MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: April 9, 1997

SUBJECT: Halibut Management

ESTIMATED TIME
3 HOURS

ACTION REQUIRED

(a) Final Review of Seabird Avoidance EA/RIR.
(b) Initial Review of Area 4 Catch Sharing Plan EA/RIR.
(c) Initial Review of Subsistence EA/RIR.
(d) Final Review of Amendments 50/50 to allow donation of halibut to food banks.
(e) Review of IPHC Halibut Stock Assessment - SSC only.

BACKGROUND

(a) Final Review of Seabird Avoidance EA/RIR

At its December 1996 meeting, the Council approved gear modifications, seabird avoidance devices, or changes in fishing methods designed to reduce the incidental mortality of seabirds for the longline groundfish fisheries in the Gulf of Alaska and Bering Sea/Aleutian Islands. Seabird avoidance regulations are attached as Item C-2(a)(1). The required measures include the following:

1. All hook-and-line fishing operations would be conducted in the following manner:
   - Baited hooks must sink as soon as possible after they are put in the water. This could be accomplished by the use of weighted groundlines or thawed bait.
   - The dumping of offal shall be avoided to the extent practicable while gear is being set or hauled; if discharge of offal is unavoidable, the discharge must take place aft of the hauling station or on the opposite side of the vessel to that where gear is set or hauled.
   - Every effort shall be made to ensure that birds brought aboard alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

2. One or more of the following measures would be employed at all times when baited hooks are being set:
   - A buoy, board, stick, broom, or other like device shall be towed behind the vessel at a distance appropriate to prevent birds from taking baited hooks. Multiple devices may be employed, or;
   - A streamer line designed to effectively discourages birds from settling on baits during deployment of gear, shall be towed, or;
   - Gear shall be set only at night (between the times of nautical twilight). When fishing at night, only the minimum vessel's lights necessary for safety shall be used; or
   - Baited hooks shall be deployed under water using a lining tube designed and manufactured for such a purpose, or;
   - With the approval of the Regional Administrator, other experimental seabird avoidance devices may be substituted for those listed above.

The Council deferred action for the halibut hook-and-line fishery until the IPHC had reviewed the proposed regulations. The IPHC concurred with development of regulations to implement similar requirements in the halibut fisheries at its annual meeting in January 1997. The EA/RIR was mailed to you on April 7, 1997.

(b) Initial Review of Area 4 Catch Sharing Plan RIR

In December 1995 the Council approved an interim measure to set Area 4 subarea allocations using the historical commercial fishery allocations. This plan was to be in place until the IPHC approved a revised method for determining Area 4 subarea apportionments based on a biologically based approach. In January 1997, the IPHC approved such a method and requested that the Council remove Area 4A and 4B from its catch sharing plan (CSP). Under this proposal, the IPHC will set catch limits for Area 4A, 4B, and a combined 4C-E. The Council's CSP would then allocate the combined Area 4C-E catch limit according to historical allocations.

Alternative 2 would continue to apportion the IPHC combined Area 4C-E catch limit with the Council status quo subarea apportionments: 4C: 46.4%; 4D: 46.4%; and 4E: 7.2%. With the proposed removal of Areas 4A and 4B from the CSP beginning in 1998, the formula for allocating an additional 80,000 lb for any catch limit above 5.92 million lb to Area 4E will be adjusted to deduct that amount from Areas 4C and 4D only. Alternative 3 would withdraw the CSP. The IPHC would set subarea allocations for Area 4A, Area 4B, and a new Area 4C. Under this alternative, the Council would have to redistribute all IFQs and CDQs in Areas 4C, 4D, and 4E to the new Area 4C. A revised RIR is attached in Item C-2(b)(1). Alternatives included in this analysis are:

Alternative 1: Status quo.

Alternative 2: Remove Areas 4A and 4B from the Area 4 catch sharing plan.

Alternative 3: Withdraw the Area 4 catch sharing plan.

(c) Initial Review of Subsistence EA/RIR

The Halibut Subsistence EA/RIR analyzes management options to allow for the legal harvest of halibut for subsistence use in the Bering Sea/Aleutian Islands and Gulf of Alaska. First, subsistence halibut harvests are currently included within the personal use or sportfish regulations largely because the subsistence fishery's pattern of use has not been adequately documented. Sportfish regulations do not reflect the customary and traditional use of halibut in rural communities. Regulations for Alaska limit all non-commercial halibut harvests to two fish per person per day, caught on a single line with a maximum of two hooks or a spear, from February 1 through December 31. Increased enforcement of commercial halibut IFQ and CDQ regulations led to increased awareness of the conflict between halibut regulations and customary and traditional subsistence practices of Alaska Natives in coastal communities.

Second, subsistence harvests may not be adequately accounted for in the International Pacific Halibut Commission calculations of total halibut removals. Despite the lack of accurate landings information, all non-commercial halibut harvests are estimated to account for less than one percent of total halibut removals.

In September 1996, the Council received a NMFS report on enforcement issues related to halibut subsistence and designated a committee to advise the Council on management of subsistence halibut harvests. In October 1996, staff from the Council, NMFS Enforcement, NOAA General Counsel, and Alaska Department of Fish and Game Subsistence Division met with Alaska Native Tribal representatives to exchange information on the Council process for developing fishing regulations and Tribal subsistence customs. Agency staff met in November 1996 and provided a report to the Council in December on numerous management issues related to development of halibut subsistence regulations. At that meeting, the Council named seven representatives of Native Alaskan

Tribes to the Halibut Subsistence Committee with Robin Samuelsen as Chairman. The committee met in January 1997 and provided recommendations for the development of halibut subsistence regulations in its report to the Council in February. At its February meeting, the Council initiated preparation of an EA/RIR for a regulatory amendment to allow the legal harvest of halibut for subsistence in rural communities to conform with state and federal statutes that provide for the opportunity for the continued existence of these traditional cultures and economies.

The EA/RIR was mailed to you on April 8, 1997. The following management alternatives are addressed:

Alternative 1. Status quo.

Alternative 2. Allow the harvest of halibut for subsistence.

OPTION 1. Define subsistence.

Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.'

OPTION 2. Define eligibility for halibut subsistence:

Suboption A. Members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut. (Subsistence Committee definition)

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Native Groups with Subsistence Halibut Uses,' and will also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

Suboption C. Tribal members and non-Native permanent residents of Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

OPTION 3. Define legal gear.

Legal halibut subsistence gear is defined as (1) hook-and-line gear (including set and hand-held gear) with a range of 10 hooks, 30 hooks, and 60 hooks and (2) rod-and-reel gear. An individual would be limited to one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy.

Suboption. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:

A. 1 - 3 skates of gear, up to 60 hooks each
B. any gear type

OPTION 4. Define minimum size.

Suboption A. No minimum size be imposed for subsistence harvests of halibut.

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

OPTION 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.
Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount:
1. $200
2. $400
3. $600

Allow low monetary, non-commercial sale of halibut to legalize current practice of compensating subsistence fishermen for fuel or other fishing expenses in exchange for fish. The analysis would define 'barter,' 'non-commercial,' 'low monetary value,' and 'customary trade' and analyze the enforcement and monitoring costs of allowing barter.

OPTION 6. Sale of subsistence halibut.

Suboption A. Allow the commercial sale of subsistence-caught halibut.
Suboption B. Prohibit the commercial sale of subsistence-caught halibut.

OPTION 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

Option 2, Suboption A would qualify nearly 42,000 individuals from 118 Alaska Native Tribes for proposed halibut subsistence regulations. Suboption B would qualify over 82,000 Alaska rural residents from 114 coastal communities that had established customary and traditional halibut subsistence practices. Suboption C would qualify over 88,500 Alaska Natives and non-native residents from 114 communities. Halibut consumption was estimated to be approximately 1.8 million lb under Suboption A, 3.3 million lb under Suboption B, and 3.5 million lb under Suboption C, based on per capita rates reported by resident type and community. Other impacts of the proposed management options are discussed in the EA/RIR.

(d) Final Review of Amendments 50/50 to Allow Donation of Halibut to Food Banks

The proposed action would authorize a distributor to coordinate the donation of halibut taken as bycatch and landed at specified shoreside processing sites in the Alaska trawl fisheries for donation to economically disadvantaged individuals through a tax-exempt, authorized distributor selected by NMFS. This action, the Halibut Donation Program (HDP), would be implemented under Amendments 50/50 to the BSAI and GOA FMPs, respectively.

At its January 1993 meeting, the Council recommended to NMFS and the IPHC that limited retention of halibut be permitted, on a temporary basis, to assess the feasibility of a charitable donation program for dead prohibited halibut bycatch. Terra Marine Research and Education and Northwest Food Strategies (NWFS) applied for an Experimental Fishing Permit (EFP) to develop a means to improve resource utilization and reduce waste. NMFS approved three EFPs to NWFS, effective during 1993 through 1996. The three EFPs addressed only the retention of prohibited salmon bycatch. However, the information gained as a result of the study is directly applicable to the retention of dead prohibited halibut bycatch landed at shoreside processing sites.

At its January 1996 Annual Meeting, the IPHC approved a pilot program allowing limited retention of halibut bycatch for use by food banks. The pilot program was intended to explore ways to reduce waste and to improve bycatch records. The IPHC approved retaining 50,000 pounds (net weight) of halibut, landed by trawlers at shore plants in Dutch Harbor, for distribution in the manner previously used for salmon bycatch from factory trawlers. NWFS was responsible for conducting the distribution. During 1996, NWFS received only 572 pounds of halibut bycatch from two shore plants for the project. NMFS approval of the NWFS program was not effective until the start of the pollock B season. NMFS Enforcement and NOAA General Counsel could not identify an acceptable

administrative procedure to transfer halibut bycatch landed at shore plants from the vessel or plants to the government. An acceptable method has since been developed. The EA/RIR was mailed to you on April 2nd.

The following two alternatives are addressed in the analysis:

Alternative 1: Status quo.

Alternative 2: FMP amendments would be implemented to authorize the distribution of halibut taken as bycatch, and landed ashore at specified shoreside processing facilities, in the Alaska trawl fisheries, for donation to economically disadvantaged individuals. This alternative would require a NMFS-authorized distributor to issue Halibut Retention Permits (HRPs) to vessel operators and processors to authorize the donation of halibut caught as bycatch in the groundfish trawl fisheries to economically disadvantaged individuals. The NMFS-authorized distributor(s) would be determined by the Regional Director under a HDP. This alternative provides a voluntary alternative to regulatory discard through an authorized distributor selected by NMFS.

(e) Review of IPHC Halibut Stock Assessment - SSC only

Pat Sullivan, IPHC staff, will present an overview of the revised Pacific halibut stock assessment procedures to the Scientific and Statistical Committee.

parte presentations are permitted, provided they are disclosed as provided the Commission's Rules. See nerally 47 CFR 1.1202, 1.1203 and 1.1206(a).

Comment Dates

38. Pursuant to applicable procedures set forth in §§ 1.415 and 1.419 of the Commission's Rules, interested parties may file comments on or before May 16, 1997 and reply comments on or before June 16, 1997. All relevant and timely comments will be considered before final action is taken in this proceeding. To file formally in this proceeding, participants must file an original and four copies of all comments, reply comments, and supporting comments. If participants want each Commissioner to receive a personal copy of their comments, an original plus nine copies must be filed. Comments and reply comments should be sent to the Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center (Room 239) of the Federal Communications Commission, 1919 M Street, NW, Washington, DC 20554.

List of Subjects in 47 CFR Part 76

Cable television.

Federal Communications Commission.

William F. Caton,

Acting Secretary.

[FR Doc. 97–5350 Filed 3–4–97; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN: 1018—AC10

Endangered and Threatened Wildlife and Plants, Notice of Reopening of Comment Period on Proposed Threatened Status for the Flat-tailed Horned Lizard

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed Rule, notice of reopening of comment period.

SUMMARY: The Fish and Wildlife Service (Service), pursuant to the Endangered Species Act of 1973, as amended (Act), provides notice of reopening of the comment period on proposed endangered status for the flat-tailed horned lizard (*Phrynosoma mcalli*). The comment period has been reopened to acquire additional information from interested parties.

DATES: The public comment period closes May 9, 1997. Any comments received by the closing date will be considered in the final decision on this proposal.

ADDRESSES: Written comments and materials concerning this proposal should be sent directly to the Field Supervisor, Carlsbad Field Office, 2730 Loker Avenue West, Carlsbad California 92008. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Sandy Vissman at (619) 431–9440.

SUPPLEMENTARY INFORMATION:

Background

The flat-tailed horned lizard inhabits desert areas of southern Riverside, eastern San Diego, and Imperial Counties in California; southwestern Arizona; and adjacent regions of northwestern Sonora and northeastern Baja California Norte, Mexico. Within the United States, populations of the flat-tailed horned lizard are centered in portions of the Coachella Valley, Ocotillo Wells, Anza Borrego Desert, West Mesa, East Mesa and the Yuma Desert in California; and the area between Yuma and the Gila Mountains in Arizona. The flat-tailed horned lizard occurs on Federal, State, county, and privately owned lands.

This species may be threatened by one or more of the following: commercial and residential development, agricultural development, off-highway vehicle activity, energy developments, military activities, and pesticide use.

On November 29, 1993, the Service published a rule proposing threatened status for the flat-tailed horned lizard. The original comment period closed on January 28, 1994. The Service was unable to make a final listing determination on this species because of a limited budget, other endangered species assignments driven by court orders, and higher listing priorities. In addition, a moratorium on listing actions (Public Law 104–6) that took effect April 10, 1995, stipulated that no funds could be used to make final listing or critical habitat determinations. Now that funding has been restored, the Service is proceeding with a final determination for this species.

Due to the length of time that has elapsed since the close of the initial comment period, changing procedural and biological circumstances, and the need to review the best scientific information available during the decision-making process, the comment period is being reopened. Such changing circumstances include the recent (October 1996) draft *Flat-tailed Horned lizard Rangewide Management Strategy*, which likely affect the threats facing the species.

The Service seeks information that has become available in the last three years concerning:

(1) Biological, commercial, or other relevant data on any threat (or lack thereof) to this species; and

(2) The size, number, or distribution of populations of this species.

Written comments may be submitted until May 9, 1997 to the Carlsbad Field Office, 2730 Loker Avenue West, Carlsbad, California 92008.

Author: The primary author of this notice is Sandy Vissman.

Authority

The authority for this action is the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*)

Dated: February 26, 1997.

Thomas J. Dwyer,

Acting Regional Director, Region 1.

[FR Doc. 97–5383 Filed 3–4–97; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 679

[Docket No. 970226037–7037–01; I.D. 022197F]

RIN 0648–AJ39

Fisheries of the Exclusive Economic Zone Off Alaska; Management Measures to Reduce Seabird Bycatch in the Hook-and-Line Groundfish Fisheries

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: NMFS proposes regulations to require operators of hook-and-line vessels fishing for groundfish in the Bering Sea and Aleutian Islands management area (BSAI) and the Gulf of Alaska (GOA) and federally-permitted hook-and-line vessels fishing for groundfish in Alaska waters adjacent to the BSAI and to the GOA, to conduct

fishing operations in a specified manner, and to employ specified bird avoidance techniques to reduce seabird bycatch and incidental seabird mortality. This measure is necessary to mitigate hook-and-line fishery interactions with the short-tailed albatross, an endangered species protected under the Endangered Species Act (ESA), and other seabird species. This measure is intended to accomplish the objectives of the ESA and of the Fishery Management Plan for Groundfish of the Gulf of Alaska and the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (Groundfish FMPs) with respect to the management of the GOA groundfish fishery and the BSAI groundfish fishery and the marine environment.

DATES: Comments must be received by March 20, 1997.

ADDRESSES: Comments should be sent to Ronald J. Berg, Chief, Fisheries Management Division, Alaska Region, NMFS, P.O. Box 21668, Juneau, AK 99802, Attn: Lori J. Gravel, or delivered to the Federal Building, 709 West 9th Street, Juneau, AK. Copies of the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) prepared for the amendment may be obtained from the North Pacific Fishery Management Council, Suite 306, 605 West 4th Avenue, Anchorage, AK 99501–2252; telephone: 907–271–2809.

FOR FURTHER INFORMATION CONTACT: Kim S. Rivera, 907–586–7228.

SUPPLEMENTARY INFORMATION: The U.S. groundfish fisheries of the GOA and the BSAI in the Exclusive Economic Zone (EEZ) are managed by NMFS under the Groundfish FMPs. The FMPs were prepared by the North Pacific Fishery Management Council (Council) under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 773 *et seq.*, 1801 *et seq.*; Magnuson-Stevens Act) and are implemented by regulations for the U.S. fisheries at 50 CFR part 679. General regulations that also pertain to U.S. fisheries appear at subpart H of 50 CFR part 600.

Background

Recent takes of the endangered short-tailed albatross (*Diomedea albatrus*) (two in 1995 and one in 1996) in hook-and-line groundfish fisheries in the BSAI and the GOA highlight a seabird bycatch problem. A biological opinion issued in an ESA section 7 consultation on the GOA and BSAI groundfish fisheries includes an incidental take statement for the take of two short-tailed albatrosses annually in the fisheries. If the annual take exceeds two, NMFS immediately must reinitiate section 7 consultation and review with the U.S. Fish & Wildlife Service (USFWS) the need for possible modification of the reasonable and prudent measures established to minimize take of the short-tailed albatross.

In response to these recent takes, several industry groups representing hook-and-line vessels in the GOA and the BSAI petitioned the Council and NMFS to impose regulatory measures intended to reduce the incidental mortality of seabirds in their fisheries. The presence of "free" food in the form of offal and bait attract many birds to fishing operations. In the process of feeding, birds sometimes come into contact with fishing gear and are accidentally killed. For example, most birds taken during hook-and-line operations are attracted to the baited hooks when the gear is being set. These birds become hooked at the surface and are then dragged underwater where they drown. The proposed measures would reduce the incidental mortality of short-tailed albatrosses and other seabird species by (1) minimizing the seabirds' attraction to fishing vessels and (2) preventing seabirds from attempting to seize baited hooks.

At its December 1996 meeting, the Council voted unanimously to recommend that all hook-and-line vessels fishing for groundfish in the GOA and BSAI must use certain seabird bycatch avoidance devices intended to reduce the incidental mortality of the short-tailed albatross and other seabird species. At its April 1997 meeting, the Council is scheduled to take final action to expand these measures to the Pacific halibut fishery in convention waters off Alaska. Should the Council take this action, rulemaking to require seabird avoidance measures would be initiated separately for the halibut fishery.

At the February 1997 Council meeting, NMFS informed the Council of revisions in the draft proposed rulemaking made because of concerns regarding the enforceability of some of the seabird avoidance measures. The Council reiterated its December 1996 recommendations that the seabird avoidance measures be required in regulation.

Seabird Bycatch in Alaskan Groundfish Fisheries

Over 80 species of seabirds, including the short-tailed albatross, occur over waters off Alaska and could potentially be affected by interactions with the GOA and BSAI groundfish fisheries. Fulmars, gulls, and albatrosses account for the vast majority of seabird bycatch in both the GOA and the BSAI. NMFS, USFWS, and the National Biological Survey are cooperating to obtain accurate information on the mortality of seabirds related to hook-and-line, trawl, and pot vessels fishing groundfish in the EEZ of the GOA and BSAI. This cooperative project will also address questions about the effects of various levels of take on the world-wide population of short-tailed albatrosses, currently estimated at 800 birds. Whereas the USFWS provided an opinion in 1989 that short-tailed albatrosses could be adversely affected by commercial fishing operations in Alaska, this effect on the world population is unknown.

The EA/RIR/IRFA prepared for this action contains more information on Alaskan seabirds and a historical background of the seabird bycatch issue (see **ADDRESSES**).

Seabird Bycatch Avoidance Gear and Methods

The proposed measures are intended to reduce the incidental mortality of seabirds by minimizing their attraction to fishing vessels and by preventing the seabirds from attempting to seize baited hooks. The proposed measures would apply to vessels fishing for groundfish with hook-and-line gear in the GOA and the BSAI and federally-permitted vessels fishing groundfish with hook-and-line gear in waters of the State of Alaska that are adjacent to the GOA and the BSAI and that retain more round-weight equivalent of groundfish than round-weight equivalent of halibut.

1. All applicable hook-and-line fishing operations would be conducted in the following manner:

a. Use hooks that, when baited, sink as soon as they are put in the water. This could be accomplished by the use of weighted groundlines and/or thawed bait.

b. Avoid dumping of offal to the extent practicable while gear is being set or hauled. If discharge of offal is unavoidable, the discharge must take place aft of the hauling station or on the opposite side of the vessel to that where gear is set or hauled.

c. Make every reasonable effort to ensure that birds brought on board alive are released alive and that, wherever possible, hooks are removed without jeopardizing the life of the bird.

2. All applicable hook-and-line fishing operations would be required to employ one or more of the following seabird avoidance measures:

a. Deploy gear only during the hours specified at § 679.24(e)(2)(iv)(D) of this

proposed rule, using only the minimum vessel's lights necessary for safety;

b. Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;

c. Tow a buoy, board, stick or other device during deployment of gear, at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed; or

d. Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear.

The Council and NMFS intend to implement these proposed regulations for the groundfish fisheries first and to follow at a future time with the same or similar regulations for the Pacific halibut fishery. To avoid having the proposed groundfish regulations applicable to halibut fishermen that retain bycatch amounts of groundfish, the proposed regulations would apply only to those hook-and-line fishermen that retain more round-weight equivalent of groundfish than round-weight equivalent of halibut.

The Council and NMFS intend to reduce the fisheries-related bycatch and incidental mortality of seabirds that occur over waters off Alaska. To maximize the extent to which these proposed regulations would apply, an operator of a hook-and-line vessel that has been issued a Federal permit to fish for groundfish in the BSAI and GOA would be required to comply, even while fishing for groundfish in State of Alaska waters.

Although the Council's recommendation at its December 1995 meeting included a provision whereby fishermen could substitute other experimental seabird avoidance devices with the approval of the NMFS Administrator, Alaska Region, NMFS believes that such a waiver provision is not administratively practicable. NMFS strongly encourages the industry's efforts to find other effective seabird avoidance devices. Additional effective measures can be implemented through the regulatory amendment process in the future.

The proposed measures are modeled after NMFS' regulations implementing conservation and management measures adopted by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) (61 FR 8483; March 5, 1996) and measures currently in use by some hook-and-line fishermen in Alaskan fisheries. Some of the CCAMLR measures were initially developed for use in the Australian and New Zealand longline fisheries and have proven very effective in reducing bait loss and incidental seabird mortality. In addition to the measures benefitting seabirds, the reduction of bait loss and subsequent increased fish harvest provides financial benefits to fishermen. In the Australian southern bluefin tuna fishery, annual economic losses attributed to bait loss and reduced harvest were estimated to exceed $7 million in Australian dollars (approximately $5 million United States).

The CCAMLR regulations indicate that longline gear shall be set between the times of nautical twilight. Nautical twilight is defined practically as those times when it is too dark to see the horizon clearly and when normal outdoor activities cannot be conducted without the use of artificial light. The intent of the proposed regulation is to limit hook-and-line gear deployment to those hours (nighttime hours/hours of darkness) between nautical twilight, if that is the option being exercised by the fisherman. The proposed regulation provides a table specifying the allowed hours of hook-and-line gear deployment. The *Nautical Almanac*, a U.S. Naval Observatory publication, was used to determine these times. This option is not available during the months of June and July, due to the lack of nautical twilight at northernmost latitudes.

Besides the measures proposed here, other methods have been used to reduce seabird bycatch. Some of them are: Loud noises to deter birds from the stern of the fishing vessel during gear deployment, automatic bait-caster to deploy bait away from the turbulent water caused by "prop wash" and causing the bait to remain afloat, deflating swim bladders or the squid mantle of bait species (causing bait to sink faster), and reducing the time taken to haul back gear. NMFS specifically requests comments on: (a) These and other effective methods for reducing seabird bycatch that are not included in the proposed measures, (b) any safety concerns of using seabird bycatch avoidance devices during extreme weather conditions, and (c) offal discharge during setting or hauling of hook-and-line gear and how either or both of these operations impacts seabird bycatch.

Suggestions for Streamer Line Construction

The streamer line is a seabird avoidance device that currently is required in Australian and New Zealand longline fisheries and has been credited with effectively reducing seabird bycatch. Scientific studies in New Zealand indicate that the quality of a streamer line, both in construction and materials used, played a major role in the streamer line's effectiveness in preventing seabirds from seizing baited hooks. In fact, the difference in bycatch rates between sets that used no streamer line and sets that used a poorly-constructed streamer line was not significant. Sets that used a high-quality streamer line were significantly less likely to catch seabirds than sets that used a poor-quality streamer line or no streamer line at all. The purpose of the streamer line is to scare birds away from the stern of the vessel when gear is deployed and baited hooks are present near or on the water's surface. A well-constructed streamer line thrashes about unpredictably; thus, the seabirds do not become habituated to its movement. The key characteristics of an effective streamer line are:

- All materials used to construct the streamer line and to hold the streamer line in place are strong enough to withstand all weather conditions in which hook-and-line fishing activity is likely to be undertaken;
- The streamer line is attached to a pole at the stern of the vessel and positioned such that it will be directly above the baited hooks as they are deployed;
- The height of the streamer line at the point of attachment is 3 to 4 meters (m) above sea level;
- The streamer line is constructed of material that is between 2 and 5 millimeters (mm) in diameter;
- Length of streamer line is a minimum of 150 to 175 m;
- Number of streamers attached to a streamer line is 5 to 10 pairs;
- Streamers made of a heavy, flexible material that will allow the streamers to move freely and flop unpredictably (for example, streamer cord inserted inside a red polyurethane tubing);
- Streamer pairs attached to the bird streamer line using a 3-way swivel; and
- Streamers should just skim above the water's surface over the baited hooks.

These characteristics should be taken into consideration when employing a bird streamer line, as proposed in this rulemaking.

The Magnuson-Stevens Act requires that the public be provided with a comment period of 15 to 60 days to respond to proposed regulations. Beginning January 1, the hook-and-line fisheries open in the BSAI and GOA. Short-tailed albatross sightings in the BSAI and/or GOA have occurred in all months from April to November. Considering the urgency of completing rulemaking regarding these proposed measures, NMFS has provided for a 15-day public comment period. The

proposed measures were initially requested by hook-and-line industry representatives as emergency measures because of concerns about the potential economic impacts if the annual take limit for the short-tailed albatross is exceeded and fishing ceases pending reinitiation and conclusion of consultation pursuant to section 7 of the ESA.

Classification

This proposed rule has been determined to be not significant for purposes of E.O. 12866.

NMFS prepared an IRFA as part of the RIR, which describes the impact this proposed rule would have on small entities, if adopted. Based on the analysis, it was determined that this proposed rule could have a significant economic impact on a substantial number of small entities. In 1995, 1,217 and 100 hook-and-line catcher vessels harvested groundfish from the GOA and BSAI, respectively. Catcher/processor vessels numbered 35 and 46 in those respective areas. Very significant impacts on small entities could occur if the groundfish fisheries are altered or perhaps closed due to the annual take of the endangered short-tailed albatross being exceeded. The likelihood of this happening is great under the status quo alternative because of recent takes (e.g., two in 1995). The economic impacts of such alterations or closures would depend on the development and implementation of the reasonable and prudent measures established to minimize take of the short-tailed albatross.

Several measures available under the preferred alternative would minimize the economic impacts on small entities. The economic impact on small entities would depend upon the particular measures chosen. Procedural or operational changes may be necessary in fishing operations. A vessel operator would have a choice of several other measures. The cost of buoys and bird streamer lines as seabird bycatch avoidance devices range from $50–$250 per vessel. A lining tube is a technology used in fisheries of other nations to deploy baited hooks underwater to avoid birds and is offered as a possible option. NMFS anticipates that the operators of smaller vessels (less than 60 ft (18.3 m)) would choose an avoidance measure other than a lining tube, which could cost as much as $35,000 per vessel. There are 154 and 53 hook-and-line catcher vessels and 31 and 45 catcher/processor vessels equal to or greater than 60 ft (18.3 m) in the GOA and BSAI, respectively.

