like a brokerage for commodities such as grain and precious metals. Processors and fishermen access the commodity exchange via computer terminal and are able to conduct transactions in real time. Some fishermen even have computer terminals on the fishing vessel so that, should they encounter a target of opportunity while fishing, but not hold quota for that species, they can purchase additional shares while on the grounds. Likewise, should the bycatch rate in a particularly profitable fishery become such that bycatch quota will be exhausted, they may purchase additional shares of the bycatch species to allow continuation of the target fishery.

The flexibility engendered by rapid and orderly quota adjustment is the primary advantage of an ITQ system. The management agency need not regulate bycatch rates, individual vessel performance, gear limitations or restrictions, short seasons, etc. This is because the market for quota reflects the current and correct value of the various species at all times. The management agency need only concern itself with maintenance of the overall quota and enforcement.

Control of the overall quota

Setting a total quota for a species under an ITQ system is no different than the current Council approach to the annual establishment of a TAC. Quota shares may be either rights to harvest some fixed proportion of the catch in a fishery, for example 1% of the TAC, or they may be some fixed amount of catch, such as 100 mt. For the former, quota adjustment is straightforward; the TAC is set annually and the fisherman becomes entitled to a quota equal to the TAC multiplied by his share percentage. Obviously, the amount of quota rises and falls with the TAC, lending some uncertainty with regard to future harvest levels, and with regard to the value of the quota held.

Under a fixed quota (weight) system the harvest amount may need to be changed should the TAC change. Should the biomass of a species increase such that an increase in quota is warranted, the management agency can make additional quota available for purchase. The situation where declines in the stock lead to a reduction in quota is much more difficult to manage. One possibility is an across-the-board reduction in the value of a quota share in proportion to the quota reduction. For example, if it is necessary to reduce the overall TAC for sablefish by 10%, all shares which are currently equal to 1 mt of sablefish would be worth 0.9 mt of sablefish after the reduction. This value adjustment is analogous to changes in the value of holdings due to currency fluctuations or to a loss of real value through inflation. Another mechanism for quota reduction, when amounts are fixed, is for either the management agency or an industry association to purchase and remove from the market quota excess to the new biological limit to harvest.

In New Zealand, the government has purchased and held quota when reduction has been necessary. This is possible, philosophically, because the government assumed property rights to the resource, viewing the fishing fleet as lessees of those rights. It is possible, operationally, because the government made a financial commitment to fund the administration of the program and to make funds available for quota buy-back (Crothers, 1987).

In Australia it became necessary recently to reduce the quota for southern bluefin tuna for 1987 by devaluing the value of a quota "unit" (Robinson, pers. comm.). Since in that country the government had made no philosophical or financial commitment to holding quotas, and since the reduction proposed was in the order of 40%, the situation seemed grim. However, the Australian Tuna Boat Owners' Association intervened by purchasing the excess quota. Should the quota subsequently increase, the association plans to release the held quota to its members.

Thus, in terms of both the individual and overall quota, the individual transferable quota system allows orderly and timely adjustments. This is the strength of the system. At the same time, imposition and maintenance of an ITQ system presents a somewhat unique set of problems,⁹ which are discussed below.

Administration

Relative to the commitment of the government or management agency to holding and trading quota, some institutional arrangement for quota transactions will need to be established. If the commodity market for quota is publicly held (i.e., a government agency), the public will incur the cost of a large and complex administrative system for managing the quota. In the case of the Alaskan fisheries it will be necessary to create an entirely new infrastructure capable of handling real time purchase/sale/lease of quota, of providing accurate and timely information to the fishermen concerning quota availability and price, and capable of providing real time accounting of the flow of fishery products from fishermen to processors to wholesalers. Clearly, this will necessitate an extensive computer terminal network. Such a system will not only be expensive but will require considerable time and effort for installation and performance evaluation.

It is also possible, in the absence of government intervention, for a quota trading agency to arise. In this case the public would not bear the administrative cost of the system but fishermen would, presumably, have to pay a commission on all transactions. Under the private commodity market alternative it will still be necessary for the management agency to have access to the accounting part of the system to give the enforcement authority the ability to monitor "paper" versus actual performance.

Enforcement

Given a quota tracking system, shoreside (or at-sea) processing performance can be monitored. The crucial enforcement issue under an ITQ system, however, is at-sea enforcement at the harvesting level. First, in terms of target

9. See Copes, 1987, for a more complete discussion of practical problems under an ITQ system.

quota, there will be a tendency to overharvest the quota, particularly for high-valued species. This may be dealt with by fines, forfeiture of overage, reduction of an ITQ for an overage in a preceding year, or by some allowance for harvest over quota.^{10/}

Second, there is a tendency to "high-grade," that is, discard smaller sized or lower valued fish over the side so as to maximize the value of the landed catch. High grading is not unique to a fishery managed by ITQ but the fact that all fish will be counted against quota when landed leads to its prevalence.