If the annual take of short-tailed albatross in the hook-and-line fisheries operating under these proposed measures would exceed the take limit established under the ESA section 7 consultation, the actual economic impacts resulting from the modification of the reasonable and prudent measures established to minimize take of the short-tailed albatross would depend upon the development and implementation of revised measures. The revised measures could range from those proposed by this rule, additional or modified measures, to closures. The economic impact on fishing operations would depend upon the length of time of the closed period and the additional cost of revised measures. Significant impacts on small entities could occur if the fisheries closed due to the annual take of the endangered short-tailed albatross being exceeded. The likelihood of this happening is less under the proposed rule than under the status quo alternative. The economic impacts of this proposed rule on small entities could result in a reduction in annual gross revenues by more than 5 percent and could, therefore, potentially have a significant economic impact on a substantial number of small entities. A copy of this analysis is available from the Council (see ADDRESSES).

List of Subjects in 50 CFR Part 679

Fisheries, Reporting and recordkeeping requirements.

Dated: February 28, 1997.

Nancy Foster,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 679 is proposed to be amended as follows:

PART 679—FISHERIES OF THE EXCLUSIVE ECONOMIC ZONE OFF ALASKA

1. The authority citation for 50 CFR part 679 continues to read as follows:

Authority: 16 U.S.C. 773 *et seq.* and 1801 *et seq.*

2. In § 679.24, paragraph (e) is added to read as follows:

§ 679.24 Gear limitations.

* * * * *

(e) *Seabird avoidance gear and methods for hook-and-line vessels fishing for groundfish*—(1) *Applicability.* (i) Except as provided in paragraph (e)(1)(ii) of this section, the operator of a vessel that is required to obtain a Federal fisheries permit under § 679.4(b)(1) must comply with the seabird avoidance measures in paragraph (e)(2) of this section while fishing for groundfish with hook-and-line gear in the BSAI, in the GOA, or in waters of the State of Alaska that are shoreward of the BSAI and the GOA.

(ii) The operator of a vessel is not required to comply with the seabird avoidance measures in paragraph (e)(2) of this section whenever the round-weight equivalent of halibut retained on board exceeds the round-weight equivalent of groundfish retained on board.

(2) The operator of a vessel described in paragraph (e)(1) of this section must conduct fishing operations in the following manner:

(i) Use hooks that when baited, sink as soon as they are put in the water.

(ii) Avoid dumping of offal to the extent practicable while gear is being set or hauled. If discharge of offal is unavoidable, the discharge must take place aft of the hauling station or on the opposite side of the vessel to that where gear is set or hauled.

(iii) Make every reasonable effort to ensure that birds brought on board alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

(iv) Employ one or more of the following seabird avoidance measures:

(A) Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;

(B) Tow a buoy, board, stick or other device during deployment of gear, at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed; or

(C) Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear; or

(D) Deploy gear only during the hours specified below, using only the minimum vessel's lights necessary for safety.

HOURS THAT HOOK-AND-LINE GEAR CAN BE DEPLOYED FOR SPECIFIED LONGITUDES ACCORDING TO PARAGRAPH (E)(2)(IV) OF THIS SECTION

[Hours are Alaska local time]

Calendar Month	Longitude		
	Shoreward to 150°W	151 to 165°W	166 to 180°W
January	1800–0700	1900–0800	2000–0900
February	1900–0600	2000–0700	2100–0800
March	2000–0500	2100–0600	2200–0700
April	2100–0400	2200–0500	2300–0600
May	2200–0300	2300–0400	2400–0500
June	[1]	[1]	[1]
July	[2]	[2]	[2]
August	2200–0400	2300–0500	2400–0600
September	2000–0500	2100–0600	2200–0700
October	1900–0600	2000–0700	2100–0800
November	1800–0700	1900–0800	2000–0900
December	1700–0700	1800–0800	1900–0900

[1] This measure cannot be exercised during June.
[2] This measure cannot be exercised during July.

[FR Doc. 97–5438 Filed 3–4–97; 8:45 am]
BILLING CODE 3510–22–P

50 CFR Part 697

[I.D. 091696A]

Atlantic Coast Weakfish Fisheries; Public Hearings

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of additional public hearing; extension of comment period.

SUMMARY: On February 21, 1997, NMFS announced three public hearings to receive comments from fishery participants and other members of the public regarding proposed regulations on the harvest and possession of weakfish in the exclusive economic zone of the Atlantic Ocean from Maine through Florida.

Due to requests from the public, NMFS now announces one additional public hearing in New Bern, NC and extends the comment deadline.

To accommodate people unable to attend a hearing or wishing to provide additional comments, NMFS also solicits written comments on the proposed rule.

DATES: Written comments on the proposed rule and supporting documents (Draft Supplemental Environmental Impact Statement and Regulatory Impact Review (DSEIS/RIR) must be received on or before April 1, 1997.

The New Bern, NC hearing will be held on Thursday, March 27, 1997, from 7–9 p.m.

ADDRESSES: Written comments should be sent to Richard H. Schaefer, Chief, Staff Office of Intergovernmental and Recreational Fisheries (Fx2), National Marine Fisheries Service, 8484 Georgia Avenue, Suite 425, Silver Spring, MD 20910. Clearly mark the outside of the envelope "Atlantic Weakfish Comments." The hearing will be held at the following location:

Sheraton Grand New Bern, 1 Bicentennial Park, New Bern, NC 28563.

FOR FURTHER INFORMATION CONTACT: Thomas Meyer/Paul Perra, 301–427–2014.

SUPPLEMENTARY INFORMATION: The hearing announcement was published on February 21, 1997, (62 FR 7994).

A complete description of the measures, and the purpose and need for the proposed action, is contained in the proposed rule published February 14, 1997 (62 FR 6935), and is not repeated here. A copy of the proposed rule may be obtained by writing (see **ADDRESSES**) or calling the contact person (see **FOR FURTHER INFORMATION CONTACT**).

The purpose of this document is to alert the interested public of hearings and provide for public participation. These hearings are physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids for the New Bern, NC hearing should be directed to Thomas Meyer by March 17, 1997 (see **ADDRESSES**).

Authority: 16 U.S.C. 1851 note.

Dated: February 27, 1997.

Gary C. Matlock,

Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 97–5335 Filed 3–4–97; 8:45 am]
BILLING CODE 3510–22–F

DRAFT FOR COUNCIL REVIEW

ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW

FOR

A REGULATORY AMENDMENT

FOR

CREATING AND DEFINING A HALIBUT SUBSISTENCE FISHERY CATEGORY

Prepared by

Staff
North Pacific Fishery Management Council
Alaska Department of Fish and Game
International Pacific Halibut Commission
National Marine Fisheries Service

April 8, 1997

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The proposed action in the Halibut Subsistence EA/RIR is to develop regulations to allow for the legal harvest of halibut for subsistence use in the Bering Sea/Aleutian Islands and Gulf of Alaska. First, subsistence halibut harvests are currently included within the personal use, or sportfish, regulations, largely because the subsistence fishery's pattern of use has not been adequately documented. Sportfish regulations do not reflect the customary and traditional use of halibut in rural communities. Regulations for Alaska limit all non-commercial halibut harvests to two fish per person per day, caught on a single line with a maximum of two hooks or a spear, from February 1 through December 31. Increased enforcement of commercial halibut IFQ and CDQ regulations has led to increased awareness of the conflict between halibut regulations and customary and traditional subsistence practices of Alaska Natives in coastal communities.

Second, subsistence harvests may not be adequately accounted for in the International Pacific Halibut Commission calculations of total halibut removals. Despite the lack of accurate landings information, all non-commercial halibut harvests are estimated to account for less than one percent of total halibut removals.

In September 1996, the Council received a NMFS report on enforcement issues related to halibut subsistence and designated a committee to advise the Council on management of subsistence halibut harvests. In October 1996, staff from the Council, NMFS Enforcement, NOAA General Counsel, and Alaska Department of Fish and Game Subsistence Division met with Alaska Native Tribal representatives to exchange information on the Council process for developing fishing regulations and Tribal subsistence customs. Agency staff met in November 1996 and provided a report to the Council at its December 1996 meeting on numerous management issues related to development of halibut subsistence regulations. At that meeting, the Council named seven representatives of Native Alaskan Tribes to the Halibut Subsistence Committee and named Council member Robin Samuelsen as Chairman. The committee met in January 1997 and provided recommendations for the development of halibut subsistence regulations in its report to the Council in February 1997. At its February meeting, the Council initiated preparation of an EA/RIR for a regulatory amendment to allow the legal harvest of halibut for subsistence in rural communities to conform with state and federal statutes that provide for the opportunity for the continued existence of these traditional cultures and economies.

The following management alternatives were approved for analysis:

Alternative 1. Status quo.

Alternative 2. Allow the harvest of halibut for subsistence.

OPTION 1. Define subsistence.

Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.'

OPTION 2. Define eligibility for halibut subsistence:

Suboption A. Members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut. (Subsistence Committee definition)

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Native Groups with Subsistence Halibut Uses,' and will also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

Suboption C. Tribal members and non-Native permanent residents of Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

OPTION 3. Define legal gear.

Legal halibut subsistence gear is defined as (1) hook-and-line gear (including set and hand-held gear) with a range of 10 hooks, 30 hooks, and 60 hooks and (2) rod-and-reel gear. An individual would be limited to one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy.

Suboption. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:

A. 1 - 3 skates of gear, up to 60 hooks each
B. any gear type

OPTION 4. Define minimum size.

Suboption A. No minimum size be imposed for subsistence harvests of halibut.

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

OPTION 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.

Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount:

1. $200
2. $400
3. $600

Allow low monetary, non-commercial sale of halibut to legalize current practice of compensating subsistence fishermen for fuel or other fishing expenses in exchange for fish. The analysis would define 'barter,' 'non-commercial,' 'low monetary value,' and 'customary trade' and analyze the enforcement and monitoring costs of allowing barter.

OPTION 6. Sale of subsistence halibut.

Suboption A. Allow the commercial sale of subsistence-caught halibut.

Suboption B. Prohibit the commercial sale of subsistence-caught halibut.

OPTION 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

1.0 INTRODUCTION

This document assesses the potential biological, social and economic impacts of a regulatory action to develop halibut subsistence regulations for Alaskan rural communities to legitimize current subsistence uses. A number of federal and state agencies and divisions have management responsibilities for halibut. It has benefitted from the cooperative efforts of staff from the North Pacific Fishery Management Council, International Pacific Halibut Commission, National Marine Fisheries Service, NOAA General Counsel, U.S. Fish and Wildlife Service, State of Alaska Department of Fish and Game Commercial Fisheries Management and Development, Sport Fish, and Subsistence divisions.

The domestic fishery for halibut in and off Alaska is managed by the International Pacific Halibut Commission (IPHC) as provided by the "Convention Between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea" (Convention) signed at Washington March 29, 1979, and the Northern Pacific Halibut Act of 1982 (Halibut Act). The Convention and the Halibut Act authorize the respective North Pacific Fishery Management Council (Council) established by the Magnuson-Stevens Act to:

> develop regulations governing the United States portion of Convention waters, including limited access regulations, applicable to nationals or vessels of the United States, or both which are in addition to and not in conflict with regulation adopted by the Commission. Such regulation shall only be implemented with the approval of the Secretary, shall not discriminate between residents of different States, and shall be consistent with the limited entry criteria set forth in Section 303(b)(6) of the Magnuson Act. If it becomes necessary to allocate or assign halibut fishing privileges among various United States fishermen, such allocation shall be fair and equitable to all such fishermen, based upon the rights and obligation in existing Federal law, reasonable calculated to promote conservation, and carried in such manner that no particular individual, corporation, or other entity acquires an excessive share of the halibut fishing privileges...[Halibut Act]

In general, the language in the Magnuson-Stevens Act, the Halibut Act and the Convention have been interpreted to assign to the Council the duty to advise the Secretary of Commerce on halibut management issues concerning allocations between various users of the halibut resources in and off waters of Alaska. It is under this authority that the Council is considering alternatives to recognize and manage the subsistence halibut fishery. These acts, coupled with Executive Orders 12866 and 12962 and the National Environmental Policy Act (NEPA), mandate that certain issues are examined before a final decision is made. These analytical requirements are addressed in this document, the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA).

1.1 Purpose of and Need for the Action

The purpose of this EA/RIR/IRFA is to develop regulations to allow for the legal harvest of halibut for subsistence use in the Bering Sea/Aleutian Islands and Gulf of Alaska (Figure 1.1). First, subsistence halibut harvests are currently included within sportfish regulations, largely because the subsistence fishery's pattern of use has not been adequately documented. Sportfish regulations limit all non-commercial uses of halibut in Alaska, including recreational, personal use and

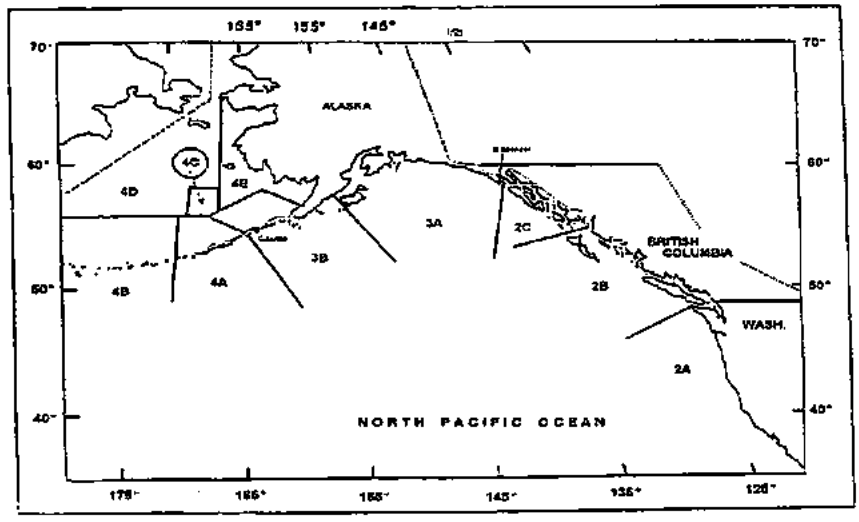


Figure 1. Regulatory areas for the Pacific halibut fishery.

subsistence fisheries, to two fish per person per day, caught on a single line with a maximum of two hooks or a spear, from February 1 through December 31. Sportfish regulations do not reflect the customary and traditional use of halibut for subsistence in rural communities.

During 1996, the Council received a number of requests from Alaska Native Tribal organizations to legitimize established halibut subsistence practices. The Council received a letter from Sen. Ted Stevens, dated May 15, 1996, referring to the Council a resolution by the Central Council of Tlingit and Haida Indian Tribes of Alaska to 'recognize and acknowledge halibut as a customary and traditional subsistence resource, and to assure subsistence harvesting of halibut by Alaska Natives is protected.'

In July 1996, the Coastal Villages Fishing Cooperative (CVFC) requested a meeting with Council, NMFS, and NOAA staff in Bethel, Alaska to discuss halibut IFQ and CDQ enforcement. The meeting occurred in August, 1996 and information was exchanged regarding halibut commercial fishing regulations and traditional halibut subsistence practices. Some Western Alaska Native fishermen routinely retain sublegal halibut harvested along with commercial Community Development Quota (CDQ) halibut for subsistence purposes. The parties agreed to refer the conflict between traditional subsistence practice and existing fishing regulations to the Council.

CVFC, the Southeast Native Commission, the Central Council of Tlingit and Haida Indian Tribes of Alaska, and the Aleutian Pribilof Islands Association submitted a request, dated September 13, 1996, to NMFS to resolve enforcement issues related to subsistence halibut fishing. The letter referred to a State enforcement case in Southeast Alaska where three Angoon fishermen were cited for using illegal gear (longline) to harvest halibut for subsistence. That case was dismissed in Superior Court in January 1997. The State elected not to appeal the *Hunter* decision.

Identical proposals to define subsistence halibut fishing in the regulations were submitted by the Traditional Councils of Tooksook Bay, Kipnuk, Nightmute, and Newtok to the Council's Halibut Subsistence Committee at its January 1997 meeting. Resolutions by the Central Council of Tlingit and Haida Indian Tribes of Alaska and the Southeast Native Subsistence Commission were also submitted to the committee.

Second, subsistence harvests may not be adequately accounted for in the International Pacific Halibut Commission calculations of total halibut removals. Methods for estimating halibut subsistence removals were reevaluated in 1993. Since then, IPHC has used the estimate of 228,000 lb of halibut, derived from ADFG Subsistence Division household surveys, to account for Alaskan subsistence halibut removals. There currently is no satisfactory system for assessing the size and trends in the subsistence fishery in rural Alaska, nor in the immediate future, funds to do so. Despite the lack of accurate landings information, all non-commercial halibut harvests are estimated to account for less than one percent of total halibut removals.

In September 1996, the Council received a NMFS report on enforcement issues related to halibut subsistence and designated a committee to advise the Council on management of subsistence halibut harvests. In October 1996, staff from the Council, NMFS Enforcement, NOAA General Counsel, and Alaska Department of Fish and Game Subsistence Division met with Alaska Native Tribal representatives to exchange information on the Council process for developing fishing regulations and Tribal subsistence customs. Agency staff met in November 1996 and provided a report to the Council at its December 1996 meeting on numerous management issues related to development of halibut subsistence regulations. At that meeting, the Council named seven representatives of Alaska Native Tribes to the Halibut Subsistence Committee and named Council member Robin Samuelsen as Chairman. The committee met in January 1997 and provided recommendations for the development of halibut subsistence regulations in its report to the Council in February 1997. At its February meeting, the Council initiated preparation of this EA/RIR for a regulatory amendment to allow the legal harvest of halibut for subsistence in rural communities to conform with state and federal statutes that provide for the opportunity for the continued existence of these traditional cultures and economies.

1.1.1 Defining 'Subsistence'

Given the nature of public and governmental debate regarding subsistence in Alaska, it is important to differentiate the meanings of "subsistence" before analyzing alternatives. In general, "subsistence" refers to fishing and hunting for wild foods by Alaska Natives and other residents of rural Alaska areas, as characterized in this ethnographic description in Wolfe 1993b:

> In 1990 there were about 52,000 Alaska Natives living in somewhat more than 250 rural settlements (commonly called "villages") in Alaska, including Tlingit, Haida, Tsimshian, Aleut, Alutiiq, Yup'ik, Inupiat, and several Athapaskan tribal groups. The economies, cultures, and spiritual well being of Alaska's indigenous societies are heavily dependent upon customary and traditional fishing and hunting practices (called "subsistence" in Alaska) (Wolfe and Walker 1987). Fishing and hunting for subsistence uses are mainstays of the economy, culture, and way of life of most contemporary Alaska Native villages. The annual subsistence harvest in rural areas is about 35-45 million pounds of usable wild foods, which come to about a pound of food per person per day for the rural population (this includes about 38,000 non-Natives).
>
> Subsistence activities of Alaska Native are usually conducted by traditional, kinship-based groups using small-scale, efficient technologies (e.g., gill nets, seine nets, fish wheels, rifles, skiffs, outboard motors, and snowmachines). The food product is preserved by traditional, labor-intensive methods including air drying, smoking, freezing, salting, and fermenting. Traditional foods are distributed along non-commercial networks of sharing and exchange and consumed primarily by families in rural areas. Fishing and hunting occur in traditional areas following customary principles of the local society... (cf., Alaska Department of Fish and Game, Division of Subsistence (1992) for materials on contemporary subsistence systems of Alaska Native villages). (Wolfe 1993b:13)

Wild food harvests contribute to the food supply of most rural places in Alaska, as documented by surveys by the Division of Subsistence and analyzed by Wolfe and Walker (1987:68):

> The statewide survey indicates that subsistence harvests are a prominent part of the economy and social welfare of most rural Alaska regions. Subsistence productivity is substantial in most areas except in the four large urban population centers of Anchorage, Fairbanks, Juneau, and the Matanuska-Susitna Borough. (Wolfe and Walker 1987:68)

Subsistence patterns conducted by Alaska Native groups can be differentiated from the subsistence patterns by non-Natives in Alaska, according to Smith and Kancewik (1995):

> For Alaska Native Tribal members, subsistence is a Native cultural tradition, an integrated pattern of tribal community life and the substance of Native self-definition. It is a matter of inherent historical, cultural identity. Non-Native subsistence, for the most part, is the opposite; an individual activity governed by the rules affecting individual rights.
>
> To participate in what Alaska Natives mean when they speak of subsistence, then, a non-Native would need to become a participating member of a Native community. Long-term non-Native residents, for example, spouses of members, are often admitted to membership. Transients, such as school teachers, or government agency personnel, most often are not.
>
> This is not to say that non-Natives do not engage in what they perceive to be subsistence: the taking of fish and game for personal sustenance. This is also not to say that there are families who have chosen to live this way for several generations, or that there are not individual non-Natives who have come to

identify themselves with this minimalist way of life, finding in it a Zen sort of richness. But it is to say that Native subsistence and non-Native subsistence are not the same thing, and that both are entitled to be regulated in a manner that accommodates them.

The implication for management is directly related to one's interpretation of the meaning of subsistence The Council's final choice for determining eligibility under Alternative 2, Option 2 will directly affect the outcome of the analysis of the remaining management options. Eligibility criteria will have repercussions on gear restrictions, barter, and sale.

The cultural context will also define the kinds of regulations that will be applicable to subsistence users. The Halibut Subsistence Committee has identified some traditional subsistence practices unique to certain rural communities, and that are inconsistent with state and federal regulations. Where these customs occur, regulations may be written to exempt those communities. Western Alaska Native communities traditionally use three hooks per line. Some Western Alaskan Natives believe that returning hooked fish to the water spiritually damages the stock. Southeast Natives use a variety of gear, including an 1,800 ft skate with up to 100 hooks. Southeast Alaska Natives have a tradition of 'sale' of subsistence-caught fish as one means of distributing subsistence foods among Tribal members, along with sharing and barter. Most Alaska Native communities have a tradition of trade and barter of halibut.

The history of subsistence laws in Alaska is complicated. Village, regional, and multi-regional authorities have been formed by subsistence users to manage local resources (Wolfe 1993b). However, with few exceptions, the jurisdiction of these authorities are not recognized by the state or federal government because aboriginal rights to hunt and fish were extinguished by the Alaska Native Claims Settlement Act (ANCSA) in 1971. State and federal laws were passed in 1978 and 1980, respectively, that required these governments to pass subsistence fishing and hunting regulations to provide for subsistence users, and gave priority to subsistence uses over commercial or recreational uses.

The federal law contained higher standards of protection, requiring subsistence regulations to impose 'the least adverse impacts' on customary and traditional subsistence practices (cf., John vs. State of Alaska; Kwethluk vs. State of Alaska). The federal bill initially proposed a Native-only subsistence preference, but modified it to "rural residents" to appease state interests, but with the stated understanding that rural residents were mostly Alaska Natives (Kancewick and Smith 1991). Alaska's rural population as defined by the Boards of Game and Fisheries is split almost evenly between Alaska Native and non-Natives. The rural compromise in state and federal laws recognized that most subsistence practices by Alaska Natives would be covered under a 'rural' designation, while including fishing and hunting by non-Natives in rural places as well (R. Wolfe, pers. commun.)

The state subsistence statute had to provide a 'reasonable opportunity' for subsistence uses to occur. Some changes have been made in the development of subsistence laws; a variety of court cases have thrown the legality of subsistence statutes into question and substantially disrupted fish and game management in Alaska (Kancewick and Smith 1991). After 1989, when portions of state law were found to be unconstitutional, the federal government stepped in to take control of subsistence management on federal lands because state management fell short of federal requirements of protecting subsistence. These legal problems remain unresolved.

While legal challenges have led to confusion of rights and responsibilities for subsistence management (Kancewick and Smith 1991), in the case of subsistence regulations for Pacific halibut there is no debate that: (1) federal law does allow for rural preference (and Native preference); (2) the state constitution does not allow for a rural preference; (3) Title VIII of ANILCA is generally not applicable to marine navigable waters of the U.S. (John vs. State of Alaska); and (4) State authority to regulate fishing for Pacific halibut in Convention

waters is preempted by the Convention Between the United States and Canada for the Preservation of the Pacific Halibut Fishery of the Northern Pacific Ocean and the Bering Seas and the Northern Pacific Halibut Act, 16 U.S.C §§ 773-773k. Therefore, the Council may legally choose from among the management options presented below. The Council may coose to limit any rural or Alaska Native preference to only those individuals residing in areas with customary and traditional uses of halibut.

1.2 Alternatives Considered

1.2.1 Alternative 1: No Action

Current sportfish regulations developed by the International Pacific Halibut Commission and implemented by the National Marine Fisheries Service do not provide for customary and traditional subsistence practices by residents of rural Alaskan communities. The status quo alternative would continue the current application of halibut sportfishing regulations to subsistence harvests in Alaska. Continued conflict could occur between federal and state enforcement agencies and rural Alaskans engaged in customary and traditional halibut subsistence practices, although these conflicts were identified only recently with increased enforcement of IFQs and CDQs in rural communities.

1.2.2 Alternative 2: Allow the harvest of halibut for subsistence.

Alternative 2 would result in federal regulations to specifically allow the legal subsistence harvest of halibut. The seven options described below allow the Council to determine the effects of different options for defining subsistence, eligibility, legal gear, size limits, customary and traditional trade, sale, and reporting requirements.

1.2.2.1 Option 1. Define subsistence.

Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.' * amended by R.S. added as a friendly am.

The Council included the above definition in the analysis, which was recommended to them by its Halibut Subsistence Committee. However, the final definition of subsistence will be developed by the Council's final action. The recommended language may remain, but the Council may also choose to further refine the definition since it may as easily be used to define personal use.

1.2.2.2 Option 2. Define eligibility for halibut subsistence:

Suboption A. * Non-native permanent residents and Members of Alaska Native Federally-recognized Tribes, with customary and traditional use of halibut. (Halibut Subsistence Committee definition) + community ? (communities identified in State criteria as eligible)

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Native Groups with Subsistence Halibut Uses,' and will also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

Suboption C. Tribal members and non-Native permanent residents of Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

Suboptions A - C are based on: (A) a recommendation from the Council's Halibut Subsistence Committee; and (B) and (C) other federal laws. The eligibility criteria is the most critical of the Council's decisions related to

developing halibut subsistence regulations; it is also, however, the most controversial. The number of eligible individuals or communities, combined with the definition of legal gear, will ultimately determine the amount of halibut that can be taken. It is, however, the Council's intent to legitimize established uses and not expand the subsistence fishery beyond established patterns of use.

Suboption A was recommended to the Council by the Halibut Subsistence Committee to recognize that Alaska Native Tribal members are most affected under the status quo. Enforcement case contacts with Alaska Native Tribal members in Western and Southeast Alaska raised the awareness of both Natives and federal fishery management agencies regarding the conflict between customary Alaska Native subsistence practices and federal commercial and sport fishing regulations. Continued enforcement of current commercial and sport fishing regulations conflicts with the practice of aboriginal customs of providing food for Alaska Native communities. Suboptions B and C recognize that halibut is taken primarily for food and not for recreational uses in rural Alaska.

The EA/RIR addresses the effects of proposed federal regulations for halibut subsistence on Alaskan rural residents. The Council approved three eligibility options for Alaska rural residents for this analysis. In its recommendations to the Council, the Halibut Subsistence Committee proposed the list of Alaska rural places and Alaska Native groups in areas with subsistence halibut uses that was developed by the Alaska Board of Fisheries (Suboption A). The committee further recommended that the Council develop an administrative process for those groups not already approved to petition the Council for eligibility. Suboption B includes similar recommendations. Suboption C would require a separate application/adjudication process for determining individual eligibility.

> Subsistence uses may be defined for persons living in particular areas, since such uses only occur in a local area. This would require that subsistence users in one part of the state stay in those areas which customarily are their fishing areas. Because for many Alaskans, particularly Native Tribal members, 'subsistence uses' have meaning only within the context of an identifiable, territorially defined group, subsistence regulations may be developed by reference to that group's customs and membership to be eligible for subsistence halibut. Where a group's culture is inextricably tied to subsistence use, any member of the group can be assumed to participate, as a harvester, processor, or recipient of sharing or barter. That is, membership is defined by those who participate.
>
> While it is obvious Native villages and groups are most likely to benefit from this approach, the benefit are not tied to Native people. There may very well be non-Native groups, especially in isolated communities, who too can establish themselves as an identifiable group engaged in customary and traditional uses within a specific area, as currently defined by the Board of Fish. It is appropriate, then, to tailor subsistence regulations to meet the customs and traditions of identifiable groups practicing a subsistence way of life. (adapted from Smith and Kancewick 1995).

SUGGESTED REVISION:

Suboption C. Tribal members and *non-Tribal* permanent residents of Alaska Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

'Non-Tribal' residents would include non-Native as well as Native non-Tribal members. This revision is suggested by staff to account for Alaska Native residents residing in rural communities identified as having customary and traditional use of halibut but who are not members of the Tribe associated with that community. Without this revision some Alaska Native members with legitimate halibut subsistence needs may be excluded

from subsistence, while non-Native residents with legitimate halibut subsistence needs residing in the same community may be included. This appears to be an oversight not intended by the Council.

1.2.2.3 Option 3. Define legal gear.

Suboption A. rod-and-reel gear

Suboption B. hook-and-line gear (including set and hand-held gear) with a range of:
1. 10 hooks
2. 30 hooks
3. 60 hooks.

Suboption C. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:

1. 1 - 3 skates of gear, up to 60 hooks each
2. any gear type

Suboption A is the currently allowed gear for all non-commercial fishing. Suboption B would allow an individual to use one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy. The Council has proposed to limit the skate to 10, 30, or 60 hooks per skate. Suboption C would allow 'designated' Tribal fishermen to fish halibut for the community using: (1) up to 3 skates, with up to 60 hooks per skate or (2) any gear type.

Question: Current regulations also allow the use of a spear to harvest halibut for personal use. The Council may wish to clarify its intent to allow the continued use of that gear under this action.

1.2.2.4 Option 4. Define minimum size.

Suboption A. No minimum size shall be imposed for subsistence harvests of halibut.

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

Option 4 includes two separate decision points. Suboption A would set no minimum size for subsistence, as occurs for all non-commercial halibut fisheries. Suboption B would eliminate the 32 inch commercial minimum size limit for the halibut CDQ fishery in Area 4E only.

1.2.2.5 Option 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.

Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount:
1. $200
2. $400
3. $600

This option would allow for the customary and traditional trade of subsistence halibut. There are two suboptions. Suboption A allows for the customary and traditional trade of subsistence caught halibut.

Suboption B allows for the trade ("barter") of subsistence caught halibut, limited to an annual amount set by the Council, such as $200, $400, or $600.

SUGGESTED REVISION:

Option 5: Allow the customary and traditional trade of subsistence halibut.

Suboption A. Prohibit the customary and traditional trade of subsistence halibut.

Suboption B. Allow the customary and traditional trade of subsistence halibut.

1. $200
2. $400
3. $600

Option 5 would either prohibit or allow the exchange (trade, barter) of halibut for other goods with: a) other Tribes; b) any Alaska rural resident; c) any Alaska resident; or d) anyone. What is meant by trade, sale, or barter is not always clear. This revision has been suggested by staff since the definition of "barter" does not include an exchange for cash, but "trade" does.

1.2.2.6 Option 6. Sale of subsistence halibut.

Suboption A. Prohibit the commercial sale of subsistence-caught halibut.

Suboption B. Allow the commercial sale of subsistence-caught halibut.

Option 6 would either prohibit or allow the commercial sale of subsistence halibut. No limits are currently proposed for analysis under Suboption B to allow sale.

1.2.2.7 Option 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

Under Option 7, tribal, state, and federal governments would develop cooperative agreements to collect necessary harvest records. In addition to data collection, these agreements could be used to identify eligible users and legal gear in rural communities.

SUGGESTED REVISION:

Option 7. Develop cooperative agreements with Tribal, State, and Federal governments.

The development of local area plans to address subsistence concerns in larger coastal communities (Sitka, Ketchikan, Wrangell, etc.) could be included in cooperative agreements under Option 7.

2.0 BIOLOGY AND MANAGEMENT OF PACIFIC HALIBUT

Halibut belong to a family of flounders called Pleuronectidae. The scientific name is *Hippoglossus stenolepis*, a name derived from the Greek *hippos* (horse), *glossa* (tongue), *steno* (narrow), and *lepis* (scale). Halibut are found on the continental shelf of the North Pacific Ocean and have been recorded from Santa Barbara, California to Nome, Alaska. Halibut also occur along the Asiatic coast from the Gulf of Anadyr, Russia to Hokkaido, Japan. Halibut are demersal, living on or near the bottom, and prefer water temperatures ranging from 3 degrees to 8 degrees C. Although halibut have been taken as deep as 300 fathoms (1,100 m), most are caught when they are at depths from 15 fathoms (27 m) to 150 fathoms (275 m).

The resource and fishery is managed by the International Pacific Halibut Commission (IPHC or Commission), which was established in 1923 by a Convention between Canada and the United States. The Convention has been revised several times to extend the Commission's authority and to meet new conditions in the fishery. The most recent amendment, termed a Protocol, was signed in 1979 (McCaughran and Hoag 1992). Among other issues, the Protocol altered the Commission's mandate such that management was to be based on optimum yield, rather than the previously prescribed maximum sustainable yield.

In the United States, the Protocol was put into effect by enabling legislation called the Northern Pacific Halibut Act of 1982. Among the many measures addressed, one of the most significant was the provision that provided authority to the regional fishery management councils to develop regulations for the halibut fishery which are not in conflict with IPHC regulations (McCaughran and Hoag 1992). The councils did not become involved in halibut management until a decision was made by NOAA in 1987 that the Commission should no longer consider regulations that relate to domestic allocation. That task would be undertaken by the appropriate regional fishery council. Currently, the North Pacific Fishery Management Council (NPFMC), through the National Marine Fisheries Service, has authority to implement regulations pertaining to allocations of halibut in the waters off Alaska.

In 1932, the Convention waters were divided into four large regulatory areas, which have subsequently been subdivided and regrouped. The regulatory areas have remained unchanged since 1992. The separation of Convention waters at Cape Spencer, Alaska was, in part, arrived at from biological data obtained from early tagging experiments which suggested, according to Kask (1937) that "...the halibut on banks south of Cape Spencer and the halibut on banks north and west of Cape Spencer form separate and distinct stocks." Presently, the Commission considers the halibut resource in the Convention waters to form one homogenous population.

2.1 Biology

2.1.1 Distribution

North American halibut are typically found along the continental shelf of the sub-Arctic North Atlantic and North Pacific Oceans. Halibut are demersal, living on or near the bottom at temperatures within a few degrees of 5° C, associated with banks and channels that characterize the continental shelves. Summer depth distribution of Pacific halibut is normally less than 200 m, but may extend from 50-400 m (IPHC 1987). Larger individuals move to deeper water in winter.

The Pacific halibut distribution in the eastern Pacific extends from Santa Barbara, California to Nome, Alaska (IPHC 1987). Adult fish are found in the summer primarily on deep banks at depths greater than 90 m, on the edges of gullies that cut the continental shelf, and on the upper continental slope and outer continental shelf. Pacific halibut are most abundant in the central Gulf of Alaska (Deriso et al. 1985), particularly near Kodiak Island. High concentrations are also found south of the Alaska Peninsula and south of the Kenai Peninsula. Moderate abundance is found along both sides of the Aleutian Islands, in the eastern Bering Sea, and through

southeast Alaska and northern British Columbia. Limited quantities of adult halibut occur from southern British Columbia to California. In winter, adult halibut move to deeper water on the upper continental slope in the 300-600 m depth range. Pacific halibut are normally found in temperatures from 3-9° C (Thompson and Van Cleve 1936).

2.1.2 Reproduction

Sexual determination of live halibut and other flatfish has not previously been possible except through extrusion of spawning products from mature individuals. A procedure for determining the sex of live Pacific halibut from examination of the cloaca, or genital vent, has recently been developed (St-Pierre 1992). The projecting cloaca has a different shape for males and females. During the first test of the procedure, sex was successfully determined for 101 of 102 Pacific halibut. Subsequently, other IPHC personnel correctly determined the sex of 97% of 869 Pacific halibut. The procedure is most suitable for individuals longer than 50 cm, as the cloaca is too small for successful sex determination in smaller fish. The method may have application for other flatfish species, as IPHC staff have also been successful in differentiating the sex of arrowtooth flounder (Atheresthes stomias).

Spawning for Pacific halibut occurs mainly in late fall and winter (St-Pierre 1984), from November through March. Males and females broadcast eggs and sperm, and fertilization occurs externally by random contact. Spawning grounds for Pacific halibut were identified during the years when fishing occurred during the spawning season (St-Pierre 1984).

In general, small, first-spawning halibut may release only 100,000 eggs, while a large female may release over 4 million eggs. Schmitt and Skud (1978) fitted a power curve to Pacific halibut fecundity relationships, and found significant differences for halibut from the Gulf of Alaska and those taken from waters off British Columbia. Schmitt and Skud (1978) showed that fecundity is more closely related to fish size than to age. They also found major differences in fecundity-at-age which more than doubled in the Gulf of Alaska from 1927 to 1973 because growth rates increased during this period.

Males and females mature over a range of ages that varies somewhat by area (Novikov 1964; Schmitt and Skud 1978; St-Pierre 1984). Novikov (1964) indicated that Bering sea halibut mature at ages 7-13 for males and 9-15 for females, Gulf of Alaska halibut mature at 5-11 years for males and 8-16 for females, and Norwegian halibut mature at 7-17 years for males and 8-18 years for females. St-Pierre (1984) found similar ages for Pacific halibut.

Thompson (1915, 1916) concluded that mature Pacific halibut ovaries contain several generations of ova that mature from one year to the next, and observed small batches of maturing eggs from the current generation. The group-synchronous pattern is the most common type of ovarian physiology among teleosts. The large number of annually-maturing eggs requires batch spawning over a period of time, as a female would be unable to hold all fully developed eggs at one time. The actual duration of spawning by an individual fish is unknown.

Thompson (1915) concluded that spawning is an annual event. Novikov (1964), however, presented information suggesting that halibut do not spawn every year. He observed halibut at the end of the spawning season (February and March) with developing ova presumably too immature to spawn that year. St-Pierre (1984) noted that Novikov's (1964) observation may have been of immature halibut that had not yet begun to spawn, because a number of female halibut will not spawn for the first time until age 16. St-Pierre (1984) reported that IPHC research data during the spawning season indicated that over 94% of age 16 female halibut were in various stages of spawning; roughly 50% should not be in spawning condition if the fish spawn only every other year. Therefore, we conclude that halibut are annual spawners.

2.1.3 Early Life History

The pelagic phase of existence is thought to last 6-7 months. Spawning occurs near the edge of the continental shelf, generally at depths between 180-550 m for Pacific halibut (St-Pierre 1984) (Figures 2.1 and 2.2). The eggs of both halibuts are exceptionally large by marine teleost standards, with a mean diameter of fertilized eggs before first cleavage of about 3 mm. Thompson and Van Cleve (1936) determined a size range of 2.90 mm to 3.80 mm, averaging 3.27 mm, for 2824 Pacific halibut ova collected from plankton samples, and a range of 2.05 mm to 3.85 mm, averaging 3.17 mm, for eggs taken from a live spawning female. They attributed the smaller size of eggs from the live fish to the presence of immature eggs. Mean diameters of fertilized Pacific halibut eggs were reported as 3.2 and 3.34 mm by Forrester and Alderdice (1973) and 3.4 $\pm$ 0.9 mm by McFarlane et al. (1991).

Thompson and Van Cleve (1936) and Van Cleve and Seymour (1953) caught newly spawned eggs with plankton nets, and were able to determine the vertical distribution of the eggs. Van Cleve and Seymour (1953) found concentrations of Pacific halibut eggs more closely aligned to density than to depth. Most laboratory studies confirm that neutral density of eggs occurs at bathypelagic depths (Forrester and Alderdice 1973; McFarlane et al. 1991). Forrester and Alderdice (1973) also found the salinity of neutral buoyancy (at constant temperature) to increase with time from hatching. However, McFarlane et al. (1991) measured salinity of neutral buoyancy for Pacific halibut in the laboratory and estimated location of developing eggs in the water column. They predicted spawning depths of 200-600 m, and a rise of fertilized eggs to 100-200 m depth within 12 to 18 d.

Forrester and Alderdice (1973) found that Pacific halibut took 21 d to hatch at 5°C., and 12.5 d to hatch at 8° C. Similarly, McFarlane et al. (1991) found hatching in 18 d at 5° C, and 13 d at 7° C. Forrester and Alderdice (1973) did not find hatching at temperatures lower than 5° C. The yolk sac contains a large reserve.

Data on larvae are typically scarce, probably because they are difficult to catch in sufficient numbers. Thompson and Van Cleve (1936) first noted a hatching length of 8-15 mm for Pacific halibut. Forrester and Alderdice (1973) measured length at hatching of about 6 mm, ranging from 5.33-7.79 mm. McFarlane et al. (1991) obtained an intermediate value of 7.5 mm ± 0.21 mm.

The long pelagic phase of eggs and larvae for both halibuts provides a mechanism for long distance redistribution from the spawning grounds. The drift of Pacific halibut eggs and larvae have been extensively examined by the International Pacific Halibut Commission. Skud (1977) re-examined ichthyoplankton data of Van Cleve and Seymour (1953) and concluded that a definite northerly movement of eggs occurred from prevailing surface and subsurface ocean currents, which carry them from spawning grounds near Cape St. James (Queen Charlotte Islands) as far north as Alaskan waters. His analyses caused a reconsideration of the view held previously that halibut stocks off British Columbia and Alaska waters were separate and independent. The established pattern in the eastern North Pacific during winter (Figure 2.3) shows the probable path of egg and larval drift, and St-Pierre (1989) has provided supporting evidence.

Pacific halibut are still in the water column after fin formation, after the eye has moved past the dorsal profile, and after pigmentation is nearly complete (Thompson and Van Cleve 1936). Halibut larvae are found in the water column at depths of 180 m or less by the age of three to five months. They are then carried inshore by the currents, where they settle to the bottom in shallow waters in late spring and early summer (St-Pierre 1989). The distribution of the juvenile halibut seems quite dispersed as they occur over the entire continental shelf from Cape Spencer to Unimak Pass, and in the Bering Sea (Best 1968). However, some discrete concentrations have been identified, such as occurs on Portlock Bank (Skud 1977).

Figure 2.1 **Schematic Life Cycle for Pacific Halibut**

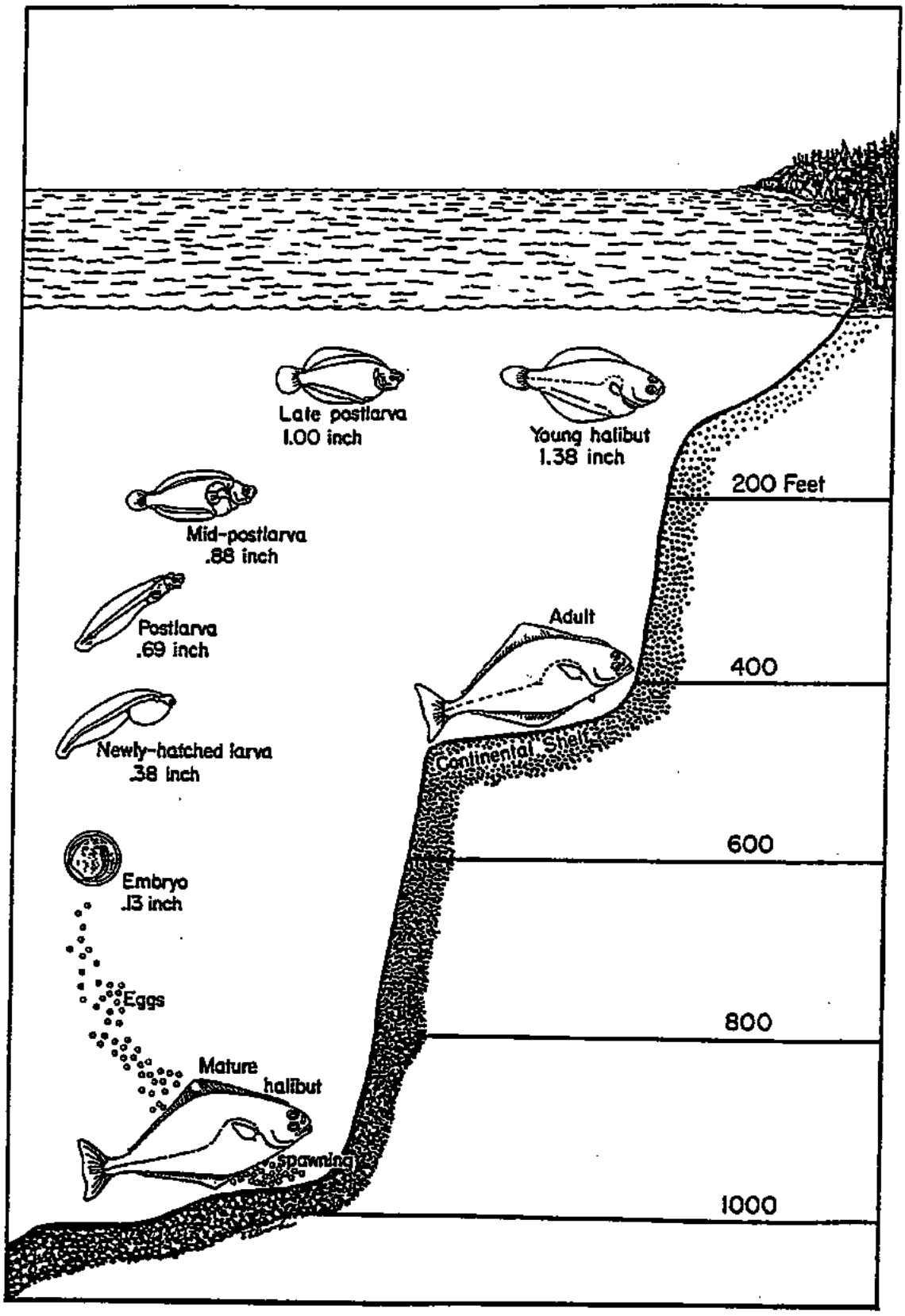


Figure 2.2 Major Pacific halibut spawning grounds

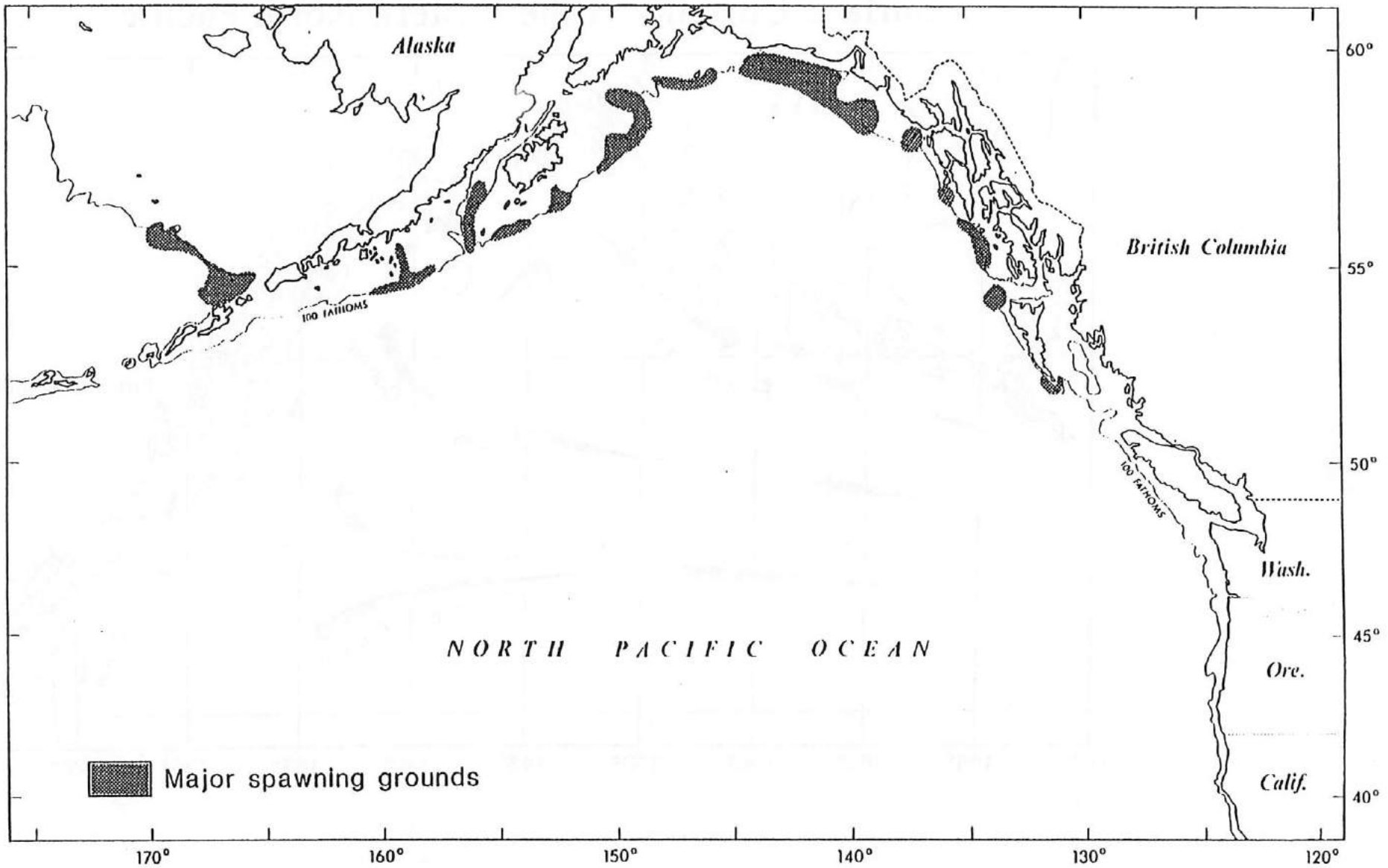
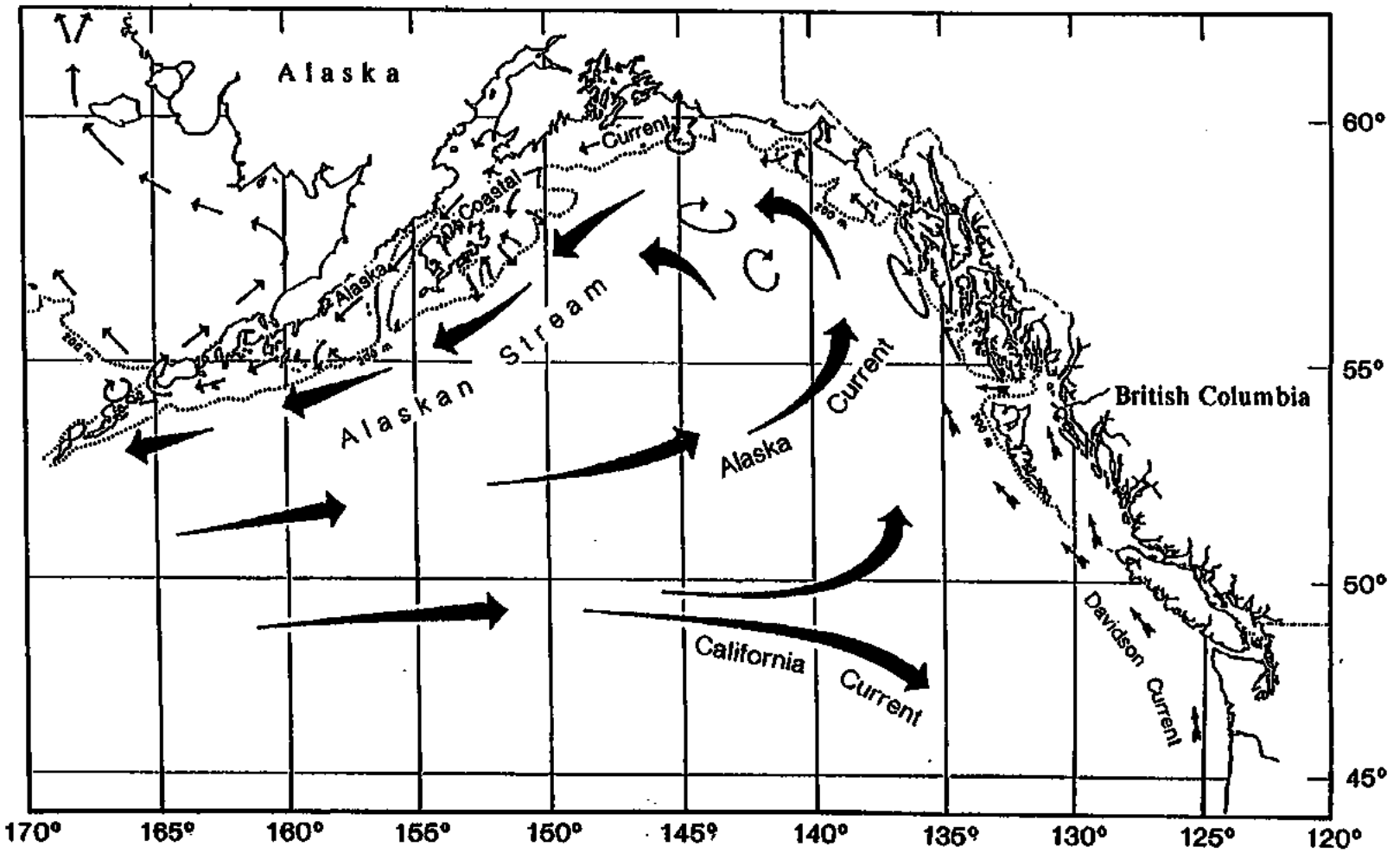


Figure 2.3 **Surface Currents in the Eastern North Pacific**



2.1.4 Movements of Juvenile Halibut

Continuity of the Pacific halibut resource requires that the progeny move back to the east and south at some stage in the life history to counter the extensive drift of eggs and larvae. Best (1968) and Skud (1977) present evidence that the counter migration for Pacific halibut occurs during the juvenile stage, and that most juveniles migrate between ages 2- and 6-years. Recovery data from juvenile Pacific halibut tagged from trawlers as 2-, 3-, and 4-years old show considerable migration to the east and south (Figure 2.4). Tagged juvenile halibut have rarely been documented moving to the west or from the Gulf of Alaska into the Bering Sea. Extreme migration from the Bering Sea to waters off northern California has been documented (IPHC, Seattle, Wa, unpublished data), but migration from the Bering Sea, Unimak Pass, and Kodiak Island areas to southeast Alaska and British Columbia is consistent. Migration rates cannot be reliably calculated from available data because recovered tags are not consistently returned from different regions of the coast (Trumble et al. 1990).

Age composition of migrating juvenile Pacific halibut presented by Skud (1977) and updated by the IPHC supplies additional information supporting countermigration, primarily by juvenile halibut. One- and 2-year old Pacific halibut are commonly found by trawl surveys in inshore areas of central and western Alaska, but are virtually missing from southeast Alaska and British Columbia. Juvenile halibut tend to move further offshore at age 2- or 3-years old. Mean and modal ages in the offshore surveys increase to the east and south, with the youngest trawl-caught halibut off southeast Alaska and British Columbia tending to be age 4 and older.

2.1.5 Movements of Adult Halibut

By the time that Pacific halibut recruit to the commercial fishery (at a minimum size of 81.83 cm), most of the extensive countermigration to balance egg and larval drift has apparently taken place. Commercial sized halibut, however, continue seasonal movements but with very little directed migration from year to year.

Early analyses of tagging data by IPHC suggested that mature halibut did undertake large directed migrations. Thompson and Herrington (1930) concluded that separate populations existed north and south of Cape Spencer, Alaska. As a result, IPHC created separate management areas. Skud (1977) demonstrated that analysis of early tagging experiments did not recognize the seasonality of Pacific halibut migration. Most tagging in the Gulf of Alaska originally occurred during winter, but recoveries were made during the February to November fishing season; conversely, most tagging and recoveries off southeast Alaska and British Columbia occurred during summer. Skud (1977) examined data from several seasons to show that mature Pacific halibut migration is limited predominately to movements from summer feeding grounds during the autumn to winter spawning grounds, and return during spring. Once a summer feeding location is established, mature halibut show little net summer to summer movement.