Third, the problem of incidental catch or bycatch may be exacerbated by an ITQ. In one sense there may be no bycatch problem under an individual transferable quota system since all species may be subject to quota and since the share price will appropriately reflect the value of that fish, be it a target species or a bycatch species. In practice, however, it will be necessary to count the bycatch species. This is true whether retention is allowed or whether discard is required. Accordingly, particularly with a discard rule, there will be a tendency to discard more prohibited species than are reported.

Administrative and enforcement problems under an ITQ system are not qualitatively different than those under conventional management. However, the cost of the administrative and enforcement systems may be considerably greater than under conventional management. These costs will depend entirely on the stance taken towards administration (private or government) and enforcement (overages allowed, or not; retention or discard of incidental catch).

An Example

The most difficult issue in establishing an ITQ management system, however, will be the initial allocation of quota shares. A set of examples from the proposed ITQ system for sablefish off British Columbia^{11/} is presented to illustrate some of the possibilities for initial allocation.

Suppose initial allocations are to be based on an individual's

- 1) past performance (historical catches),
- 2) past participation (days fished),
- 3) past investment (using a proxy for investment of boat length),

or,

- 4) that shares should be equally divided among all potential participants.

10. New Zealand, for example, allows vessel to land 110% of its quota although the excess quota is forfeit to the government. The quota for that species for that vessel is then reduced in the following year.

11. Taken from: Department of Fisheries and Oceans, Canada. 1987. "Fishermen's Discussion paper on Individual Transferable Quota (ITQ) in the Sablefish Fishery," unpub. mss., 12 pp. (March).

The proposed ITQ system for the British Columbia sablefish fishery selected four alternatives for initial allocation of quota shares. The alternatives used one or more of the four considerations listed above and are:

- 1) 100% performance - initial share distribution is based entirely on past performance using the last four years of catch for each boat (1983-86), selecting the two best years from that four-year record, and computing the average annual catch from the best two years.
- 2) 73% performance, 27% equal - 73% of the ITQ is based on a share as calculated in 1), while 27% of the quota is distributed equally to all license holders.
- 3) 77% performance, 13% participation, 5% investment, 5% equal - past performance, as calculated above, accounts for 77% of the initial share of the quota; 13% is based on participation using the total number of days fished between 1983 and 1986 in relation to the total days fished by the entire fleet over the same period; 5% is based on investment by computing the vessel's "share" of total boat length; the remaining 5% is shared equally among all licensees.
- 4) 40% performance, 20% participation, 20% investment, 20% equal - as in 3) except the relative weighting of performance, participation, investment and equal shares is modified as indicated.

The Canadian discussion paper continues by calculating the initial quota allocation for each vessel in the fishery (48 licensees) for each of the four scenarios, producing a table of allocations unique to each vessel. The vessel owners were then mailed an individualized copy of the discussion paper. The results for a representative vessel are reported below.

 Table 1. Vessel Description
 Length: 21.0 meters, 69'¹/₂

	<u>Catch History</u>				
	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>Average</u>
Days fished	62	88	51	45	62
Catch, mt	33.68	77.43	42.25	29.31	45.67

Best 2 years, catch, mt - 77.43 (1984); 42.25 (1985)
 " average - 59.84
 " share - 1.1%

1. Taken from Table 1. op. cit., p.5.

 Table 2. Initial allocations for vessel above
 under four alternatives-----

	Alternative ^{2/}			
	1	2	3	4
Vessel Quota (ITQ), mt	34.37	27.84	29.93	44.76
Gain/(Loss), mt (compared to 1986)	5.06	(1.47)	0.62	15.45
Gain/(Loss), percent	17.3%	(5.0%)	2.1%	52.7%

1. Taken from Table 2, op. cit., p.5.

2. See text for a discussion of the four alternatives examined.

The hypothetical vessel described in Table 1 tends to gain the most (relative to 1986) under Alternative 4 (40% performance, 20% participation, 20% investment, 20% equal), and lose the most under Alternative 2 (77% performance, 13% participation, 5% investment, 5% equal) (Table 2). That vessel would most likely favor Alternative 4.

Through exercises like this it may be possible for the industry to reach consensus for initial allocation of quota.

Conclusion

An ITQ system is adaptable to changes in the overall quota. It is one of the more direct harvest controls available to the fishery manager. Under ITQs, there would be greater freedom to determine both the level of harvest effort needed and the timing of the harvest since fishermen would only be entitled to catch an assigned share of the quota. Regulations on input such as vessel and gear would be unnecessary because there would be no incentive to bring more harvesting capacity to the fishery than that required to harvest a particular share. Fishermen and processors would be able to contract with one another to schedule deliveries in a manner that improves the marketing of the fish, reduces the cost of production, or both.

Quota share systems tend to lower the costs of production, both on the harvesting and processing sides, by stabilizing employment patterns and moderating the peak production periods that accompany many of our fisheries as currently prosecuted. These lowered costs would translate to increased competitiveness of American products in our own and world markets, which (other things being equal) would tend to help redress our fisheries trade imbalance. To the extent that year-round production is possible, the consumer would benefit from increased availability and possibly decreased price.