Skud (1975) noted that emigration was observed from all areas of tagging, and that several legal sized Pacific halibut have migrated over 1600-2000 km from the Bering Sea to Washington state or south. Most of the fish tagged and recovered in summer, however, were recovered in the area of release. Conversely, summer recoveries from winter releases or winter recoveries from summer releases tend to be widespread from the release site. The distant movements of Pacific halibut examined by Thompson and Herrington (1930) proved to be mostly winter-summer movements. Skud gave examples of the amount and distance of seasonal migrations. Summer tagging in 1954 in the eastern Gulf of Alaska had 83% of the tags recovered in the area of tagging, with no recoveries more that 500 km to the west. Winter tagging in 1955 in the same vicinity had only 63% of tags recovered in the area of tagging, with more than 10% of recoveries beyond 500 km west. Similar results were obtained from northern British Columbia where a 1947 summer release had 96% of recoveries in the area of release, and only 2% beyond 200 km while a 1940 winter release had 33% recovered in the area of release and 8% beyond 200 km. Figure 2.5 shows the dispersion from winter tagging and the central tendency for summer releases. Most

Figure 2.4 **Schematic Movements of Juvenile Pacific Halibut (<65 cm in length)**

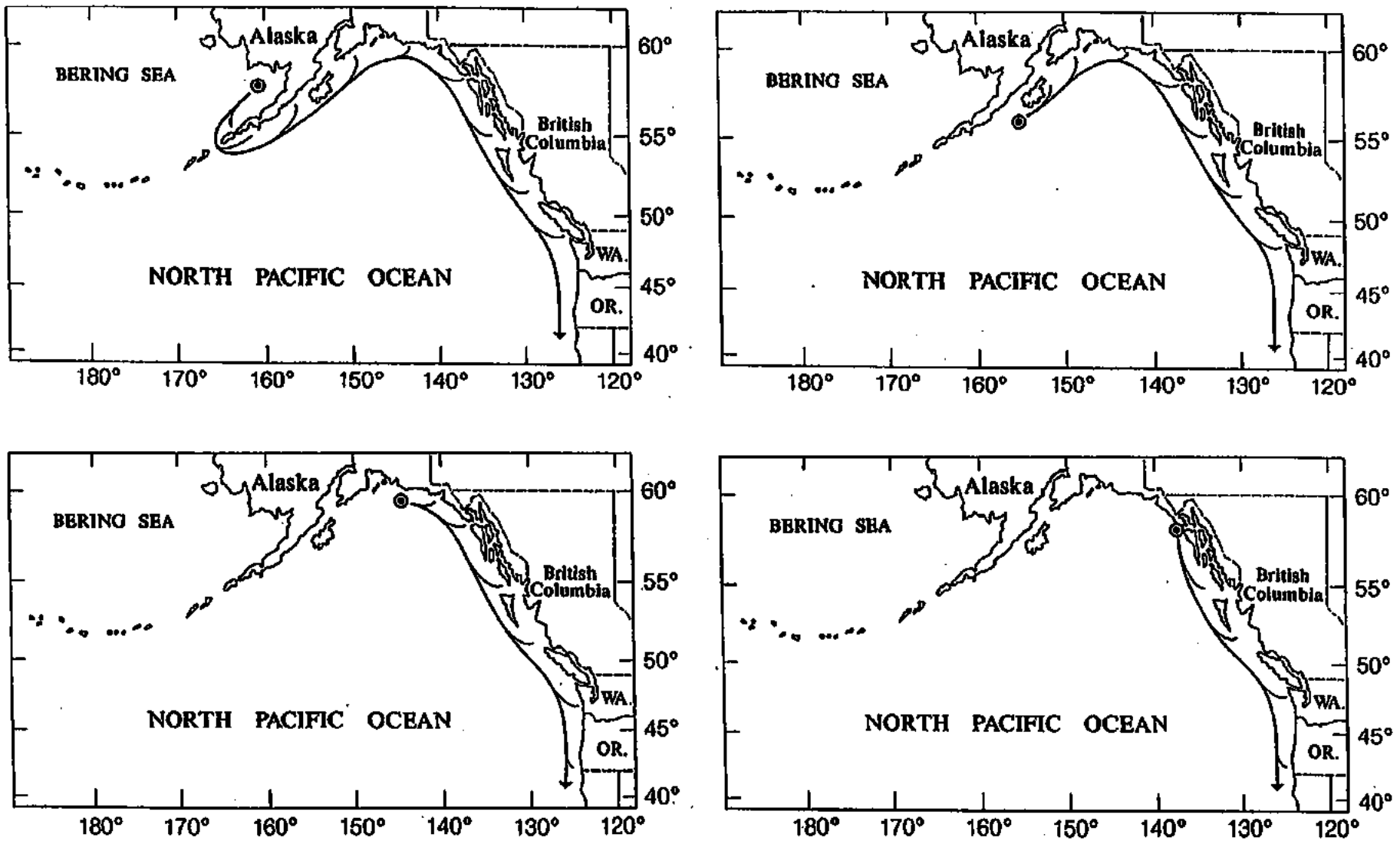
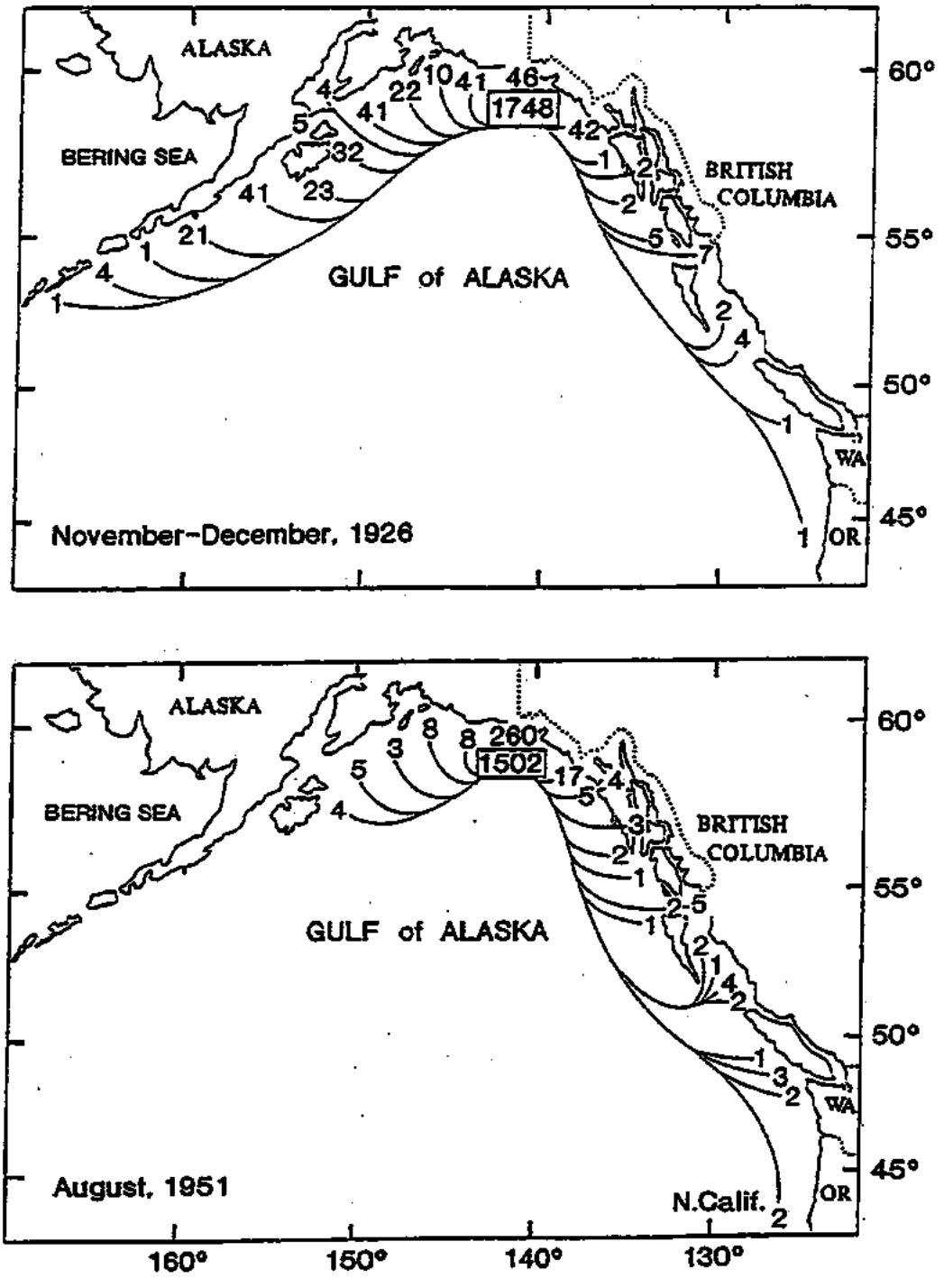


Figure 2.5 **Distribution of Recoveries from Pacific Halibut Tagged in Winter and Summer**



winter 1926 tags were recovered out of the tagging area, and only 21% of them moved to south and east locations. Most of the 1951 summer tags were recovered in the area of tagging, but 67% of those that were not, moved south and east.

Commercial fishing for Pacific halibut currently occurs only in late spring to autumn, so summer to summer movement patterns are of most interest for management purposes. A large scale, multipurpose summer longline survey released tagged fish on a grid since 1976 with the expectation that migration rates would be determined from tag recoveries. Deriso and Quinn (1983) and Quinn et al. (1985) estimated migration rates for exploited fish from the grid and earlier surveys. They found that few commercial sized Pacific halibut migrated from the management area of release, although emigration rates from the Bering Sea were higher than from the Gulf of Alaska. The actual migration rates are uncertain, however, because tags are not returned at a consistent rate by time and area (Trumble et al. 1990).

The homing by halibut to summer feeding grounds and to winter spawning grounds (Skud 1977) suggests that the adult fish establish stock (fishing) units that would be independent of fishing on other stock units. However, data and analyses are not yet available to determine if such separations extend to population (genetic) units, which is subject of considerable speculation.

Homing and attendant reproductive isolation would promote the development of separate populations. The unidirectional countermigration of juvenile halibut suggests a genetic programming. For example, progeny of Pacific halibut spawned off northern British Columbia or southeastern Alaska would tend to drift with ocean currents in such a way that countermigration from nursery grounds would bring juveniles back to the vicinity of the spawning grounds. The greater the separation between spawning areas, the lower the probability of mixing of progeny.

The tendency to isolate would weaken as the range of drift and countermigration increases. Alternating strong and weak current regimes would distribute metamorphosing larvae of different spawning areas to overlap on nursery grounds. Countermigration proportional to biotic and physical stimuli, such as directly with density of other juveniles or inversely with current velocity, would also increase mixing. Mixing does not need to be strong enough to cause uniformity, only enough to keep genetic input high enough to prevent isolation. Movement of juvenile Pacific halibut from the Bering Sea to the coast of Washington-Oregon-California shows potential for substantial mixing. Mixing during larval drift and juvenile dispersion may also account for genetic homogeneity observed for Atlantic halibut.

2.1.6 Age and Growth

Halibut are the largest of all flatfish and are among the larger species of fish in the sea. Both halibuts generally exhibit sexual dimorphism, and females grow substantially larger than males. The largest specimens in the Atlantic and Pacific are over 3 m long and have been reported to weigh 300 kg; these weights have not been thoroughly documented. Age, length, and weight of Pacific halibut are obtained from otoliths, collected from sampling the commercial fishery and from research cruises. Age is derived directly from counting annuli, and fish weight can be estimated by proportion to otolith weight or to fish length (Quinn et al. 1985).

Surface aging for Pacific halibut found maximum ages of 42 years for females, and 27 years for males (IPHC 1987), although more recent break and burn techniques increased the maximum age of a male to 55 years. Most halibut in the Pacific setline fishery are 10-14 years old.

Southward (1962, 1967) used back-calculated lengths from otoliths to demonstrate a change in growth rates of Pacific halibut during the 1950s and 1960s. Schmitt and Skud (1978) noted similar changes while examining fecundity at age.

McCaughran (1981) developed statistics for modeling Pacific halibut growth, using a subset of tagging data that included sex of recaptured fish. The natural logarithm of lengths converted the data to a normal distribution. The three-parameter von Bertalanffy equation and a two-parameter power function fit the data equally well when tested with tag return length data for males from the northern British Columbia coast. Growth parameters were subsequently estimated for females using the power function, which was preferred for its simplicity. McCaughran (1987) extended his previous analysis to males and females throughout the range for year classes 1935-1965. To avoid gear selectivity bias, longline-caught fish less than 10-years old when tagged were excluded from the analysis. Growth of either sex varied little since 1935.

The apparent discrepancy between the conclusion by Southward (1962, 1967) and Schmitt and Skud (1978) of changed growth rates over time and that by McCaughran (1981, 1987) of no change is attributed to length measurements used. The former studies used estimated or measured lengths of individuals of a wide size range, while McCaughran used length increments determined from tagging of large individuals. The results of these authors are consistent, and indicate that change in growth rates occurs at younger ages, perhaps from density dependent or environmental influences. By the time Pacific halibut reach larger sizes, growth increments are fixed.

2.1.7 Trophic Interrelationships

No trophic information is available on larval life history stages. However, feeding by juvenile (post-metamorphosis) and adult stages of both halibuts has been investigated. In such fish, an often quite striking transition of prey selection occurs from invertebrates to fish as halibut increase in size (Best and St-Pierre 1986). Juveniles are strongly oriented to teleost prey. Unidentified shrimp and crab, Tanner crab (*Chionoecetes* spp.), and hermit crab (*Paguridae*) made up most of the invertebrate prey of Pacific halibut, while sand lance (*Ammodytes hexapterus*), walleye pollock (*Theragra chalcogramma*), and Pacific sandfish *(Trichodon trichodon*) constituted the most numerous teleost prey (Best and St-Pierre 1986).

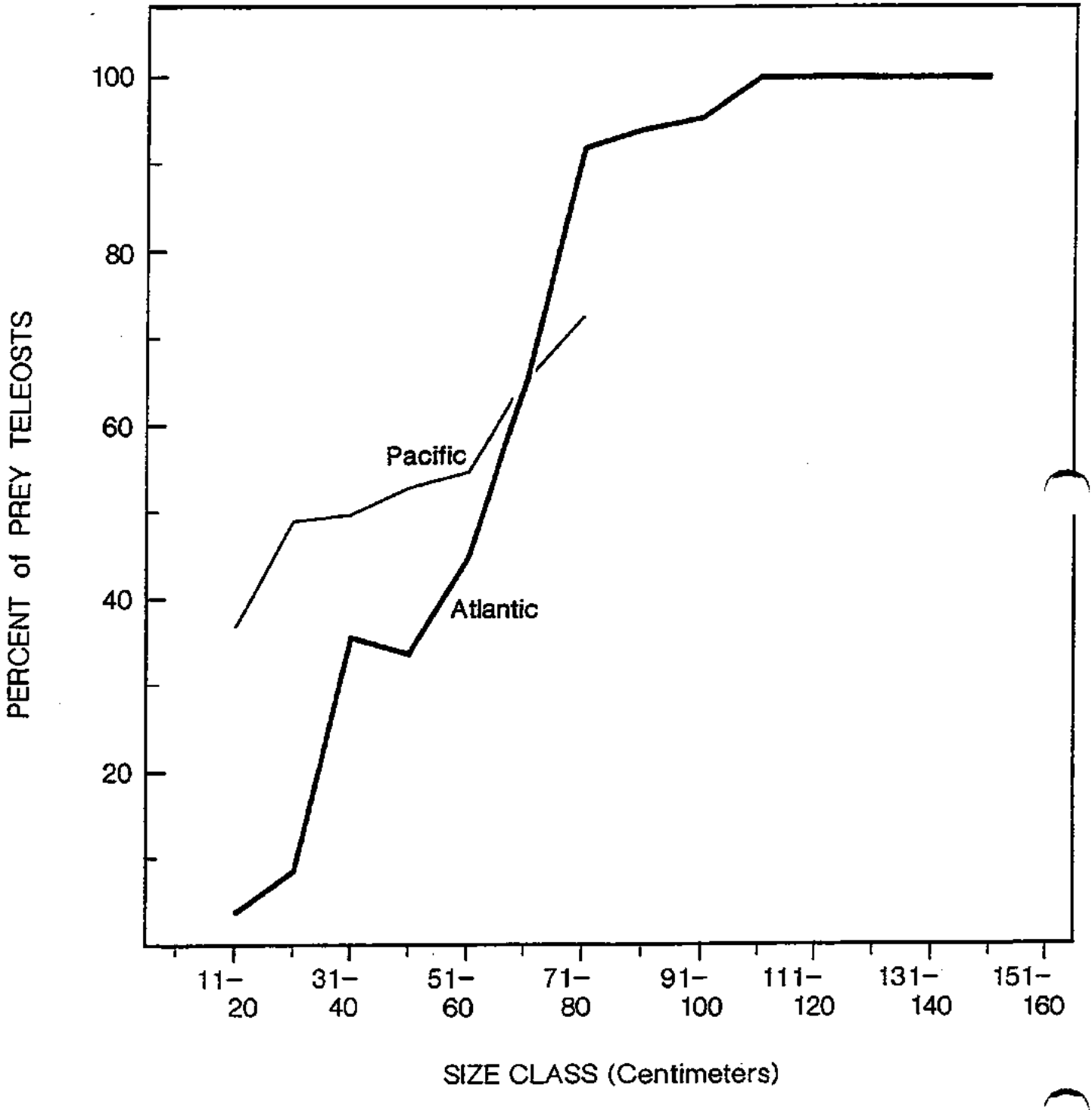
As halibut grow beyond about 70 cm SL, the diet consists largely of other fish (Figure 2. 6). Best and St-Pierre (1986) concluded that halibut are opportunistic feeders, utilizing whatever is readily available: they examined over 2,700 stomachs from juvenile halibut collected in the Gulf of Alaska and over 1,300 stomachs from adult halibut from off British Columbia and Alaska, and found that Pacific sand lance, walleye pollock, octopus and Tanner crab made up a significant proportion of the halibut diet. A total of thirty and forty different prey species were identified from the adult and juvenile collections, respectively. Brodeur and Livingston (1988) examined the gut contents of 301 Pacific halibut collected from two areas in the eastern Bering Sea. They concluded that fish supply about 80% of the food consumed on a weight basis, with walleye pollock, yellowfin sole, and Pacific herring composed 48, 9 and 6% of the total prey volume, respectively. Using Odum's measure of prey diversity D, (Number of species consumed/log 10 (total prey weight)), they concluded that halibut had a relatively diverse prey spectrum.

Marine mammals, notably the Stellar sea lion (*Eumetopias jubata*), are notorious for preying upon Pacific halibut hooked on setline fishing gear, often forcing fishermen to change their grounds (Best and St-Pierre 1986). Those authors also provide a review of the incidence of feeding by other marine mammals on Pacific halibut, and concluded that the rates of mortality were low. They concluded that this was due to the size and active nature of Pacific halibut, along with their bottom dwelling habits which renders them less accessible to predation than schooling pelagic species.

2.2 Catch History

Halibut are the target of a commercial fishery that has been in existence for over 100 years. The sport fishery has grown in importance in more recent years. Catch limits have been in place for the commercial fishery since

Figure 2.6 **Percentage of Fish in the Diet of Atlantic and Pacific Halibut vs Size**



the 1930s. The sport fishery is regulated by daily bag and possession limits on individual fishermen. Catches by both fisheries are managed by IPHC regulatory area.

The 1990s have seen a dramatic change in the management regime employed by the U.S. and Canada in managing their commercial halibut fleets. In 1991, Canada instituted an Individual Vessel Quota (IVQ) system, whereby the annual catch limit for Area 2B was allocated among the licensed vessels in relation to the vessels' past production and vessel size. In 1995, the U.S. followed with a similar system termed Individual Fishing Quota (IFQ), in which each licensed fisherman was given a share of the annual catch limit based on the individual's past production. Both systems have resulted in much longer seasons, currently March 15 through November 15, and have also kept catches within the prescribed limits. The quota systems used by each country will not be reviewed in this document, but further information can be found in documents produced by the respective federal agencies.

Bycatch mortality, i.e., the catch of halibut in other fisheries, is the second largest source of removals from the stock. Bycatch is managed by the U.S. and Canadian governments in their respective zones.

2.2.1 Catch Limits (Quotas)

Catch limits have been used by the Commission to control fishing mortality since 1932. The basis for determining appropriate catch limits has changed considerably over the years. From the 1930s through the 1970s, catch limits were adjusted up or down as the catch per unit of effort (CPUE) in the fishery either increased or decreased. The management system at the time assumed that CPUE reflected abundance and that abundance was primarily influenced by removals (Southward 1968). Further, several studies were conducted during the 1950s and 1960s to estimate maximum sustainable yield (Chapman et al. 1962). The management system changed during the 1980s, when the Commission began estimating biomass from the analysis of catch and age data in the commercial fishery (Quinn II et al. 1985). Catch limits during the early 1980s were based on keeping removals below the surplus production of stock, i.e., the excess of what is required to replenish the population biomass each year due to removals from fishing and other causes. This strategy was designed to rebuild stocks and partly resulted in a sharp increase in biomass during the early 1980s. By 1985, stocks were considered healthy and the management strategy shifted to setting catch limits as a fixed proportion of the estimated biomass, referred to as constant exploitation yield. Table 2.1 shows the catch limits by area for years 1977 through 1996 in metric tons, round weight.

The coastwide catch limit for 1996 remained unchanged from that in 1995. 36,209 mt. Catch limits were highest in 1988, corresponding to historically high levels of abundance. Catch limits since that time have fallen 19% in response to declining biomass. Since 1992, the coastwide catch limit has been relatively stable, averaging 36,250 mt.

Among areas, catch limits have historically been highest in Area 3A and lowest in the areas at the ends of the range: Area 2A and 4. Since 1981, catch limits for Areas 2B and 2C have been quite similar, although Area 2B has usually received higher catch limits than 2C.

Catch limits apply only to the commercial setline (longline) fishery. The sport fishery is managed with daily bag and possession limits which are outside of the catch limits.

Table 2.1. Catch limits during 1977-1996 for the commercial fishery for Pacific halibut in metric tons, round weight.

Year	Area 2			Area 3A & 3B	Area 3C	Area 4					Total
1977	6636			6636	no limit	no limit					13272
1978	5430			6636	no limit	no limit					12066
	Canadian waters	U.S. Waters									
1979	3620	2172		6636	no limit	no limit					12428
1980	3680	1930		6033		603					12246
	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B						
1981	121	3258	2051	7843	1207	603					15083
1982	121	3258	2051	8446	1810	905					16591
						Area 4A	Area 4B	Area 4C	Area 4D	Area 4E	
1983	121	3258	2051	8446	3016	724	483	241	121	closed	18361
1984	181	5430	3439	10859	4223	724	603	241	241	30	25971
1985	302	6033	5430	13876	5430	1026	784	362	362	30	33635
1986	332	6757	6757	16952	6214	1207	1026	362	422	30	40059
1987	332	6938	6938	18702	5731	1056	1056	362	362	45	41522
1988	290	7541	6938	21718	4826	1146	1207	422	422	60	44570
1989	257	6033	5731	18702	5128	1086	1146	362	362	60	38867
1990	196	4706	4826	18702	4344	905	905	302	302	60	35248
1991	170	4464	4464	16047	5309	1026	1026	362	362	60	33290
1992	245	4826	6033	16047	5309	1388	1388	483	483	78	36280
1993	226	6334	6033	12488	3921	1219	1388	483	483	72	36261
1994	224	6033	6636	15685	2413	1086	1267	422	422	60	36259
1995	174	5743	5430	12066	2232	1176	1394	465	465	72	36209
1996	174	5743	5430	12066	2232	1176	1394	465	465	72	36209

Table 2.2 Commercial catch of Pacific halibut in metric tons round weight, 1977-1995.

Year	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total
1977	127	3276	1924	5212	1924	736	13200
1978	60	2781	2606	6214	796	814	13272
1979	30	2932	2733	6841	235	826	13598
1980	12	3409	1955	7221	169	428	13194
1981	121	3409	2419	8579	271	718	15516
1982	127	3342	2111	8162	2896	863	17501
1983	157	3282	3861	8512	4675	2667	23154
1984	259	5460	3529	12048	3921	1906	27124
1985	296	6268	5556	12578	6570	2582	33850
1986	350	6769	6401	19782	5327	3372	42001
1987	356	7390	6443	18895	4681	4151	41916
1988	296	7758	6859	22840	4271	2829	44854
1989	284	6292	5749	20349	4730	2974	40378
1990	193	5170	5870	17405	5243	3276	37156
1991	217	4326	5243	13791	7197	3614	34387
1992	265	4603	5924	16156	5200	3988	36137
1993	302	6413	6811	13719	4742	3771	35757
1994	235	5979	6262	14986	2329	3240	33030
1995	187	5798	4742	10974	1924	2835	26460

2.2.2 Commercial Fishery Catches

2.2.2.1 Retained Catch

Since 1977, the total commercial fishery catch has ranged from 13,200 mt to almost 45,000 mt (Table 2.2), with peak catches occurring among areas during 1987-1989. In the late 1970s, catches were somewhat stable and averaged 13,300 mt through 1980. In 1981, catches began to increase annually and were highest in 1988. Largest catches by area were 6,859 mt in Area 2C (1988); 22,840 mt in Area 3A (1988); 7,197 mt in Area 3B (1991); and 4,151 mt in Area 4 (1987). Since the late 1980s, catches have declined in most areas, the only exception being Area 4, where the 1995 catch (2,835 mt) is roughly the same as was taken in 1988 (2,829 mt).

As indicated in Table 2.3, almost half of the total coastwide catch was taken in Area 3A during 1977-1995. The Gulf of Alaska (GOA) areas (2C, 3A, and 3B) accounted for 73% of the coastwide catch and 90% of the total catch taken from Alaskan waters. The contribution from the GOA has declined in more recent years, with only 67% of the coastwide catch and 86% of the Alaska catch. These declines have occurred because of greater stock declines in the GOA areas relative to other areas.

2.2.2.2 Catch Per Unit Effort

IPHC measures CPUE in units per standard skate, the latter being 100 hooks at 18-foot spacing. Analysis by Hamley and Skud (1978) provides factors to standardize different spacings to the 18-foot measure.

Although CPUE has varied widely over the years, it has shown a general increase from the levels observed in the late 1970s. Advances in fishing technology and fishing gear during the 1980s reduced the utility of CPUE as a primary indicator of stock abundance, causing IPHC to develop catch-age methods of estimating biomass.

Consequently, CPUE is now used primarily as an index of abundance and to examine the relative distributions of biomass among regulatory areas and to help partition catch limits between subareas.

CPUE remains highest in the areas comprising the GOA, where it has usually been greater than 200 kg per skate since 1981, and occasionally exceeding 300 kg per skate. CPUE in Area 2B has increased since the introduction of the IVQ program in 1991, but only a small part of this is likely due to the program (Sullivan and Rebert 1996). One result of the program has been a longer fishing season, which has enabled fishermen to take their time in locating productive grounds and resulted in some grounds having been fished with far less gear than during the short, open-access fishing periods. CPUE estimates for the Alaskan areas in 1995 also show increases, probably for similar reasons (Table 2.4).

Table 2.3 Long-term average and 1995 catches (mt) of Pacific halibut and proportion caught by area

	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total
1977-1995 Average	204	4,982	4,579	12,856	3,532	2,399	28,552
Percent by Area							
(a) Coastwide	0.7%	17.4%	16.0%	45.0%	12.4%	8.4%	100.0%
(b) Alaska areas-only	--	--	19.6%	55.0%	15.1%	10.3%	100.0%
1995 Catch	187	5,798	4,742	10,974	1,924	2,835	26,460
Percent by Area							
(a) Coastwide	0.7%	21.9%	17.9%	41.5%	7.3%	10.7%	100.0%
(b) Alaska areas-only	--	--	23.2%	53.6%	9.4%	13.8%	100.0%

Table 2.4 Catch per unit effort (CPUE) in kg per standard skate (100 hooks at 18-foot spacing) in the commercial fishery for Pacific halibut, 1977-1995.

Year	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total
1977	109.9	81.6	60	81.2	97.3	106.3	80.3
1978	51.6	83.3	74.9	103.7	70.2	100.5	89.3
1979	66.4	63.8	106.5	114	48.7	88.1	93.3
1980	49.5	86.7	105.4	157.2	150.5	74.9	119.2
1981	64.9	84.8	165.1	189.1	222.2	142.9	144.2
1982	61.3	85.3	214.7	206.7	226.7	104.1	157.6
1983	61.6	87.1	206.8	263.6	253	193.1	187.9
1984	38.7	87.4	169.4	301.8	286.7	142.1	172.3
1985	38.1	82.1	205.5	307.6	363.4	183.9	182.4
1986	36.8	71.5	177.4	312.4	310.6	166.8	173.8
1987	34.6	74.1	157	303.8	287.2	183.2	164.3
1988	81.6	72.3	169.7	303.3	394.7	178.8	179.1
1989	69.3	75.1	155.6	275.1	355.9	184.8	177
1990	103	104	162.3	212.9	291.7	202.8	181.9
1991	97.7	83.8	140.7	192.2	281.4	221	167.4
1992	71.4	99.6	139.1	239.6	265.6	188.5	179.2
1993	90.7	110.9	153.9	235.8	304.4	203.2	181.3
1994	56.8	104.4	113.1	199.2	214.7	149.1	147.3
1995	70	110.2	141.1	225.6	237.8	183.5	165.1

2.2.2.3 Discards

Halibut discards in the commercial halibut fishery come in the form of (1) sublegal halibut (halibut <82 cm) which cannot be retained and are therefore released and (2) halibut of all sizes which are killed when the gear is lost or abandoned. IPHC has been estimating these removals since 1993 and the results for 1993-1995 are summarized in Table 2.5. Total coastwide discards averaged 1,500 mt during 1993-1994 but dropped in 1995 due to substantial reductions in the Alaskan areas. This was likely the result of a change in fishing practices due to the new IFQ program in that area. Fishermen no longer had to race to catch fish during a short 24 hour fishing period, but could fish more slowly and carefully.

Discard mortality of sublegals was estimated from sublegal catch rates on research surveys which were applied to effort data from fishermen's logbooks. The results indicated that sublegal mortality averaged 800 mt during 1993-1994. It was highest in Area 3A, averaging approximately 460 mt annually during 1993-1994. In the 1995 IFQ fishery, sublegal discards fell to 250 mt in Area 3A. Declines in other areas were of similar magnitude.

During the open access fishery prior to 1995, it was not uncommon for fishermen to set more gear than could be hauled back during the short fishing periods. This practice led to the excess gear being cut and discarded when the period closed, despite having fish on the hooks, and was termed abandoned gear. Additionally, setline gear often becomes snagged or caught on the ocean bottom and breaks, and is lost, despite having fish on the hooks. IPHC staff estimated the amount of mortality due to lost and abandoned gear from effort data in fishermen's logbooks. The results showed that the waste from lost and abandoned halibut gear was 500 mt in 1993 and increased to 777 mt in 1994, primarily due to increases in Area 2C and 3A. With the IFQ fishery in 1995, waste from lost and abandoned gear dropped to 200 mt, probably in response to the slower fishing possible under IFQs and the opportunity to recover any gear which might become lost.

Table 2.5 Discards (metric tons, round weight) of Pacific halibut in the commercial fishery for halibut.

Year	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total
	Discard mortality from lost/abandoned gear						
1993	5.4	57.9	115.8	205.7	38	68.2	491.1
1994	0.6	41.6	137.5	509.8	23.5	64.6	777.6
1995	1.8	35	38	88.1	15.7	25.3	203.9
	Discard mortality on sublegal halibut						
1993	9.7	143.6	102	445.8	118.2	47.1	866.3
1994	4.8	133.9	94.1	486.9	58.5	40.4	818.7
1995	1.8	102	45.2	246.1	30.8	22.9	448.8
	Total from both sources						
1993	15.1	201.5	217.8	651.5	156.3	115.2	1357.4
1994	5.4	175.6	231.7	996.6	82	105	1596.3
1995	3.6	136.9	83.3	334.2	46.5	48.3	652.8

2.2.2.4 High-grading

In the U.S. IFQ program, it is illegal for fishermen to discard legal-sized fish from a vessel if the fisherman has available IFQ within the area. However, there have been many anecdotal remarks suggesting high-grading of either small or large halibut to meet price and demand. IPHC does not have estimates of how frequently this occurs. Information on the amount of reported legal-sized halibut discarded once an IFQ has been reached is

recorded by IPHC samplers during logbook interviews. This type of discard mortality is reflected as part of the wastage component.

The Canadian IVQ program has no provisions regarding legal-sized discards when IVQ is still available, but, as with the U.S. IFQ program, reported discards after IVQ is reached are recorded and estimated through the wastage component.

2.2.3 Sport Fishery Catches

Recreational fishing for halibut was nonexistent in the 1920s but has grown into a major industry in Canada and Alaska, with catches of 4,663 mt in 1995 (Table 2.6). The first IPHC regulations on sport fishing were instituted in 1973 and included an 8-month season with limitations on the individual's daily catch and the gear. Since that time, sport regulations have grown in complexity and have seen increased involvement by state, provincial and federal agencies.

Sport fishery catches are provided to IPHC by state and federal agencies. Estimates for the Area 2A harvest are provided by the Oregon Department of Fish and Wildlife (ODF&W) and Washington Department of Fish and Wildlife (WDF&W) from creel census and telephone surveys. Area 2B estimates continue to be under review by IPHC and Canada Department of Fisheries and Oceans (DFO), but IPHC uses estimates currently based on the DFO Tidal Diary Program. The Alaska Department of Fish and Game (ADF&G) provides harvest estimates from Areas 2C, 3 and 4 using a postal survey and port sampling. The coastwide sport fishery harvest for 1995 is the second highest on record, slightly below the 1993 harvest (Table 2.6).

In all areas, an IPHC license was required for sport charter boats that intended to pursue halibut. For Area 2A, the Pacific Fishery Management Council (PFMC) limited vessels to participating in either the sport charter, directed longline or troll fisheries and established April 30 as a cut-off date for license applications. The number of licensed vessels reached 2,439 in 1995 (Table 2.7).

2.2.4 Personal Use

Personal use includes removals from a variety of sources for which little documented data are available. sources include (1) sanctioned Indian food fish in Canada; (2) unreported harvests landed in rural Alaska; and (3) take-home or cook fish.

In Canada, DFO estimates the annual Indian food fish catch at 1,800 mt. For Alaska, personal use estimates are derived from a paper by Wolfe (1993), which resulted in annual estimates for 1993-1995 of 138 mt.

Currently, both the IFQ and IVQ programs account for any personal use take-home fish as part of the person's quota. In Area 2A, state regulations require that any take-home poundage be recorded on the fish ticket. Thus, this type of removal in Area 2A is accounted for within the commercial catch figures.

2.2.5 Bycatch Mortality

Bycatch mortality is the second largest source of halibut removals and most recently documented by Williams et al. (1989). Halibut bycatch mortality was relatively small until the 1960s, when it increased rapidly due to the sudden development of the foreign trawl fisheries off the North American coast. The total bycatch mortality (excluding the Japanese directed fishery) peaked in 1965 at about 12,900 mt. Bycatch mortality declined during the 1960s, but increased to about 12,000 mt in the early 1970s. During the late 1970s and early 1980s, it dropped to roughly 9,000 mt. By 1985, bycatch mortality had declined to 4,359 mt, the lowest level since the IPHC began its monitoring nearly 25 years earlier. The late 1980s saw an unexpected increase in bycatch

mortality, as the foreign fleets off Alaska were replaced by a growing U.S. groundfish fishery. Bycatch mortality peaked during this period at 10,860 mt in 1990. For 1995, bycatch mortality is estimated at 8,988 mt, a decrease of 5.2% from 1994. Annual bycatch mortality estimates are shown in Table 2.8.

Table 2.6 Sport catches (metric tons, round weight) of Pacific halibut by IPHC regulatory area, 1977-1995.

Year	Area 2A	Area 2B	Area 2C	Area 3	Area 4	Total
1977	8	10	43	118	-	180
1978	6	5	49	170	-	231
1979	9	11	105	220	-	345
1980	11	7	200	294	-	513
1981	11	14	192	453	7	677
1982	30	40	295	432	7	804
1983	38	62	334	570	2	1006
1984	71	75	375	619	8	1147
1985	116	317	411	730	5	1579
1986	201	224	440	1151	12	2029
1987	269	318	471	1200	18	2276
1988	150	304	649	1969	22	3094
1989	197	383	941	1813	14	3348
1990	119	460	802	2195	24	3600
1991	95	352	998	2556	45	4046
1992	151	349	1006	2352	24	3883
1993	148	396	1093	3176	43	4857
1994	112	396	1207	2707	31	4453
1995	142	396	1213	2868	43	4663

Table 2.7 Number of vessels licensed by the International Pacific Halibut Commission for the sport or sport/commercial fishery for Pacific halibut.

	ALASKA		CANADA		WA-OR-CA		
Year	Sport		Sport		Sport		Total
1984	260	242	7	3	83	37	632
1985	267	310	11	4	90	50	732
1986	316	301	27	6	87	57	794
1987	322	319	58	7	117	78	901
1988	339	392	60	8	128	109	1036
1989	355	419	60	8	125	115	1082
1990	397	509	105	9	120	107	1247
1991	443	545	221	14	123	100	1446
1992	554	598	251	15	120	97	1635
1993	638	645	241	13	109	93	1739
1994	915	487	318	10	94	106	1930
1995	1172	764	382	7	114	-	2439

Table 2.8 **Estimates of Pacific halibut bycatch mortality, 1977-1995, in metric tons, round weight, by International Pacific Halibut Commission regulatory area.**

Year	Area 2	Area 3	Area 4	TOTAL
1977	1447	3612	1758	6818
1978	1116	2953	3030	7099
1979	1613	4051	3269	8933
1980	1142	4283	5571	10996
1981	1022	3790	3866	8678
1982	705	3603	2869	7177
1983	753	2951	2575	6280
1984	830	2200	2831	5861
1985	869	952	2538	4359
1986	884	752	3364	4999
1987	1178	1878	3462	6517
1988	1154	2060	5344	8558
1989	1088	2464	4393	7945
1990	1836	3883	5140	10860
1991	1929	3238	4565	9732
1992	1716	2998	4916	9630
1993	1737	3168	4198	9103
1994	1323	3073	5110	9506
1995	1414	2713	4861	8988

2.3 Population Assessment, 1996

The method used by IPHC of assessing the condition of the halibut stock and estimating exploitable biomass has been a constantly evolving science (Sullivan and McCaughran 1995). Recently, the assessment has consisted of an analysis of catch and age data from the commercial fishery (Deriso et al. 1985). The CAGEAN model used until 1994 to conduct Pacific halibut stock assessments showed a strong retrospective pattern over the last years, in which estimates of exploitable biomass for past years were consistently adjusted upwards in every successive assessment, as more years of data entered in the analysis (Parma 1993a, Parma 1993b). This pattern could most likely be explained by trends in catchability or by shifts in fishing selectivity of the different age classes, assumed to be constant in the model. The assumption that the age-specific selectivity has remained constant is problematic in the light of the recent trends in body growth exhibited by Pacific halibut. To address this problem, the IPHC staff developed a new model for the analysis of halibut catch at size and age.

Over the last several years IPHC staff noted changes taking place in the halibut fishery that lead to changes in interpretations and assumptions associated with the Pacific halibut stock assessment. Pacific halibut have undergone a rapid reduction in individual growth in recent years, with average length at age now being 20-25% lower than what it was 10-15 years ago. Changes in the fishery, prompted by initiation of individual-quota programs, would likely have an effect as well. The IPHC staff proposed a new approach that accounts for changes in individual size at age and its likely effect on the catchability of halibut. The approach indicated that both stock biomass and recruitment might be higher than that estimated under previous stock assessment procedures. In 1996 the IPHC staff confirmed these preliminary results and incorporated other important sources of information into the assessment. The new assessment procedure not only takes into account commercial age-composition, catch, and CPUE as it has in the past, it also includes size at age of the commercial catch, and catch, CPUE, age-composition, and size at age of IPHC standardized setline surveys. In addition, it now accounts for the mortality of legal-sized halibut associated with bycatch in non-directed fisheries. These features of the new assessment procedure aid in adjusting for changes in growth, in accounting for changes in the fishery, and in better tracking the influence of bycatch mortality on the stock.

Exploitable biomass estimates have increased under the new stock assessment. The increase in the estimates can be broken down into three major components. (1) Halibut size at age is now better represented in the assessment model. We recognize that halibut size at age has been decreasing in recent years as a result of slower growth. This reduction in size has reduced the catchability of younger age groups by setline gear through fish behavior and thresholds imposed under the legal size limit. The "poor recruitment" of age 8 halibut into the fishery was interpreted as low abundance in earlier assessments rather than as poor catchability due to smaller size. This lower catchability can now be estimated, and the estimated abundance of both younger and older age groups has increased accordingly. (2) Bycatch mortality of legal-sized halibut is now included as removals directly in the assessment along with other removals (commercial and sport catches, wastage, and personal use). The estimated biomass must increase to account for the increased level of removals. The magnitude of the increase depends on the amount of legal-sized bycatch mortality relative to total stock biomass in each area. (3) Information from IPHC setline surveys can now be explicitly incorporated. Survey CPUE trends support trends seen in commercial fishery CPUE, lending greater weight to the belief that abundance has increased since the 1980s, while helping to point out changes that have taken place in halibut catch statistics under the recently implemented individual-quota programs.

The Pacific halibut stock assessment continues to show a slight downward trend in coastwide stock biomass over the last five years (Figure 2. 7). This trend, however, is not as severe as that reported under previous assessments. In contrast, some IPHC regulatory areas show a leveling off (Areas 2A, 2B), or an increase (Areas 3B, 4), after accounting for the effects of slower growth and bycatch mortality (Figures 2.8 - 2.13). IPHC systematic survey catch per unit effort (CPUE), now incorporated in the assessment, can be compared with commercial setline CPUE (in number of halibut per skate) in Areas 2B, 2C, and 3A (Figure 2. 14). Survey CPUE, while generally lower than commercial CPUE in Area 2B, shows a greater relative increase between observations taken in the 1990s and those taken in the 1970s to 1980s. Area 2C surveys also show an increase in contrast to the decline shown by commercial CPUE. Area 3A survey and commercial CPUEs both are quite consistent in indicating an increase since the 1980s, with similarly high levels occurring currently. The sublegal-sized component of the fishery is making up a greater proportion of the survey catch in recent years (Figure 2. 14) again indicating the influence of smaller individual size on observed measures of abundance. The assessment now follows changing trends in growth, and takes account of changes in gear selectivity which are likely to occur simultaneously. In areas where this change in growth is great (e.g. Areas 3A and 3B), the result is generally a greater increase in the estimated level of abundance. Apparent poor recruitment to the fishery by more recent cohorts shown in earlier assessments actually resulted from a reduced vulnerability to the fishery, rather than a diminished abundance.

Commercial CPUE (in pounds per skate) was stable or on the upturn in 1996, with a coastwide increase of 10% from 283 pounds per skate (lb/sk) in 1995 to 311 lb/ks in 1996 (Figure 2. 14). CPUE on an area-by-area basis increased 74% to 155 lb/sk in 2A and 8% to 221 lb/sk in 2B, decreased 5% to 221 lb/sk in 2C, increased 13% to 442 lb/sk in 3A, decreased 3% to 462 lb/sk in 3B, and increased 25% lb/sk in Area 4 (Figures 2.9 - 2.14).

Change continues to be observed in the average weight at age of individual halibut. Figure 2. 15 shows the trend in the weight of age-12 halibut for each regulatory area. Dramatic decreases can be seen in the average weight of fish landed in the central regulatory areas Area 3A and Area 3B. Decreasing, though less dramatic, trends can be seen in Area 2AB and Area 4, while some increase can now be seen in the weight of halibut caught in Area 2C. Halibut younger than age 12 (not shown) have begun to exhibit an upturn in weight for all areas except Area 3A. The implications of these continually changing weights for determining the status and production levels of future stock biomass is complex and will continue to be monitored.

The incorporation of growth into the assessment has had a major effect on our estimates of year-class strength and trends in recruitment. The stock assessment figures show total biomass of 8-year-old halibut labeled as recruitment (Figures 2.7 - 2.13). This statistic represents the relative year-class strength in biomass of potential

recruits rather than a reflection of their level of entry into the fishable portion of the stock. Under previous assessment methods the trends in these recruitment estimates were in severe decline. Some decline can still be seen on average coastwide and in most areas. However, the decline is not severe and the strength of more recent cohorts is better represented. The 1987 year class in particular, indicated as being strong in abundance in National Marine Fisheries Service trawl surveys (Clark and Walters, 1995), continues to show its strength as it enters into the fishery. These recruiting halibut (shown as a peak in eight-year-old recruitment biomass in 1995 in Figures 2.7 - 2.13) will be ten years of age during the 1997 season. Of these fish, approximately one third are estimated to be available to the fishery. The presence of this year-class appears to be greatest in Area 4; however, great uncertainty is associated with the Area 4 estimate. Recruitment biomass estimates in this and other areas are highly imprecise in the most recent years, when cohorts have been observed only once or twice in the fishery. Furthermore, given the generally smaller size of these fish, the percentage available for harvest is estimated to be very low, which in turn implies that the estimates themselves may be quite unreliable as only a very small fraction is observed in the catch. An additional consequence of the reduced size-at-age is that the overall contribution to exploitable biomass of these year classes is likely to be smaller in the long term than the strong year classes of larger individuals observed in the mid-1980s. The strength of the 1987 year class, never-the-less, is a positive sign for the fishery.

As can be noted in the accompanying figures, each area's assessment demonstrates its own unique representation of stock trends and recruitment levels. The total quantity of information available for each area's assessment is not the same however. Areas 2A-2B, 2C, and 3A, for example, all have long term IPHC setline survey data that provide information on trends in total abundance and year-class strength. Area 3B and Area 4 lack such systematic and longer term survey information. The resulting estimates are considerably less precise with one half to one third the level of confidence of the estimates given in the other areas.

In Area 3B, inconsistencies can be noted in relative abundance as estimated in independent assessments conducted on Areas 3A and 3B. The independent estimates, shown in this document, indicate that Area 3B exploitable biomass is roughly 30% of that estimated for Area 3A. The 1996 IPHC setline survey and NMFS trawl survey averages conducted over the two areas, on the other hand, indicate that Area 3B exploitable biomass should be roughly 60% of that shown for Area 3A (Clark 1996). No merging of these data has yet brought about an estimate that is consistent with all available information. Unfortunately, long-term setline survey information is lacking in Area 3B. Such information would be invaluable in addressing observed differences in estimates of relative abundance. Commission staff will continue to follow closely trends and statistics collected in Area 3B relative to the neighboring Area 3A.

In Area 4, low harvests in the 1970s have reduced the level of information available from the commercial catch for this area. Furthermore, there is sparse commercial coverage of all grounds known to contain halibut in Area 4. The lack of complete data coverage over time and area is a serious concern in the assessment of the Area 4 stock. As noted by the measures of relative uncertainty shown in the stock biomass and recruitment figures, greater risk is associated with managing the stock in these areas under the current management protocols. Commission staff will consider alternative assessment and management strategies for Area 4.

2.3.1 Setline CEY Calculation

Given the changes occurring in the biology of the stock, and the associated change in the assessment, exploitation rates used in calculating the constant exploitation yield (CEY) must be reevaluated. How different exploitation rates perform hinges on the relationship between adult biomass levels and future levels of recruitment, as well as the average reproductive contribution of recruits. In conformance with a change in method of bycatch accounting, the choice of harvest rate now reflects the loss due to pre-recruitment bycatch mortality. The analysis of alternative harvest rates conducted using a definition of exploitable biomass that is consistent with current estimates of selectivity indicates that harvest rates in the range 0.20-0.25 may achieve close to

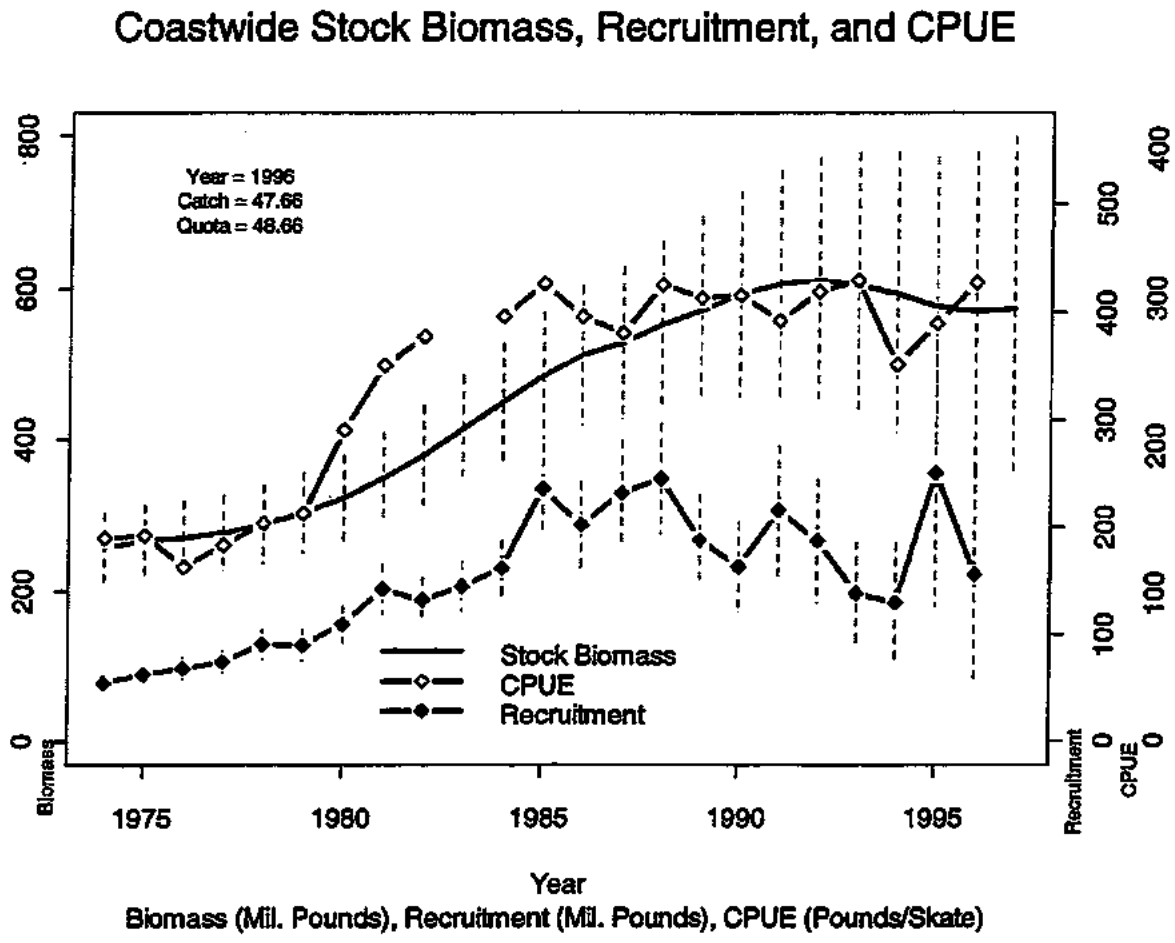


Figure 2.7 **Coastwide size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates.**

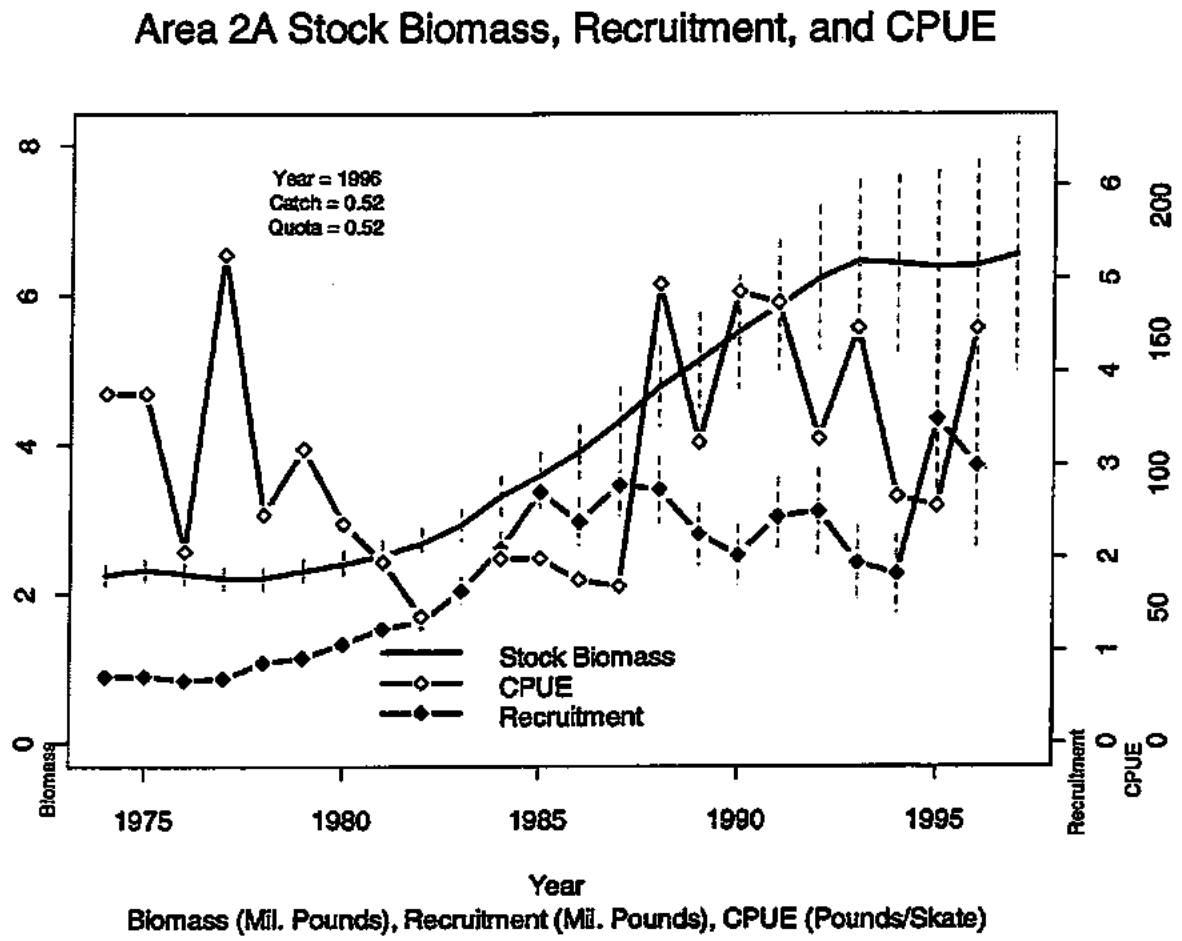


Figure 2.8 **Area 2A size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates. Area 2A biomass estimates represent 7% of the Area 2A-2B combined estimate.**