By reducing the incentive for fishermen to fish rapidly in order to increase his share of a fixed quota, the rate of harvest would be slowed and the effort which managers devote to inseason monitoring of the fishery could be reduced.

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North Pacific Fishery Management Council

James O. Campbell, Chairman
Jim H. Branson, Executive Director

411 West 4th Avenue
Anchorage, Alaska 99510



Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

Telephone: (907) 274-4563
FTS 271-4064

MEMORANDUM

TO: Council, AP and SSC members

FROM: Jim H. Branson *JHB*
Executive Director

DATE: August 14, 1987

SUBJECT: Summary of Sablefish Management Option Proposals

The Council received several management proposals during the groundfish amendment cycle last winter asking for some form of effort control for the sablefish fishery. Because of the time required to analyze the issue and the complexity of possible solutions, the Council chose to put "sablefish limited entry" on its own amendment cycle.

In May, the Council solicited recommendations from the public for management options for the sablefish fishery. The deadline for proposals was July 31. We received 59 proposals, some as late as August 14.

A summary of the proposals follows. They fall into five categories, (status quo, conventional methods, license limitation, share quota, and unconventional) with subcategories depending upon specific details in any particular proposal.

Status quo

Several respondents advocated the status quo, some with particular emphasis that no form of limited entry should be considered.

Conventional methods

Several respondents advocated conventional measures to improve management of sablefish. These included changes to seasons, exclusive registration areas, and limits on gear and/or crew.

Seasons:

Open all fisheries, except roe herring, on June 1.

Split season into two or more openings.

Establish five one-month openings, each with an individual quota April-August.

Schedule openings between halibut openings.

Exclusive registration areas:

Fishing by any individual to be allowed only in one area, registered pre-season.

Gear restriction:

Eliminate trawling for sablefish.

Manage trawl-allocation as bycatch only.

Restrict amount of gear per boat to 25 skates and 12,000 hooks, or 300 pots.

Limit amount of gear and crew.

Other:

Allocate a percent of sablefish quota for salable bycatch in Pacific cod longline fishery.

Reserve portion of quota as salable bycatch in halibut fishery.

License limitation

Several respondents advocated some form of license limitation, but few suggested how many licenses should be issued or other details of a limitation system. Many proposers, however, indicated a preference for fisherman rather than vessel/owner licensing; although some did not. Several proposals were in combination with other suggestions, such as season openings.

Details:

Schedule openings between halibut openings.

Open season on July 1.

Cut-off dates for evaluating past performance in the fishery: Present, 12-31-86, 1-1-85, 1978.

Issue permits by area and date of prior participation:

SE Alaska 12-31-84, E. Yakutat 12-31-84, W. Yakutat 12-31-85, Central Gulf of Alaska 12-31-86, Western Gulf of Alaska 12-31-86, Bering Sea 12-31-87, Aleutian Islands 12-31-88.

Issue licenses by lottery, with winners getting transferable permits and losers getting non-transferable permits.

Make all permits nontransferable.

Preclude issuance to holders of other limited entry permits (e.g. salmon).

Issue permits by auction.

Categorize permits by vessel tonnage.

Preclude catcher-processors.

Limit number of permits to 200.

Establish limited entry for all longline fisheries.

Share quota

Several respondents specifically recommended limitations based on share quotas. Although most proposals did not explicitly distinguish between vessel shares or fishermen shares, the majority implicitly discussed shares to fishermen.

Details:

Cut-off dates for evaluating past performance in the fishery: 12-31-86.

Issue shares based upon past participation and production.

Calculate shares based on production over past 5 or 10 years.

Issue shares by area.

Shares to equal 100 pounds each.

Maximum share per individual equal 2% of total quota.

Unconventional

One proposal suggested elimination of any directed fishery for sablefish, and also for halibut, and reservation of these species as salable bycatch in longline fisheries for Pacific cod. A similar proposal is currently being considered by the Council's Bycatch Committee. Another proposal, although not an unconventional method, recommended a one-year closure of longlining for sablefish in a portion of the Bering Sea in order to study fishery/killer whale interactions.


Other

Two submissions provided no specific proposal, but rather some general comments.

All of us in this industry should try to have as smooth a transition as possible from the Japanese surimi era to the U.S. surimi era. American fishery interests should try to cooperate with foreign surimi interests such as those in Japan. We, the United States interests, should also understand that our interests are linked to the well-being of the resource and that the sage advice given to us by the Japanese surimi users (who have many years of experience) should be heeded.

Thank you for your consideration of this matter. If you have any questions, please do not hesitate to call on me or anyone on my staff. We remain ready to assist the Council or any government agency in regard to the promotion of the Americanization of the surimi industry.

Sincerely yours,



Frank Kawana
President

cc: Dr. William E. Evans
Ambassador Edward E. Wolfe