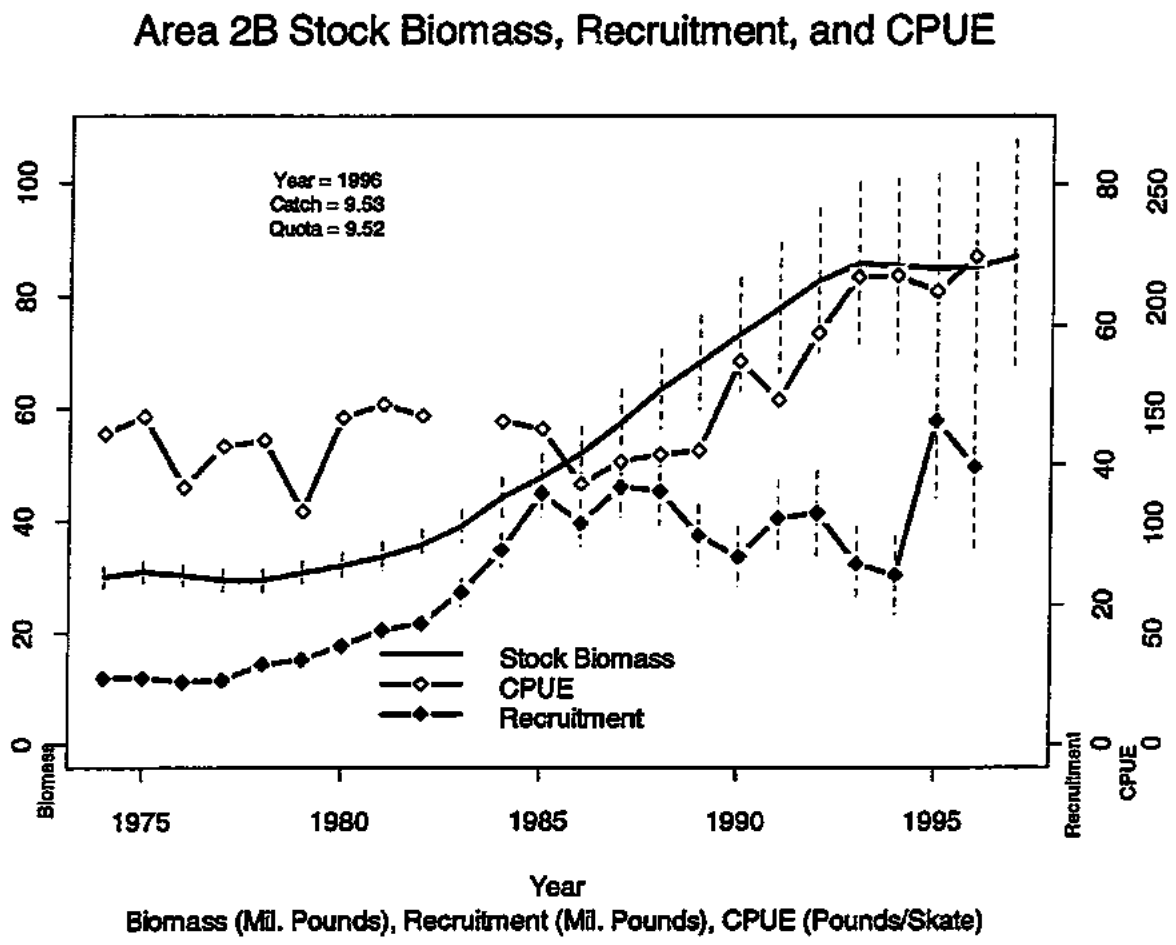


Figure 2.9 **Area 2B size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lies represent confidence measures (plus or minus two standard deviations) on the biomass estimates. Area 2B biomass estimates represent 93% of the Area 2A-2B combined estimate.**

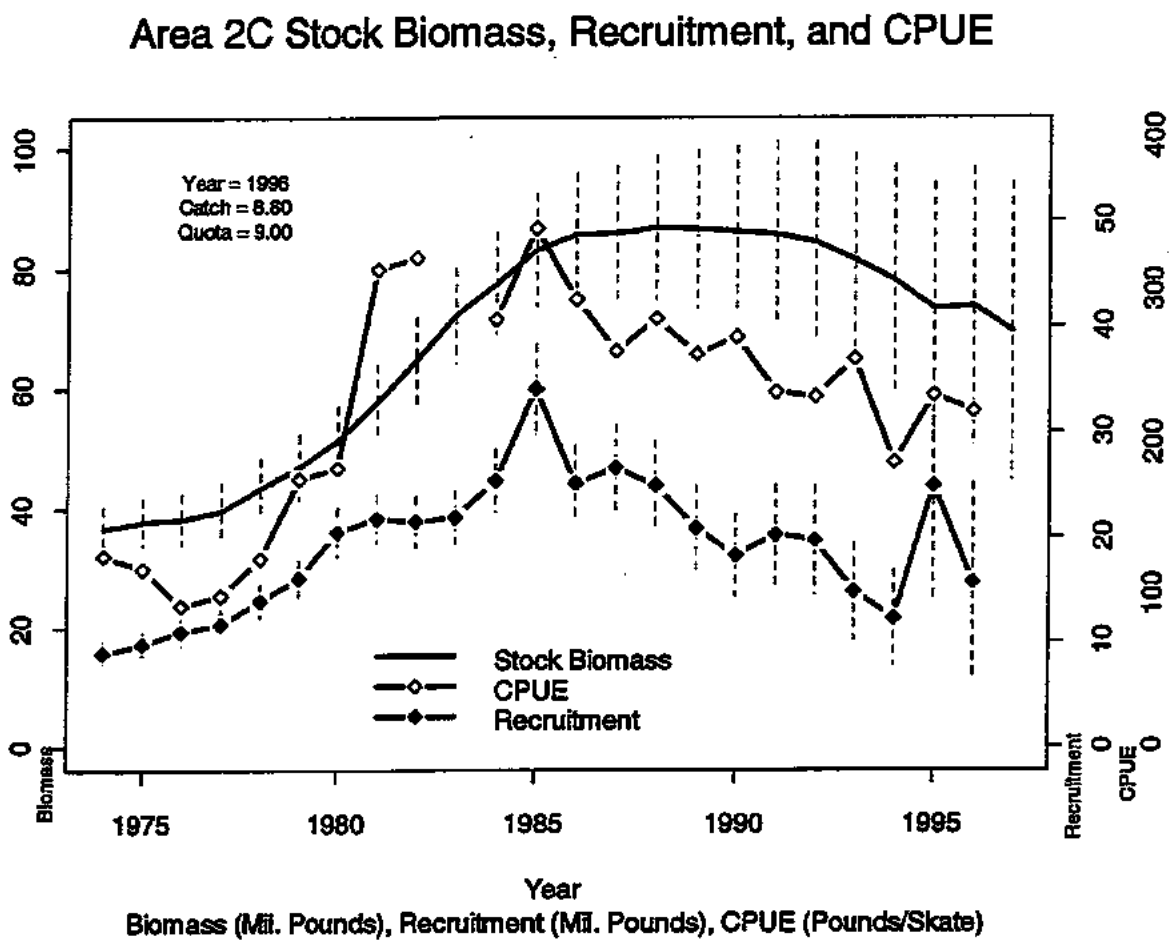


Figure 2.10 **Area 2C size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates.**

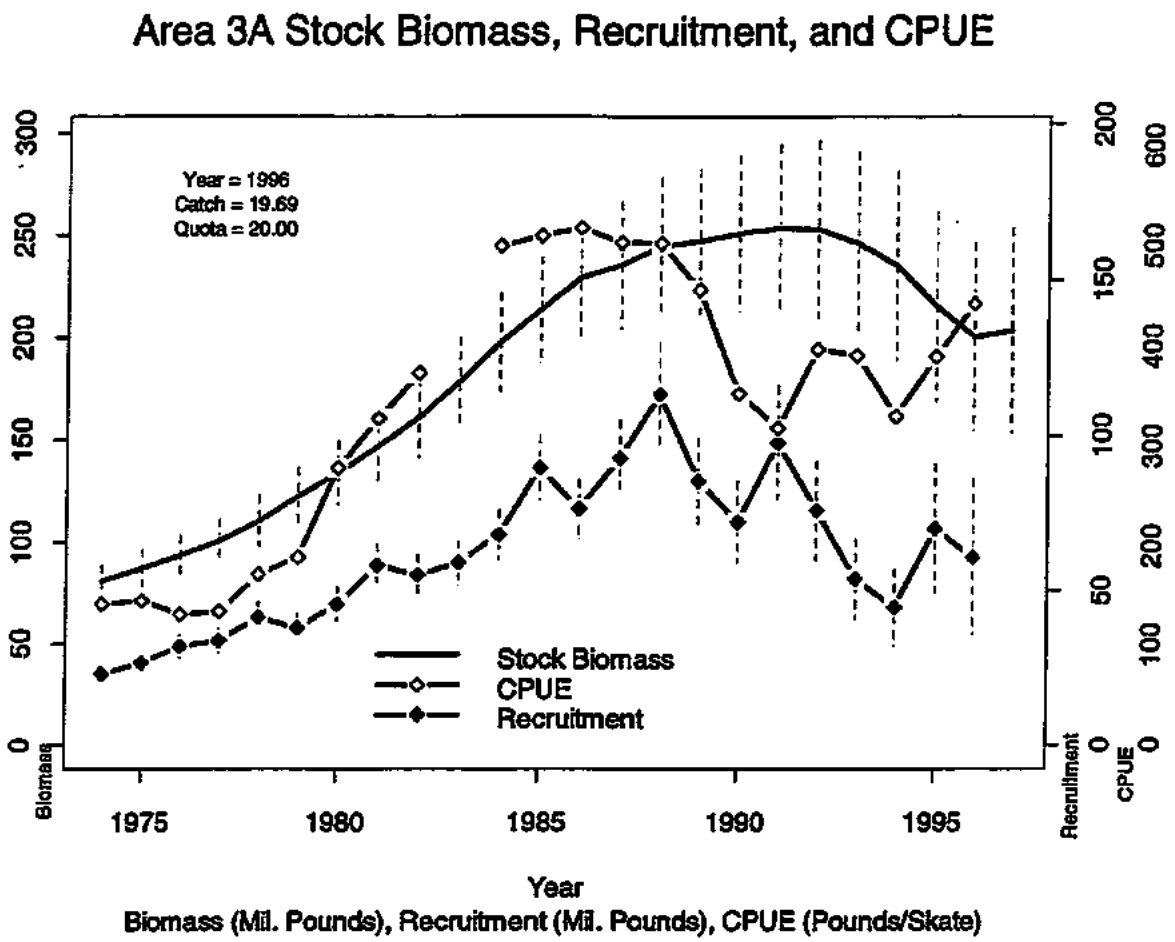


Figure 2.11 **Area 3A size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates.**

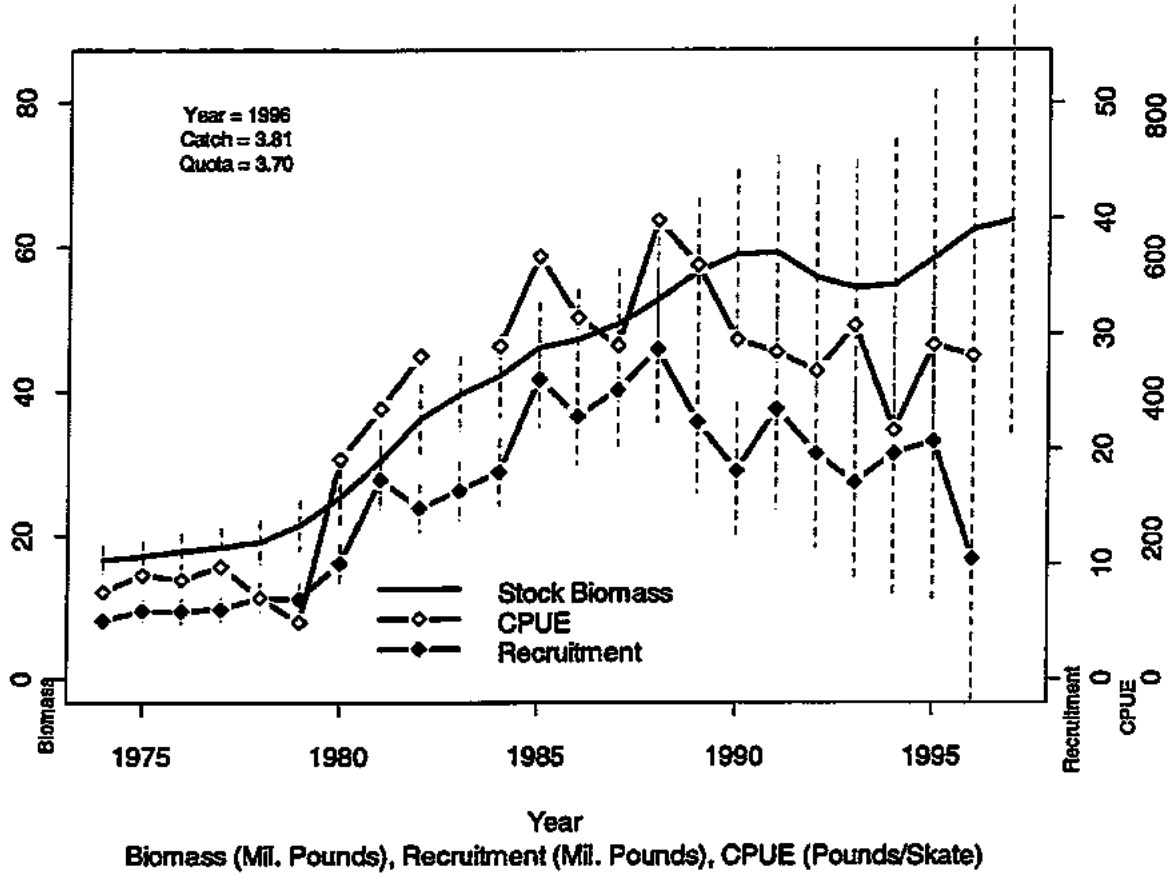


Figure 2.12 **Area 3B size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates.**

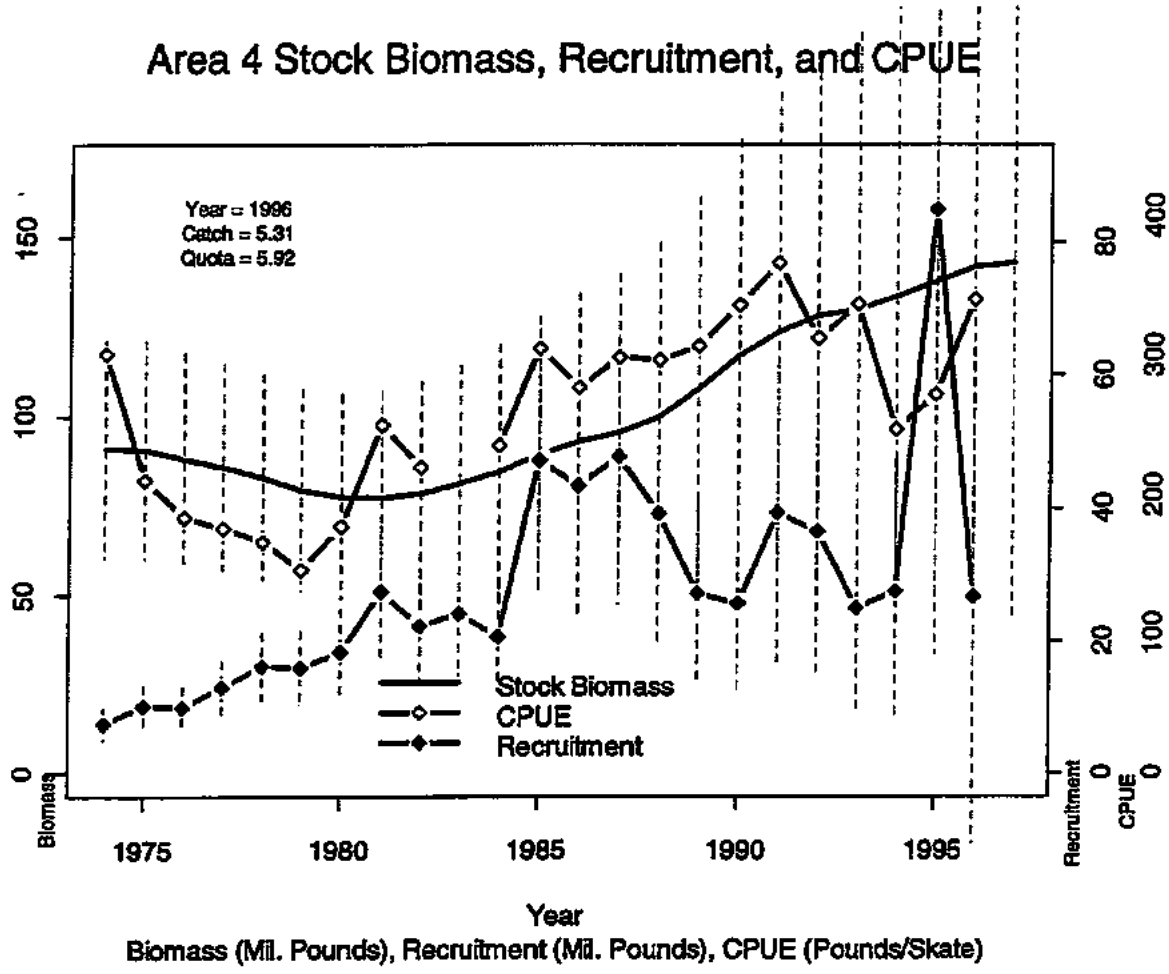


Figure 2.13 **Area 4 size-age based estimates of exploitable stock biomass, commercial CPUE, and total biomass of eight-year-old halibut as an indicator of recruitment. Vertical lines represent confidence measures (plus or minus two standard deviations) on the biomass estimates.**

Commercial CPUE Contrasted with IPHC Setline Survey CPUE

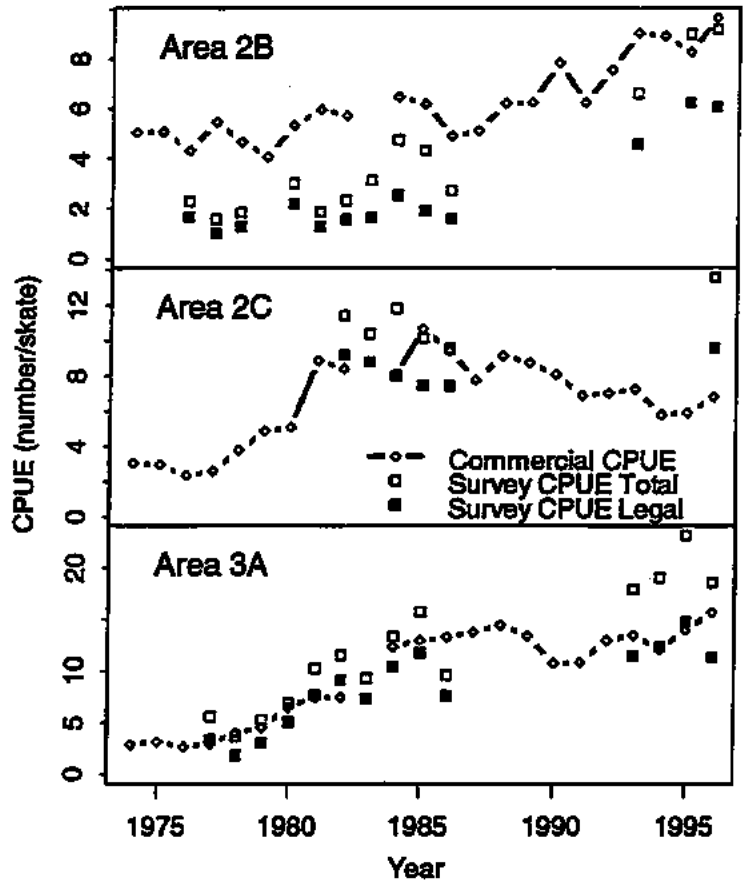


Figure 2.14 **Commercial setline catch per unit effort (CPUE) in number of halibut per skate contrasted with IPHC setline survey CPUE in total number of halibut per skate and number of legal-sized halibut per skate.**

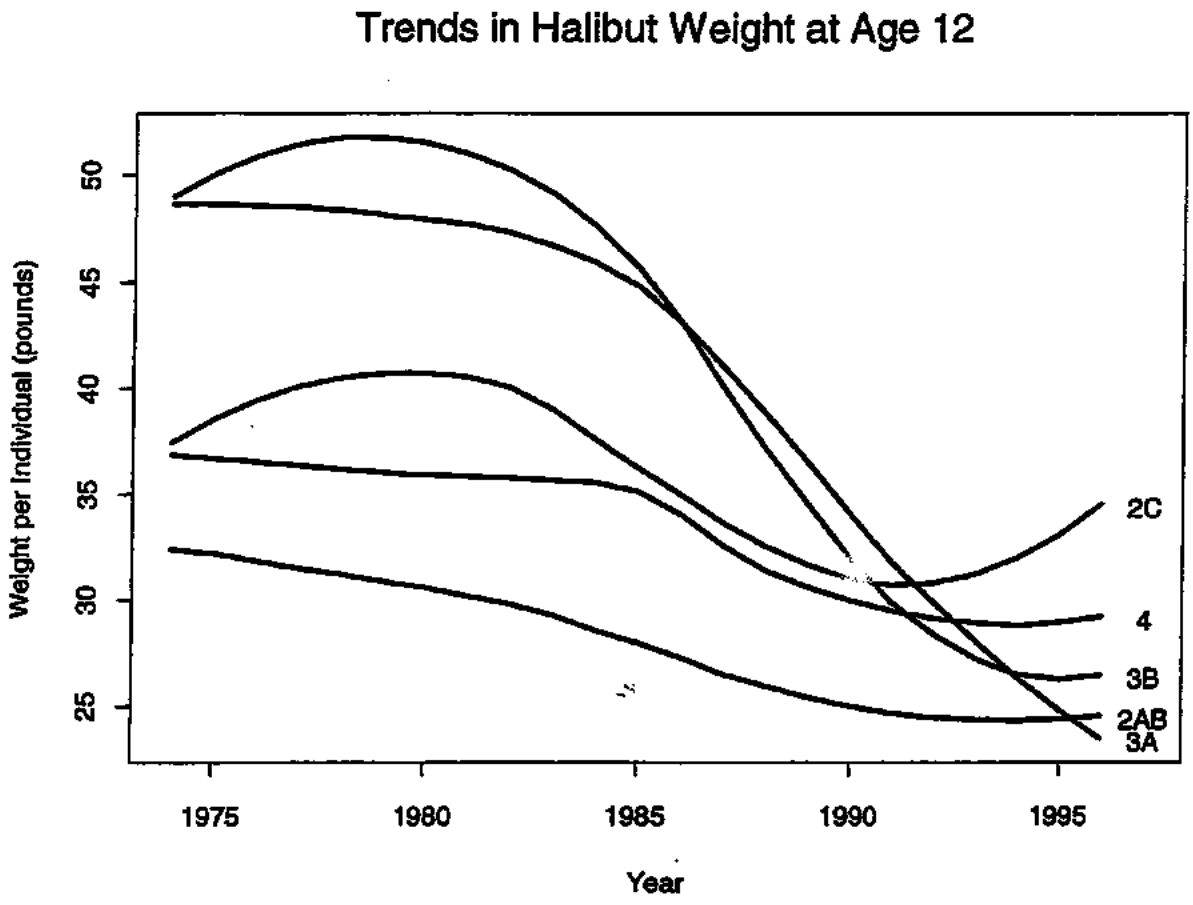


Figure 2.15 **Trends in average individual weight at age for age 12 halibut in each IPHC regulatory area. Weight given in pounds net weight.**

maximum yields under a variety of possible future recruitment scenarios with a high likelihood that the stock is maintained within the range of historically observed levels.

In computing the setline CEY from the total CEY under a 0.20 harvest rate, a new method of accounting for bycatch has been implemented. In past reports, total bycatch mortality was reported in Table 1 and a pound-for-pound adult reproductive compensation poundage was computed as a reduction in each IPHC area in proportion to the biomass in that area. This year, we instead incorporated legal-sized bycatch mortality into the calculation of stock abundance as removal. This contributed to raising the estimated stock levels. Legal-sized bycatch mortality is now the only component removed in the CEY calculation, with the sublegal-sized bycatch component resulting in a reduction of the recommended range of harvest rates. The legal-sized bycatch mortality reduction represents the current year's losses, and the CEY is reduced in each area by the level of legal-sized bycatch mortality that has taken place in that area.

2.3.2 Catch Limits for 1997

The IPHC staff continues to caution the industry that the new assessment method needs further testing and that additional research surveys are needed to confirm trends in abundance and the relative distribution of halibut among regulatory areas. Recommendations for 1997 catch limits incorporate a precautionary approach and reflect results from the new assessment, a judgment of the relative precision of the assessment among areas, and other information not included in the assessment. The recommended quotas are not uniform proportions of the new estimates, but include all ancillary information from each area and reflect the different levels of uncertainty in the assessments in each area.

Estimates of the 20% constant exploitation yield (CEY), the 1996 catch limits, and 1997 catch limits are provided below in Table 2.9. The 1997 catch limits are conservative and this precautionary approach will allow the staff time to fully explore technical aspects of the new model while not putting the stock in jeopardy of overfishing. Future catch limit recommendations by the IPHC staff will continue the precautionary approach, and incorporate improvements to the stock assessment model, consistency of the model results with biological and fishery factors, and evaluations of confidence in the model.

Table 2.9 IPHC Staff Recommendations for 1997 Catch Limits (millions of pounds)

Regulatory Area	Estimated Setline CEY	1996 Catch Limit	1997 Staff Proposal
2A*	0.93	0.52	0.7
2B	15.99	9.52	12.5
2C	11.41	9.00	10.0
3A	33.55	20.00	25.0
3B	11.49	3.70	9.0
4A	8.34	1.95	2.9
4B	8.98	2.31	3.5
4C-E	7.97	1.66	2.6
Total	**98.66**	**48.66**	**66.2**

*Includes sport, tribal, and commercial fishery.

2.4 Management History

The Northern Pacific Halibut Act of 1982, P.L. 97-176, 16 U.S.C. 773 c (c) authorizes the regional fishery management councils having authority for the geographic area concerned to develop regulations governing the Pacific halibut catch in U.S. waters which are in addition to but not in conflict with regulations of the International Pacific Halibut Commission. While the IPHC has primary authority to manage the halibut resource for biological conservation purposes, the Council has authority to recommend policies affecting halibut resource allocation among U. S. fishermen in the maritime and coastal waters of Alaska and in the ocean waters over which the U.S. exercises fishery management jurisdiction. The Council does not have a fishery management plan (FMP) for halibut, however, the Council developed a limited access system involving individual fishing quotas (IFQs) and community development quotas (CDQs) for the halibut fishery. This system is implemented by federal regulations under 50 CFR part 679 under authority of the Magnuson Fishery Conservation and Management Act of 1975, P.L. 94-265, 16 U.S.C. 1801. USFWS also has jurisdiction over halibut for public lands. USFWS determinations are listed in Appendix I.

Commercial and personal use regulations for Pacific halibut are found in 50 CFR part 300 and 50 CFR part 679, which were issued under the authority of the Magnuson Act and the Halibut Act, respectively. Magnuson Act and Halibut Act regulations recommended by the Council and IPHC, respectively, describe Pacific halibut commercial and personal use regulations. These include regulatory areas, licensing vessels, fishing periods, closed periods, catch limits, size limits, logs, and sport fishing restrictions. Magnuson Act regulations recommended by the Council describe the IFQ and CDQ commercial fisheries off Alaska.

Sport fishing under 50 CFR part 301 has been interpreted to describe all non-commercial halibut fishing. This would include recreational sport, charter boat, and subsistence fishing. Sport fishing is limited to a single line with no more than two hooks attached, or a spear. The season is limited from February 1 through December 31. The daily bag limit is two halibut of any size per day per person. The lack of explicit regulations defining legal subsistence takes has led to inclusion of subsistence under the sport fish regulations. Limitation of subsistence harvests to the sport fish gear and bag limits has resulted in conflicts with customary and traditional practices of halibut harvests by Alaska Native Tribal members in coastal communities. These practices are described in detail in Section 3.

2.5 Description of the Fishery

Three major cultural use traditions occur in Alaska for halibut: commercial, sport, and subsistence. The distinctions between them are clouded by differing legal and cultural interpretations of subsistence by both resource managers and users, although current gear restrictions may be used to post facto assign a user category to a landing. Terms such as sportfishing and personal use are often confused. The IPHC defines sportfishing as all non-commercial harvests of halibut. Its regulations do not distinguish between "recreational" sportfishing and subsistence fishing for personal use, although they do deduct separate estimates for "personal use" (228,000 lb in 1993) and sport fishing (6,800,000 lb in 1995) in Alaska (IPHC 1997). IPHC defines personal use as including removals from a variety of sources such as Indian food fish in Canada and landings with commercial gear for personal use in Canada and United States that are not included in commercial or sport statistics.

2.5.1 Commercial Fishery

Commercial fishing (the second major cultural pattern) is done primarily for market values, that is, sale for profit on domestic and international markets. Commercial fishing is production for market sale. Commercial regulations for halibut are consistent with these values, in that they provide for efficient gear, relatively unrestricted bag limits (such as IFQs), and commercial license-taxation requirements (proposed user pays for management, etc.). The commercial cultural tradition in Alaska has developed over the past two centuries or so

from Euroamerican cultural traditions (colonial market expansion into Alaska), and the people who participate in it in Alaska are from a range of cultural groups (Natives and non-Natives) living in both rural and urbanized areas in Alaska and the continental U.S.

The distribution of initial QS holders and year-end 1995 halibut quota shares and QS holders is reported by IPHC area and resident type in Tables 2.10 and 2.11 (CFEC 1996). These tables illustrate the distribution of QS using five resident types that were originally developed by Langdon (1995) to study permit holdings under Alaska's limited entry program. These resident types have since been used by the Commercial Fisheries Entry Commission to monitor distributional changes under Alaska's limited entry program. The five resident types are defined as follows:

AK Rural Local (ARL)	A person residing in an Alaska rural community which is local to the IFQ management area for which the QS applies;
AK Rural Nonlocal(ARN)	A person residing in an Alaska rural community which is not local to the IFQ management area for which the QS applies;
AK Urban Local (AUL)	A person residing in an Alaska urban community which is local to the IFQ management area for which the QS applies;
AK Urban Nonlocal (AUN)	A person residing in an urban community which is nonlocal to the IFQ management area for which the QS applies;
Nonresident	A person residing in a location outside of Alaska

Alaska communities were classified as local or nonlocal to halibut management areas using the following rules:

(1) If the place was a coastal community, it was classified as local to the halibut management areas of that coastline.

(2) If a community was within 25 miles of the coast, and was connected to the coast by a navigable body of water or road, it was also classified as local to the halibut management areas of that coastline.

(3) If a coastal community was within 25 straight-line miles of an adjacent halibut management area boundary, it was also classified as local to the adjacent area.

Alaska communities were classified as rural or urban based largely on census data. All communities with more than 2,500 people, according to the 1990 U.S. population census, were classified as urban. Communities were also classified as urban if they were connected by highway to an urban center of 6,000 to 20,000 persons and were within 20 air miles of that urban center. In addition, communities were classified as urban if they were within 40 highway miles of an urban center greater than 20,000 persons.

Table 2.10 provides the initial distribution and year-end 1995 distribution of QS by area and resident type. For each resident type within an area it also shows the initial and year-end percentage of the area's QS held by that resident type, and the change in QS held by that resident type during the year. ARLs received QS in seven of the eight areas (they received none in Area 4D). Their largest percentage shares of the initial allocations came in Areas 2C (30% of the total), 4C (34%), and 4E (59%). They received lower percentages in the other areas, ranging from almost 0 % in Area 4A to about 10% in Area 3B. During 1995 their holdings decreased in Area 2C and rose in Areas 3A, 3B, and 4A. Their holdings remained unchanged elsewhere.

Table 2.10 Initial and year-end 1995 halibut QS by management area and resident type

Management Area	Resident Type	Initial QS	Year-end 95 QS	Initial Percent QS	Year-end 95 Percent QS	Change in Total QS	Percent Change in Total QS
2C	ARL	17,450,170	16,694,938	30	28	-755,232	-4
	ARN	359,567	235,189	1	0	-124,378	-35
	AUL	29,898,804	31,203,798	51	53	1,304,994	4
	AUN	973,473	903,082	2	2	-70,391	-7
	N	10,283,223	9,928,230	17	17	-354,993	-3
		58,965,237	58,965,237			0	
3A	ARL	15,537,936	16,278,933	9	9	740,997	5
	ARN	4,191,666	3,703,971	2	2	-487,695	-12
	AUL	77,820,990	78,035,789	43	43	214,799	0
	AUN	19,303,637	20,764,321	11	11	1,460,684	8
	N	65,829,681	63,900,896	36	35	-1,928,785	-3
		182,683,910	182,683,910			0	
3B	ARL	5,563,706	5,712,388	10	11	148,682	3
	ARN	2,194,746	2,151,565	4	4	-43,181	-2
	AUN	19,866,315	19,871,250	37	37	4,935	0
	N	25,769,646	25,659,210	48	48	-110,436	0
		53,394,413	53,394,413			0	
4A	ARL	50,264	64,203	0	0	13,939	28
	ARN	976,372	819,516	7	6	-156,856	-16
	AUL	364,612	364,872	3	3	260	0
	AUN	5,419,389	5,560,374	38	39	140,985	3
	N	7,466,275	7,467,947	52	52	1,672	0
		14,276,912	14,276,912			0	
4B	ARL	160,045	160,045	2	2	0	0
	ARN	207,969	207,969	2	2	0	0
	AUN	2,679,946	2,756,280	30	31	76,334	3
	N	5,974,304	5,897,970	66	65	-76,334	-1
		9,022,264	9,022,264			0	
4C	ARL	1,350,336	1,350,336	34	34	0	0
	ARN	23,170	23,170	1	1	0	0
	AUN	826,097	826,097	21	21	0	0
	N	1,769,583	1,769,583	45	45	0	0
		3,969,186	3,969,186			0	

Continued

Table 2.10 con't Initial and year-end 1995 halibut QS by management area and resident type

Management Area	Resident Type	Initial QS	Year-end 95 QS	Initial Percent QS	Year-end 95 Percent QS	Change in Total QS	Percent Change in Total QS
4D	ARN	40,905	40,905	1	1	0	0
	AUN	534,901	534,901	11	11	0	0
	N	4,110,190	4,110,190	88	88	0	0
		4,685,996	4,685,996			0	
4E	ARL	82,993	82,993	59	59	0	0
	ARN	4,937	4,937	4	4	0	0
	AUN	39,462	39,462	28	28	0	0
	N	12,607	12,607	9	9	0	0
		139,999	139,999			0	

Table 2.11 provides similar information on the initial and year-end 1995 distribution of QS holders by area and resident type. The table includes data on the change and percentage change in the number of QS holders by area and resident type. The table also includes data on the percentage of QS holders in each area from each resident type and their average QS holdings both at initial issuance and at year-end 1995. As can be seen, the number of QS holders declined and the average QS holdings increased in most of the non-CDQ areas and resident type and indicates that some consolidation of QS -holdings occurred during 1995.

The halibut IFQ catch distribution by port of landing is listed in Table 2.12. The table shows that Sitka (1,027), Kodiak (865), and Homer (763) had the greatest number of vessel landings. Kodiak (7.2 M), Homer (3.9 M), Dutch Harbor/Unalaska (2.9 M), Sitka (2.8 M), and Petersburg (2.6 M) led for total pounds landed (in millions). Table 2.13 lists the halibut CDQ groups, 1997 pounds and estimated ex-vessel value for each CDQ organization. Table 2.14 lists the communities for each CDQ group. In addition to halibut, sablefish, and pollock, the CDQ program was recently recommended to be expanded to all groundfish and crab species. Implementation of the groundfish and crab CDQ programs may occur in 1998.

In Area 2C, the Metlakatla Indian Community was authorized by the U.S. government to conduct a small commercial halibut fishery within the Annette Island reserve in Southeast Alaska. In 1996, 39 vessels fished fourteen 48-hr periods between April 27 and September 15 produced a total catch of 126,378 lb, which is included in the Area 2C catch (Table 2.15). The 1996 catch was nearly double the 1995 catch of 51,849 lb, harvested by the 24 vessel fleet in thirteen 48-hr periods between May 26 and October 8. The increased catch is likely due to the increase in fishing effort in 1996 (IPHC 1997). Peak fishing occurred in July.

2.5.2 Sport Fishery

Sport fishing (the first major cultural pattern) is done primarily for recreational values (that is, "sport," "fun," "enjoyment," "fair competition," etc.) - participation in a recreational-quality activity is the primary cultural value. The sport regulations for halibut are consistent with these recreational values, in that they provide for relatively inefficient gear (2-hooks, a "fair chase ethic"), limited daily bags (2-fish per day; food is not the primary purpose of the activity), and sport license requirements (user's pay for management, etc.). The sport cultural tradition in Alaska derives from Euroamerican historic traditions, and the people who currently participate in it are primarily from Euroamerican cultural groups living in urbanized areas (but also some rural places) in Alaska and the continental U.S. Table 2.16 lists Alaska sport halibut harvests since 1985 by Alaskan community.

2.5.3 Subsistence/Personal Use Fishery

Subsistence fishing (the third major cultural pattern) is a traditional use in Alaska primarily for food use by domestic family groups, including noncommercial sharing and distribution systems. Potential halibut subsistence regulations should be consistent with these values, in that they should provide for established patterns of use, including customary efficient gear from the point of view of domestic family groups, relatively unrestricted seasons and bags except for conservation reasons (subsistence fisheries are for food and are generally self-limiting because the limited size of the subsistence sharing-consumption networks), and relatively simple reporting-permitting systems. The subsistence cultural traditions in Alaska have evolved from a long historic past in Alaska, and the people who are most heavily involved in subsistence patterns are Alaska Native groups with local cultural traditions of use; in addition, non-Natives living in "rural" places (places with a mixed, subsistence-market economic system) participate in some subsistence activities. Subsistence production-distribution is commonly a major economic sector in rural communities. Mixed, subsistence-market economies are characteristic of rural villages and a few large towns in Alaska -- these are local systems of production-consumption where wild food production contributes a substantial portion of the food supply of the community

Table 2.11 Number of initial and year-end 1995 halibut QS persons by management area and resident type

Management Area	Resident Type	Initial QS holders	Year-end 95 QS holders	Change in QS holders	Percent Change in QS holders	Initial Percent QS Holders	Year-end 95 Percent QS Holders	Initial Average QS	Year-end 95 Average QS
2C	ARL	721	641	-80	-11	30	30	24,203	26,045
	ARN	143	94	-49	-34	6	4	2,514	2,502
	AUL	981	926	-55	-6	41	43	30,478	33,697
	AUN	118	111	-7	-6	5	5	8,250	8,136
	N	415	362	-53	-13	17	17	24,779	27,426
		2,378	2,134	-244					
3A	ARL	492	459	-33	-7	16	17	31,581	35,466
	ARN	239	180	-59	-25	8	7	17,538	20,578
	AUL	1,355	1,259	-96	-7	44	46	57,432	61,982
	AUN	332	313	-19	-6	11	11	58,143	66,340
	N	628	553	-75	-12	21	20	104,824	115,553
		3,046	2,764	-282					
3B	ARL	127	125	-2	-2	12	13	43,809	45,699
	ARN	199	167	-32	-16	19	17	11,029	12,884
	AUN	446	414	-32	-7	43	43	44,543	47,998
	N	269	251	-18	-7	26	26	95,798	102,228
		1,041	957	-84					
4A	ARL	6	6	0	0	1	1	8,377	10,701
	ARN	172	141	-31	-18	33	29	5,677	5,812
	AUL	19	17	-2	-11	4	4	19,190	21,463
	AUN	175	169	-6	-3	33	35	30,968	32,902
	N	154	145	-9	-6	29	30	48,482	51,503
		526	478	-48					
4B	ARL	11	11	0	0	7	8	14,550	14,550
	ARN	5	5	0	0	3	3	41,594	41,594
	AUN	63	64	1	2	42	44	42,539	43,067
	N	70	65	-5	-7	47	45	85,347	90,738
		149	145	-4					
4C	ARL	31	31	0	0	39	39	43,559	43,559
	ARN	1	1	0	0	1	1	23,170	23,170
	AUN	16	16	0	0	20	20	51,631	51,631
	N	32	32	0	0	40	40	55,299	55,299
		80	80	0					

Continued

Table 2.11 con't Number of initial and year-end 1995 halibut QS persons by management area and resident type

Management Area	Resident Type	Initial QS holders	Year-end 95 QS holders	Change in QS holders	Percent Change in QS holders	Initial Percent QS holders	Year-end 95 Percent QS Holders	Initial Average QS	Year-end 95 Average QS
4D	ARN	3	3	0	0	4	4	13,635	13,635
	AUN	18	18	0	0	27	27	29,717	29,717
	N	46	46	0	0	69	69	89,352	89,352
		67	67	0					
4E	ARL	74	74	0	0	71	71	1,122	1,122
	ARN	5	5	0	0	5	5	987	987
	AUN	19	19	0	0	18	18	2,077	2,077
	N	6	6	0	0	6	6	2,101	2,101
		104	104	0					

Table 2.12

Total IFQ Landings - Pounds and Percentages by Port

From 01-MAR-1996 To 31-DEC-1996

Port	Halibut Vessel Landings	Halibut Pounds Landed	Halibut % of Total	Sablefish Vessel Landings	Sablefish Pounds Landed
ALASKA					
AKUTAN	21	39,335	0.11		
ANCHORAGE	1	2,997	0.01		
ANGOON	74	38,997	0.11		
BARANOF WARM SPRIN	5	12,300	0.03		
CHIGNIK	12	53,863	0.15	4	238,160
CORDOVA	164	896,446	2.52	68	1,253,151
CRAIG	283	442,055	1.24	47	300,021
DUTCH HBR/UNALASKA	301	2,897,170	8.15	233	3,713,124
EDNA BAY	25	10,625	0.03		
ELFIN COVE	27	39,876	0.11	2	1,411
EXCURSION INLET	15	68,405	0.19	16	192,504
GUSTAVUS	55	69,973	0.20		
HAINES	36	35,631	0.10		
HOLLIS	1	20	0.00		
HOMER	763	3,943,651	11.09	157	1,232,451
HOONAH	454	1,232,048	3.46	133	1,121,910
HYDER	12	1,830	0.01		
JUNEAU	286	918,988	2.58	55	486,253
KAKE	164	410,410	1.15	15	266,063
KASILOF	3	2,822	0.01		
KENAI	71	364,276	1.02	3	6,115
KETCHIKAN	147	461,482	1.30	35	385,169
KING COVE	81	577,979	1.63	36	518,804
KODIAK	865	7,170,941	20.16	285	3,907,511
METLAKATLA	16	42,360	0.12		
NIKISKI	5	14,081	0.04	1	1,679
NINILCHIK	21	60,200	0.17		
OLD HARBOR	2	881	0.00		
PELICAN	230	697,061	1.96	106	898,201
PETERSBURG	567	2,629,424	7.39	97	1,701,031
PORT ALEXANDER	58	69,191	0.19	11	38,913
PORTAGE BAY	1	221	0.00		
SAND POINT	97	403,836	1.14	29	612,383
SELDOVIA	9	1,009	0.00		
SEWARD	435	3,201,294	9.00	384	7,881,643
SITKA	1,027	2,825,565	7.94	453	4,888,448
SKAGWAY	2	3,238	0.01		
ST GEORGE	17	6,704	0.02		
ST PAUL	122	346,080	0.97	6	5,688
TENAKEE SPRINGS	7	1,512	0.00		
VALDEZ	36	91,370	0.26	4	32,382
WRANGELL	246	811,542	2.28	6	18,293
YAKUTAT	232	572,784	1.61	94	1,556,868
OREGON					
ASTORIA	4	53,757	0.15	1	143
NEWPORT	1	20,957	0.06		
WARRENTON	6	145,542	0.41		
WASHINGTON					
ANACORTES	1	10,983	0.03		
BELLINGHAM	94	1,847,786	5.20	43	1,213,586
LA CONNER	5	43,006	0.12		
PORT ORCHARD	3	4,173	0.01		
SEATTLE	42	1,045,972	2.94	23	471,739
CANADA					
PRINCE RUPERT	49	703,169	1.98	21	252,835
Total	7,275	35,567,687	99.98	2,368	33,196,479

Notes:

1. This report summarizes fixed gear IFQ landings reported by Registered Buyers. At sea discards are not included.
2. Halibut weights are reported in net (headed and gutted) pounds. Sablefish weights are reported in round pounds.
3. "Vessel Landings" include the number of landings by participating vessels reported by IFQ regulatory area. Each such landing may include harvests from more than one IFQ Permit Holder.
4. Landings at different harbors in the same general location (e.g. "Juneau, Douglas, and Auke Bay") have been combined to report landings to the main port (e.g. "Juneau").
5. Due to rounding, percentages may not total to 100%.
6. Data are derived from initial data entry procedures and are preliminary. Future review and editing may result in minor changes.

Table 2.13 HALIBUT ALLOCATIONS FOR 1997

GROUP	AREA			
	4B	4C	4D	4E
Total CDQ Catch in Area	20%	50%	30%	100%
AFA	100%	0%	0%	0%
BBEDC	0%	0%	23%	30%
PIF	0%	100%	0%	0%
CVFC	0%	0%	24%	70%
NSEDC	0%	0%	20%	0%
YDEDA	0%	0%	33%	0%
Total	100%	100%	100%	100%

	4B	4C	4D	4E	TOTAL
1997 TAC By Area (lb)*	3,480,000	1,160,000	1,160,000	260,000	6,060,000
Total CDQ Catch in Area (lb)	696,000	580,000	348,000	260,000	1,884,000
AFA	696,000	0	0	0	696,000
BBEDC	0	0	80,040	78,000	158,040
PIF	0	580,000	0	0	580,000
CVFC	0	0	83,520	182,000	265,520
NSEDC	0	0	69,600	0	69,600
YDEDA	0	0	114,840	0	114,840

VALUE OF HALIBUT TO FISHERMEN: $3.00 is estimated as lb price paid to fishermen

	lb	$/lb	Total
AFA	696,000	$2.50	$1,740,000
BBEDC	158,040	$2.50	$395,120
PIF	580,000	$2.50	$1,450,000
CVFC	265,520	$2.50	$663,800
NSEDC	69,600	$2.50	$174,000
YDEDA	114,840	$2.50	$287,100
TOTAL	1,884,000		

*TAC from NMFS, RAM Division 1/31/97

Table 2.14 Western Alaska halibut CDQ communities/representative

Bristol Bay Economic Development Foundation

Aleknagik
Clark's Point
Dillingham
Egegik
Ekuk
Manokotak
Naknek
King Salmon/Sayonoski
South Naknek
Togiak
Twin Hills
Pilot Point/Ugashik
Port Heiden

Coastal Villages Fishing Cooperative

Chefornak
Chevak
Eek
Goodnews Bay
Hooper Bay
Kipnuk
Konigranak
Kwigillingok
Mekoryuk
Newtok
Nightmute
Platinum
Quinhagak
Scammon Bay
Tooksook Bay
Tuntutuliak
Tununak

Norton Sound Economic Development Foundation

Brevig Mission
Diomede/Inalik
Elim
Gambell
Golovin
Koyuk
Nome
Savoonga
Shaktoolik
St. Michael
Stebbins
Teller
Unalakleet
Wales
White Mountain

Yukon Delta Fisheries Development Association

Alakanuk
Emmonak
Kotlik
Sheldon Point

Atka Fishermen's Association

Atka

Pribilof Island Fishermen

St. Paul

Table 2.15 **Metlakatla community fishing periods, number of vessels, and catch in 1995.**

FISHING DATES	NUMBER OF VESSELS	CATCH
May 26 - 28	5	4,683
June 3 - 5	9	5,185
June 10 - 12	8	5,132
June 16 -18	9	8,020
June 23 -25	9	4,034
June 30 - July 2	6	1,380
July 14 - 16	6	4,721
July 28 - 30	6	3,801
Aug 11 - 13	6	4,632
Aug 25 - 27	10	7,127
Sept 8 - 10	2	654
Sept 22 - 24	4	1,423
Oct 6 - 8	5	1,057

Metlakatla community fishing periods, number of vessels, and catch, 1996.

FISHING DATES	NUMBER OF VESSESLS	CATCH
April 27 - 29	8	3,135
May 13 - 15	9	4,211
May 25 - 27	11	8,639
June 8 - 10	11	5,504
June 21 - 23	14	9,987
July 5 - 7	18	12,361
July 19 - 21	20	17,578
Aug 2 - 4	19	13,868
Aug 9 - 11	20	11,674
Aug 16 - 18	21	11,905
Aug 23 - 25	16	8,102
Aug 30 - Sept 1	15	11,475
Sept 6 - 8	10	6,117
Sept 13 - 15	3	1,822

(From CFEC, 1996; 1997)

Table 2.16 **Alaska sport Pacific halibut harvests, 1985-1995, and catch, 1995, by region and area.**

	Harvest											Catch
Area Fished	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1995
Southeast												
Ketchikan	12,600	11,014	9,676	11,544	13,699	9,872	9,733	9,455	12,763	15,313	14,483	22,231
Prince of Wales Island	3,073	2,902	2,760	2,778	9,213	10,264	11,875	11,661	22,501	24,465	20,808	31,313
Kake, Petersburg, Wrangell, Stikine	4,757	3,624	3,039	3,877	5,548	5,768	6,433	6,153	5,984	7,992	9,488	15,291
Sitka	6,091	6,617	7,545	10,572	17,727	17,492	20,283	22,092	19,366	23,701	21,452	35,842
Juneau	16,695	16,574	14,382	18,697	20,273	16,248	13,637	14,850	16,340	10,362	15,145	25,838
Haines-Skagway	1,023	2,189	3,567	3,201	2,588	1,972	1,199	926	2,195	1,058	856	905
Glacier Bay	1,355	1,331	2,184	4,238	4,484	3,415	8,766	4,863	5,878	5,849	7,090	13,511
Yakutat	520	777	1,194	1,673	772	1,459	2,112	1,861	2,752	3,577	2,456	3,411
Total	46,114	45,028	44,347	56,580	74,304	66,490	74,038	71,861	87,779	92,317	91,778	148,342
Southcentral												
Glennallen	0	0	0	0	0	0	0	0	0	0	0	0
Prince William Sound	4,527	8,331	4,379	9,845	8,697	10,851	12,733	17,855	19,716	23,487	24,771	43,246
Knik Arm Drainage	0	0	0	0	0	0	0	0	0	0	0	0
Anchorage	0	0	0	0	0	0	0	0	0	0	0	0
East Susitna River Drainage	0	0	0	0	0	0	0	0	0	0	0	0
West Cook Inlet-W Susitna River Drainages	510	1,072	869	1,192	1,224	1,685	1,576	984	2,507	2,725	3,236	6,173
Kenai Peninsula	68,582	94,479	84,733	147,756	132,944	156,353	160,888	160,705	185,431	193,085	188,597	359,248
Kodiak	7,303	10,960	9,869	7,749	10,435	9,134	12,089	10,860	14,169	14,910	13,989	27,598
Naknek River Drainage-Alaska Peninsula	536	1,015	1,596	1,984	1,412	2,545	5,199	2,645	3,491	2,402	2,796	5,728
Kvichak River Drainage	0	0	0	0	0	0	0	0	0	0	0	0
Nushagak	0	0	0	0	0	0	0	0	0	0	0	0
Total	81,458	115,857	101,446	168,526	154,712	180,568	192,485	193,049	225,314	236,609	233,389	441,993
Arctic-Yukon-Kuskokwim												
Tanana River Drainage	0	0	0	0	0	0	0	0	0	0	0	0
Kuskokwim River Drainage	62	0	36	0	0	144	0	33	54	45	21	53
Seward Peninsula-Norton Sound	0	0	0	0	0	0	0	0	0	75	0	0
Northwest Alaska	0	0	0	0	0	0	0	0	0	0	0	0
Yukon River Drainage	0	0	0	0	0	0	0	0	0	0	0	0
North Slope Brooks Range	0	0	0	0	0	0	0	0	0	0	0	0
Total	62	0	36	0	0	144	0	33	54	120	21	53
Alaska Total	127,634	160,885	145,829	225,106	229,016	247,202	266,523	264,943	313,147	329,046	325,188	590,388

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(that is, about 50% or more the community's protein needs). Subsistence halibut fishing typically occurs in rural places with subsistence-market economies.

The IPHC has also set aside 300,000 lb for use in the Indian food fishery by Native residents of British Columbia beginning in 1994. This amounts to 10 lb per person for the roughly 30,000 Native inhabitants.

The analysts are unable to distinguish "subsistence" from "sport" halibut landings until subsistence is defined by the Council, (i.e., are "subsistence" harvests from Natives only or all rural residents; from which gear types?). Under Option 1, the Council will identify subsistence landings through the process of selecting eligibility criteria for communities, users in those communities, and legal gear (Options 2 - 4). The final draft of this analysis will reflect the Council's preferred option on eligibility, and will therefore be able to provide improved estimates of "sport," "subsistence," and "personal use" halibut removals. Those estimates of removals will be forwarded to the IPHC for their review in determining halibut removals. In this draft analysis, therefore, all non-commercial landings are presented by community, user, and gear.

Table 2.17 lists non-commercial halibut harvests for Alaska Native and non-Native households for rural communities from ADFG surveys. A summary of this data by IPHC regulatory area is provided in Table 2.18. It shows that 105,550 lb (19.4%) of halibut were removed from commercial gear, 233,080 lb (42.8%) were removed from other non-commercial gear, and 205,864 lb (37.8%) were removed from rod-and-reel gear by Natives in rural communities for all IPHC areas. Non-Natives removed 99,348 lb (11.1%) from commercial gear, 13,941 lb (1.6%) from non-commercial gear and 780,198 lb (87.3%) were removed from rod-and-reel gear for all areas. Note that these data do not include halibut harvests by Alaska Native tribal members residing in Juneau, Ketchikan, and the Kenai Peninsula.

A wide range of per capita harvests are reported by rural community for individual survey years between 1984 and 1994 in Table 2.19. The highest rates are reported for Alaska Native households in Tenakee Springs (nearly 300 lb) and Gustavus and Port protection (above 100 lb) in Area 2C; Port Graham and Old Harbor (about 80 lb) in Area 3A; Chignik bay (74 lb) in Area 3B; and Nikolski (nearly 300 lb), St. Paul (167 lb), Tununak (124 lb) and Akutan (115 lb) in Area 4. The highest non-Natives harvests occurred in Meyers Chuck (above 100 lb) in Area 2C; Port Lions (139 lb) and Nanwalek (112 lb) in Area 3A; Perryville (91 lb) in Area 3B; and Unalaska (80 lb) and Akutan (68 lb) in Area 4. An average of 50 lb per capita is a reasonable overall estimate of personal consumption.

The following discussion of halibut harvests by gear type is taken from Wolfe (1994). Federal regulations recognize only commercial and sport halibut fishing (sportfishing is broadly defined as all non-commercial fishing). One exception is for a single treaty Indian fishery at the Metlakatla Reserve in Southeast Alaska. State regulations recognize subsistence, personal use, commercial, and sport uses of halibut. State regulations classifies all halibut harvested with a rod-and-reel as a sport harvest. Persons harvesting halibut with a rod-and-reel are required to obtain an Alaskan sport fishing license. However, most halibut fishers in rural Alaskan communities do not recognize their activities to be recreational in nature, but as subsistence or personal use, regardless of the gear type used to obtain it. The extent to which rural fisheries actually obtain sport fishing licenses to harvest halibut with rod and reels has never been assessed, or the extent to which subsistence patterns are constrained by the relatively restrictive sport fish bag limit (two fish per day). The rural halibut harvest with rod and reel is supposed to be counted through a statewide annual mailed survey to holders of sport fishing licenses by the Division of Sport Fish, ADF&G (cf., Mills 1992). Whether this survey adequately counts the rural take has been subject to debate in recent years, as discussed further below.

Halibut harvested with hand-held lines with no more than two hooks attached is classified as a "subsistence harvest" in state regulation, if the halibut is taken by state residents in waters open for subsistence fishing. A resident is not required to obtain a fishing license or a fishing permit to harvest halibut for subsistence uses.

Table 2.17. Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Area 2C													
Angoon	1987	2,876	*	8,088	10,964	54	*	5,226	5,281	2,930	*	13,315	16,245
Coffman Cove	1987	0	*	0	0	172	*	6,822	6,994	172	*	6,822	6,994
Craig	1987	1,117	*	7,842	8,959	2,775	*	9,283	12,058	3,892	*	17,125	21,017
Edna Bay	1987	0	*	0	0	1,760	*	4,061	5,820	1,760	*	4,061	5,820
Elfin Cove	1987	0	*	0	0	955	*	1,511	2,467	955	*	1,511	2,467
Gustavus	1987	0	*	1,318	1,318	553	*	10,816	11,369	553	*	12,134	12,687
Haines	1987	1,620	*	262	1,882	4,190	*	25,928	30,118	5,810	*	26,190	32,000
Hollis	1987	0	*	0	0	41	*	941	983	41	*	941	983
Hoonah	1987	10,649	*	5,101	15,750	1,027	*	18,075	19,102	11,675	*	23,177	34,852
Hydaburg	1987	4,128	*	6,007	10,134	0	*	1,924	1,924	4,128	*	7,930	12,058
Hyder	1987	0	*	0	0	1,350	*	3,578	4,928	1,350	*	3,578	4,928
Kake	1987	3,044	*	7,112	10,156	1,343	*	6,411	7,754	4,387	*	13,523	17,910
Kasaan	1987	0	*	287	287	21	*	223	245	21	*	511	532
Klawock	1987	467	*	12,713	13,180	798	*	19,243	20,041	1,265	*	31,956	33,221
Klukwan	1987	0	*	80	80	0	*	114	114	0	*	194	194
Metlakatla	1987	4,096	*	8,901	12,997	0	*	3,541	3,541	4,096	*	12,442	16,538
Meyers Chuck	1987	0	*	0	0	0	*	3,075	3,075	0	*	3,075	3,075
Pelican	1987	2,108	*	5,149	7,257	2,930	*	7,900	10,830	5,038	*	13,049	18,088
Petersburg	1987	2,108	*	10,493	12,601	13,490	*	132,409	145,899	15,597	*	142,902	158,499
Point Baker	1987	0	*	0	0	862	*	766	1,628	862	*	766	1,628
Port Alexander	1987	0	*	118	118	708	*	3,577	4,285	708	*	3,695	4,403
Port Protection	1987	115	*	115	230	391	*	2,137	2,528	506	*	2,252	2,758
Saxman	1987	141	*	1,118	1,259	0	*	2,235	2,235	141	*	3,353	3,494
Sitka	1987	1,651	*	36,524	38,176	14,779	*	204,192	218,971	16,430	*	240,716	257,146
Skagway	1987	0	*	1,870	1,870	0	*	3,071	3,071	0	*	4,941	4,941
Tenakee Springs	1987	183	*	1,521	1,704	426	*	3,737	4,163	609	*	5,258	5,867
Thorne Bay	1987	0	*	0	0	13,179	*	11,451	24,629	13,179	*	11,451	24,629
Whale Pass	1987	0	*	74	74	106	*	1,250	1,357	106	*	1,325	1,431
Wrangell	1987	6,166	*	30,786	36,952	7,798	*	27,814	35,613	13,964	*	58,601	72,565
TOTAL 2C	**	40,468	*	145,481	185,949	69,708	*	521,312	591,021	110,176	*	666,793	776,969
	Percent Gear	*21.8%*	*	*78.2%*	*100.0%*	*11.8%*	*	*88.2%*	*100.0%*	*14.2%*	*	*85.8%*	*100.0%*

** In 2C, household surveys did not ask about "other non-commercial gear".*

Table 2.17. Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Area 3A													
Akhiok	1992	41	1,845	0	1,886	0	0	32	32	41	1,845	32	1,918
Chenega Bay	1992	564	2,624	2,263	5,451	60	0	601	662	624	2,624	2,865	6,112
Cordova	1991	11,660	0	4,924	16,584	21,731	155	28,980	50,866	33,391	155	33,904	67,450
Karluk	1990	0	3,273	1,073	4,346	0	0	0	0	0	3,273	1,073	4,346
Kodiak City	1991	4,718	5,092	13,525	23,336	12,086	4,556	108,998	125,640	16,805	9,648	122,523	148,976
Larsen Bay	1993	1,873	2,495	1,888	6,255	0	114	0	114	1,873	2,609	1,888	6,370
Nanwalek	1991	0	1,953	4,903	6,856	0	0	953	953	0	1,953	5,856	7,809
Old Harbor	1991	2,240	10,575	2,798	15,612	0	0	2,171	2,171	2,240	10,575	4,968	17,783
Ouzinkie	1993	2,116	3,417	1,003	6,535	314	0	446	760	2,430	3,417	1,448	7,295
Port Graham	1991	2,212	6,445	3,102	11,759	0	0	0	0	2,212	6,445	3,102	11,759
Port Lions	1993	996	3,130	3,713	7,839	135	0	7,014	7,148	1,131	3,130	10,726	14,987
Seldovia	1991	3,115	110	3,038	6,262	1,407	125	9,555	11,087	4,522	235	12,593	17,349
Tatitlek	1991	122	1,134	2,145	3,401	0	0	0	0	122	1,134	2,145	3,401
Yakutat	1987	3,032	*	8,126	11,158	0	*	21,719	21,719	3,032	*	29,845	32,877
TOTAL 3A	**	20,423	34,349	44,240	99,013	13,942	4,795	150,854	169,592	34,366	39,145	195,094	268,605
	Percent Gear	*20.6%*	*34.7%*	*44.7%*	*100.0%*	*8.2%*	*2.8%*	*89.0%*	*100.0%*	*12.8%*	*14.6%*	*72.6%*	*100.0%*
	** In Yakutat, household surveys did not ask about "other non-commercial gear".*												
Area 3B													
Chignik Bay	1991	1,438	3,227	560	5,225	374	0	0	374	1,812	3,227	560	5,599
Chignik Lagoon	1989	918	499	0	1,416	319	239	0	559	1,237	738	0	1,975
Chignik Lake	1991	2,889	1,932	0	4,821	0	527	0	527	2,889	2,459	0	5,348
Cold Bay	**	*	*	*	*	*	*	*	*	*	*	*	*
False Pass	1988	336	332	901	1,568	0	71	237	308	336	403	1,138	1,876
Ivanof Bay	1989	0	1,091	638	1,729	0	0	0	0	0	1,091	638	1,729
King Cove	1992	7,396	1,135	0	8,531	289	560	454	1,303	7,685	1,695	454	9,834
Nelson Lagoon	1987	0	0	0	0	0	0	0	0	0	0	0	0
Perryville	1989	420	4,772	1,506	6,698	0	626	0	626	420	5,399	1,506	7,324
Sand Point	1992	6,364	7,222	367	13,953	1,934	2,000	707	4,641	8,299	9,222	1,074	18,594
TOTAL 3B	**	19,761	20,209	3,971	43,941	2,916	4,023	1,398	8,337	22,677	24,232	5,369	52,279
	Percent Gear	*45.0%*	*46.0%*	*9.0%*	*100.0%*	*35.0%*	*48.3%*	*16.8%*	*100.0%*	*43.4%*	*46.4%*	*10.3%*	*100.0%*
	** Halibut harvests undocumented.*												

Table 2.17. Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Area 4A-D													
Akutan	1990	2,504	8,082	548	11,133	422	0	0	422	2,926	8,082	548	11,556
Atka	1994	427	3,874	551	4,852	0	74	0	74	427	3,948	551	4,926
Nikolski	1990	0	11,836	0	11,836	0	0	0	0	0	11,836	0	11,836
St. George	1994	1,204	4,928	0	6,133	0	0	0	0	1,204	4,928	0	6,133
St. Paul	1994	18,672	48,411	0	67,083	0	1,271	125	1,396	18,672	49,682	125	68,479
Unalaska	1994	1,746	8,804	10,717	21,267	12,359	3,777	106,508	122,644	14,105	12,580	117,225	143,911
TOTAL 4A-D	**	24,553	85,935	11,816	122,304	12,781	5,122	106,633	124,536	37,335	91,057	118,449	246,841
	Percent Gear	*20.1%*	*70.3%*	*9.7%*	*100.0%*	*10.3%*	*4.1%*	*85.6%*	*100.0%*	*15.1%*	*36.9%*	*48.0%*	*100.0%*
Area 4E													
Chefornak	Est		12,800		12,800				*		12,800		12,800
Gambell	**				*				*				**
Mekoryak	Est		7,080		7,080				*		7,080		7,080
Newtok	Est		8,280		8,280				*		8,280		8,280
Nightmute	Est		6,120		6,120				*		6,120		6,120
Savoonga	**				*				*				**
Toksook Bay	Est		16,800		16,800				*		16,800		16,800
Tununak	1986		40,754		40,754				*		40,754		40,754
Wales	**				*				*				**
Aleknagik	**				*				*				**
Clark's Point	**				*				*				**
Dillingham	1984				0				*				0
Egegik	1984	0	0	286	286				*	0	0	286	286
King Salmon	**				*				*				**
Kipnuk	**				*				*				**
Kongiganak	**				*				*				**
Levelock	1989		528		528				*		528		528
Manokotak	**				*				*				**
Naknek	**				*				*				**
Nome	**				*				*				**
Pilot Point	1987	229	0	70	299				*	229	0	70	299
Port Heiden	1987	0	197	0	197				*	0	197	0	197
South Naknek	1992	116	28	0	144				*	116	28	0	144
Alakanuk	**				*				*				**
Bethel	**				*				*				**
Brevig Mission	**				*				*				**
Chevak	**				*				*				**
Eek	**				*				*				**

Table 2.17. Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Elim	**				*				*				**
Emmonak	**				*				*				**
Golovin	**				*				*				**
Goodnews Bay	**				*				*				**
Hooper Bay	**				*				*				**
Kotlik	**				*				*				**
Koyuk	**				*				*				**
Kwigillingok	**				*				*				**
Napakiak	**				*				*				**
Napaskiak	**				*				*				**
Oscarville	**				*				*				**
Platinum	**				*				*				**
Quinhagak	**				*				*				**
Scammon Bay	**				*				*				**
Shaktoolik	**				*				*				**
Sheldon Point	**				*				*				**
St. Michael	**				*				*				**
Stebbins	**				*				*				**
Teller	**				*				*				**
Togiak	**				*				*				**
Tuntutuliak	**				*				*				**
Twin Hills	**				*				*				**
Ugashik	1987				0				0				0
Unalakleet	**				*				*				**
White Mountain	**				*				*				**
TOTAL 4E	**	345	92,587	356	93,288	0	0	0	0	345	92,587	356	93,288
	Percent Gear	*0.4%*	*99.2%*	*0.4%*	*100.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.4%*	*99.2%*	*0.4%*	*100.0%*

*** Halibut harvests undocumented.*

Note: Round Weight (Not Eviscerated, Head On) = Usable Wt (Eviscerated, Head Off)/.7519

Table 2.18. Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Rural Residents and Halibut District

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Area 2C	**	40,468	*	145,481	185,949	69,708	*	521,312	591,021	110,176	*	666,793	776,969
Area 3A	**	20,423	34,349	44,240	99,013	13,942	4,795	150,854	169,592	34,366	39,145	195,094	268,605
Area 3B	**	19,761	20,209	3,971	43,941	2,916	4,023	1,398	8,337	22,677	24,232	5,369	52,279
Area 4A-D	**	24,553	85,935	11,816	122,304	12,781	5,122	106,633	124,536	37,335	91,057	118,449	246,841
Area 4E	**	345	92,587	356	93,288	0	0	0	0	345	92,587	356	93,288
Total Rural Places		105,550	233,080	205,864	544,495	99,348	13,941	780,198	893,486	204,899	247,021	986,062	1,437,982
Percent Gear		*19.4%*	*42.8%*	*37.8%*	*100.0%*	*11.1%*	*1.6%*	*87.3%*	*100.0%*	*14.2%*	*17.2%*	*68.6%*	*100.0%*

Table 2.19. Per Capita Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
District 2C													
Angoon	1987	6.7	*	18.7	25.4	0.6	*	54.1	54.6	5.6	*	25.6	31.2
Coffman Cove	1987	0.0	*	0.0	0.0	0.9	*	36.7	37.6	0.9	*	36.7	37.6
Craig	1987	3.0	*	20.7	23.7	3.4	*	11.5	15.0	3.3	*	14.5	17.8
Edna Bay	1987	0.0	*	0.0	0.0	25.4	*	58.6	84.0	25.4	*	58.6	84.0
Elfin Cove	1987	0.0	*	0.0	0.0	16.0	*	25.2	41.2	16.0	*	25.2	41.2
Gustavus	1987	0.0	*	101.6	101.6	3.8	*	74.8	78.6	3.6	*	79.7	83.3
Haines	1987	9.9	*	1.6	11.5	2.8	*	17.6	20.4	3.6	*	16.1	19.7
Hollis	1987	0.0	*	0.0	0.0	0.7	*	14.7	15.4	0.5	*	11.9	12.4
Hoonah	1987	23.0	*	11.0	34.0	3.8	*	66.2	70.0	16.7	*	33.1	49.8
Hydaburg	1987	11.8	*	17.1	28.9	0.0	*	68.9	68.9	10.9	*	20.9	31.8
Hyder	1987	0.0	*	0.0	0.0	17.3	*	45.9	63.3	17.3	*	45.9	63.3
Kake	1987	6.4	*	14.8	21.2	6.1	*	38.6	46.7	6.8	*	21.1	27.9
Kasaan	1987	0.0	*	13.7	13.7	1.1	*	11.8	12.9	0.5	*	12.8	13.3
Klawock	1987	1.1	*	28.8	29.8	2.2	*	53.4	55.6	1.6	*	40.4	42.0
Klukwan	1987	0.0	*	0.7	0.7	0.0	*	7.1	7.1	0.0	*	1.5	1.5
Mellakatla	1987	2.9	*	6.4	9.3	0.0	*	22.6	22.6	2.6	*	8.0	10.6
Meyers Chuck	1987	0.0	*	0.0	0.0	0.0	*	102.5	102.5	0.0	*	102.5	102.5
Pelican	1987	26.4	*	64.4	90.8	18.0	*	48.5	66.6	21.0	*	54.5	75.6
Petersburg	1987	3.2	*	15.7	18.9	4.2	*	41.7	45.9	4.2	*	38.2	42.4
Point Baker	1987	0.0	*	0.0	0.0	24.6	*	21.9	46.5	24.6	*	21.9	46.5
Port Alexander	1987	0.0	*	36.7	36.7	6.8	*	34.2	41.0	6.6	*	34.7	41.3
Port Protection	1987	53.2	*	53.2	106.4	7.0	*	38.1	45.0	8.7	*	38.6	47.3
Saxman	1987	0.6	*	4.9	5.5	0.0	*	58.1	58.1	0.5	*	13.0	13.5
Sitka	1987	0.8	*	17.4	18.1	2.4	*	33.5	35.9	2.0	*	29.9	31.9
Skagway	1987	0.0	*	32.3	32.3	0.0	*	5.8	5.8	0.0	*	8.5	8.5
Tenakee Springs	1987	31.9	*	266.0	297.9	4.8	*	42.0	46.8	6.4	*	55.5	62.0
Thorne Bay	1987	0.0	*	0.0	0.0	27.2	*	23.6	50.8	27.5	*	23.9	51.5
Whale Pass	1987	0.0	*	14.9	14.9	2.3	*	27.2	29.5	2.1	*	26.0	28.1
Wrangell	1987	4.6	*	23.1	27.7	4.9	*	17.6	22.6	4.9	*	20.6	25.6
Average		6.4		26.3	32.7	6.5		38.0	44.5	7.7		31.7	39.4

** In 2C, household surveys did not ask about "other non-commercial gear".*

Table 2.19. Per Capita Halibut Harvests (Lbs Rd Wt) for Non-Commercial Use by Residents of Alaska Rural Places

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
District 3A													
Akhiok	1992	0.6	24.6	0.0	25.2	0.0	0.0	6.3	6.3	0.5	23.1	0.4	24.0
Chenega Bay	1992	7.0	32.7	28.2	67.9	5.9	0.0	59.1	65.0	6.9	29.0	31.7	67.6
Cordova	1991	20.9	0.0	8.8	29.7	12.6	0.1	16.7	29.4	14.6	0.1	14.8	29.5
Kariuk	1990	0.0	40.1	13.2	53.3	0.0	0.0	0.0	0.0	0.0	39.6	13.0	52.6
Kodiak City	1991	4.0	4.3	11.4	19.7	2.8	1.0	24.9	28.7	3.0	1.7	22.1	26.8
Larsen Bay	1993	15.8	21.0	15.9	52.6	0.0	10.4	0.0	10.4	14.4	20.1	14.5	49.1
Nanwalek	1991	0.0	12.8	32.1	44.9	0.0	0.0	112.3	112.3	0.0	12.1	36.3	48.5
Old Harbor	1991	11.7	55.2	14.6	81.4	0.0	0.0	86.3	86.3	10.3	48.8	22.9	82.0
Ouzinkie	1993	9.9	16.0	4.7	30.5	15.9	0.0	22.5	38.4	10.4	14.6	6.2	31.2
Port Graham	1991	15.1	43.9	21.1	80.1	0.0	0.0	0.0	0.0	13.7	40.0	19.3	73.0
Port Lions	1993	5.4	16.9	20.1	42.4	2.6	0.0	136.0	138.7	4.8	13.2	45.4	63.4
Seldovia	1991	17.0	0.6	16.5	34.1	5.7	0.5	38.7	44.9	15.9	0.3	50.4	66.6
Tatitlek	1991	1.2	10.9	20.7	32.8	0.0	0.0	0.0	0.0	1.1	10.5	19.9	31.5
Yakutat	1987	8.4	*	22.4	30.8	0.0	*	94.3	94.3	5.1	*	50.7	55.8
Average		8.3	21.5	16.4	44.7	3.2	0.9	42.7	46.8	7.2	19.5	24.8	50.1

** In Yakutat, household surveys did not ask about "other non-commercial gear".*

District 3B													
Chignik Bay	1991	20.3	45.5	7.9	73.7	38.2	0.0	0.0	38.2	22.5	40.0	6.9	69.4
Chignik Lagoon	1989	31.6	17.2	0.0	48.8	26.6	19.9	0.0	46.5	30.2	18.0	0.0	48.2
Chignik Lake	1991	23.9	16.0	0.0	39.8	0.0	54.7	0.0	54.7	22.1	18.8	0.0	40.9
Cold Bay	**	*	*	*	*	*	*	*	*	*	*	*	*
False Pass	1988	5.5	5.4	14.6	25.5	0.0	9.2	30.8	40.0	4.8	5.8	16.4	27.1
Ivanof Bay	1989	0.0	34.1	19.9	54.0	0.0	0.0	0.0	0.0	0.0	34.1	19.9	54.0
King Cove	1992	17.0	2.6	0.0	19.6	2.3	4.5	3.7	10.5	13.7	3.0	0.8	17.6
Nelson Lagoon	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perryville	1989	3.8	43.8	13.8	61.4	0.0	90.9	0.0	90.9	3.6	46.6	13.0	63.2
Sand Point	1992	14.2	16.2	0.8	31.2	12.2	12.6	4.5	29.2	13.7	15.2	1.8	30.7
Average		12.9	20.1	6.3	39.3	8.8	21.3	4.3	34.5	12.3	20.2	6.5	39.0

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Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

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	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
District 4A-D													
Akutan	1990	25.9	83.6	5.7	115.1	68.1	0.0	0.0	68.1	28.8	79.5	5.4	113.7
Atka	1994	49.9	5.5	7.1	62.5	0.0	10.3	0.0	10.3	5.0	46.5	6.5	58.0
Nikolski	1990	0.0	295.9	0.0	295.9	0.0	0.0	0.0	0.0	0.0	243.7	0.0	243.7
St. George	1994	31.4	7.7	0.0	39.1	0.0	0.0	0.0	0.0	6.7	27.5	0.0	34.2
St. Paul	1994	120.8	46.6	0.0	167.4	0.0	13.8	1.4	15.2	37.9	100.8	0.3	139.0
Unalaska	1994	31.1	6.2	37.9	75.2	8.0	2.5	69.1	79.5	7.7	6.9	64.2	78.8
Average		43.2	74.2	8.4	125.9	12.7	4.4	11.7	28.8	14.4	84.1	12.7	111.2
District 4E													
Chefornak	Est		40.0		40.0						40.0		40.0
Gambell	**												
Mekoryak	Est		40.0		40.0						40.0		40.0
Newtok	Est		40.0		40.0						40.0		40.0
Nightmute	Est		40.0		40.0						40.0		40.0
Savoonga	**												
Toksook Bay	Est		40.0		40.0						40.0		40.0
Tununak	1986		124.3		124.3						124.3		124.3
Wales	**												
Aleknagik	**												
Clark's Point	**												
Dillingham	1984				0.0								
Egegik	1984			2.9	2.9							2.9	2.9
King Salmon	**												
Kipnuk	**												
Kongiganak	**												
Levelock	1989		4.9		4.9						4.9		4.9
Manokotak	**												
Naknek	**												
Nome	**												
Pilot Point	1987	3.5		0.1	4.6					3.5		0.1	4.6
Port Heiden	1987	1.9			1.9					1.9			1.9
South Naknek	1992	1.1	0.3		1.4					1.1	0.3		1.4
Alakanuk	**												
Bethel	**												
Brevig Mission	**												
Chevak	**												
Eek	**												
Elim	**												
Emmonak	**												

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Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

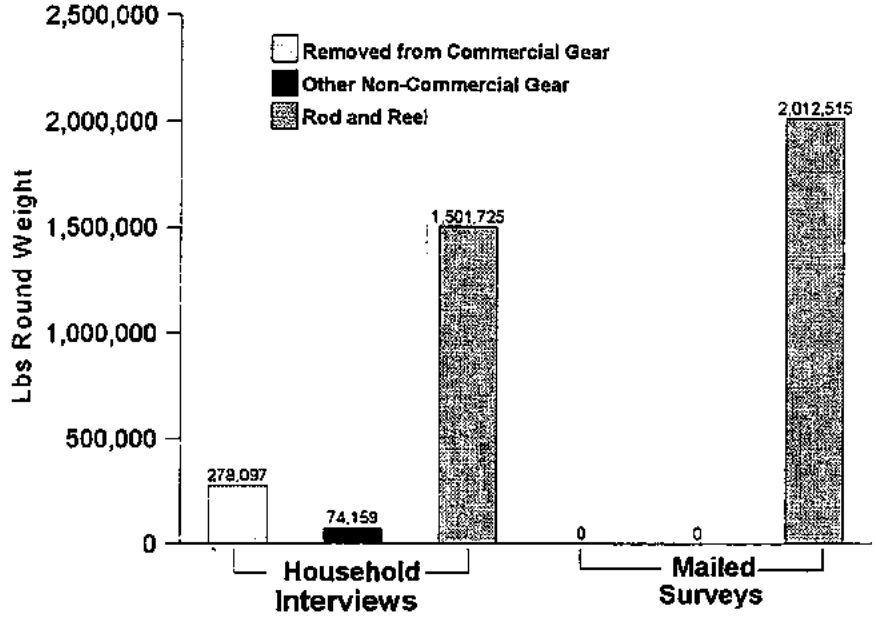
		Harvests by Alaska Native Households				Harvests by Non-Native Households				Total Harvests by All Households			
	Survey Year	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined	Removed from Commercial Gear	Other Non-Commercial Gear	Rod and Reel Gear	All Gear Types Combined
Gotovin	**												
Goodnews Bay	**												
Hooper Bay	**												
Kotlik	**												
Koyuk	**												
Kwigillingok	**												
Napakiak	**												
Napaskiak	**												
Oscarville	**												
Platinum	**												
Quinhagak	**												
Scammon Bay	**												
Shaktoolik	**												
Sheldon Point	**												
St. Michael	**												
Stebbins	**												
Teller	**												
Togiak	**												
Tuntutuliak	**												
Twin Hills	**												
Ugashik	1987				0.0								0.0
Unalakleet	**												
White Mountain	**												
Average		2.2	41.2	1.5	26.2					2.2	41.2	1.5	28.3

*** Halibut harvests undocumented.*

Note: Round Weight (Not Eviscerated, Head On) = Usable Wt (Eviscerated, Head Off)/.7519

As stated above, long lines are also set for noncommercial halibut in many rural communities. There is currently no system for counting this harvest on an annual basis or to identify the numbers and locations of subsistence halibut fishers in Alaska. The harvest of halibut with these gear types has been estimated only for certain communities and years by the Division of Subsistence household surveys (see Table 2.17). State regulations also recognize a "personal use" harvest of halibut by residents. The personal use designation has shifted over the past decade, from halibut fishing with hand-held lines by residents of nonrural areas (circa 1982), to halibut fishing by state residents in nonsubsistence areas (circa 1990), to halibut in areas without customary and traditional use determinations for halibut (currently). Personal use fishers are required to obtain a sport fishing permit.

Estimated Rural Alaska Halibut Harvests Using Two Methods (from Wolfe 1992)



Halibut retained from a commercial catch for home use has an ambiguous standing in state regulation: it is referred to as both a "subsistence harvest" and a "personal use harvest" in portions of state regulation, if the halibut is taken by state residents. Halibut appears to be taken in a number of commercial fishing contexts, such as commercial salmon, black cod, rockfish, king and tanner crab, and halibut fishing. The amount of halibut retained for home use during the commercial halibut fishing is likely to have changed with the new IFQ system. The harvest of halibut retained from commercial gear for home use has been estimated only for certain rural communities and years by the Division of Subsistence household surveys (Table 2.17). Current IFQ and CDQ regulations require "take home' fish to be counted against IFQs and CDQs. An unsuccessful attempt occurred in 1993 to obtain estimates of retained takes during the commercial halibut fishery through log books by the IPHC (Trumble 1993).

For 1992, 1993, and 1994, the method for estimating the size of the noncommercial halibut harvest has been debated by staff of the IPHC and ADF&G (cf. Hoag 1993, Trumble 1993, Wolfe 1992). In 1992, extrapolating from ADF&G information sources, IPHC staff estimated the "subsistence" halibut catch in Alaska at 2.95 million lb, of which 1.95 million lb were fish not counted by the sport fish harvest surveys. After discussions with ADF&G staff at the 1992 annual meeting, IPHC staff agreed the estimate of the uncounted catch was too

high, and subsequently used an estimate of 1.0 million lb, a figure that ADF&G argued was still three times too high (International Pacific Halibut Commission 1993:25-26). ADF&G estimated the annual rural halibut harvest by gear type to be as follows: 278,000 lb retained from commercial gear; 74,000 lb from other noncommercial gear; and between 1.5-2.0 million lb from rod and reel (see Fig. 1). In 1993, using a different extrapolation method, IPHC staff estimated an uncounted annual noncommercial halibut harvest of 800,000 lb for fishers in Alaska waters, of which 600,000 lb were taken by rural residents, while ADF&G staff offered an estimate of 350,000 lb (Trumble 1993). The disagreements in estimates result from confusion over the basic characteristic of the rural fishery and ambiguity in what available data sets portray. The estimate of the rural take must be made by compositing information from the mailed survey of sport anglers and intermittent rural household interviews, extrapolating the data to unsurveyed years and communities. An analysis of the expansion methodology pointed out a number of untested assumptions (Wolfe 1992).

One untested assumption is that halibut harvests of rural fishers using hook and line are covered by the mailed survey of sport anglers conducted by the Division of Sport Fish, ADF&G (cf. Mills 1992, Wolfe 1992). This annual questionnaire and reminders are mailed to a random sample of persons who purchased Alaska sport fishing licenses the previous year. The mailed questionnaire asks information on the number of anglers, trips, days fished, and catch by location for all sport species. Information is expanded to the total estimated number of sport fishing license holders to arrive at total Alaska harvest estimates. The mailed harvest survey provides a reliable estimate for rural communities if two conditions are met: halibut anglers in rural areas obtain fishing licenses, and halibut anglers in rural areas respond to mailed surveys at the same rates as halibut anglers in urban areas. Each of these conditions are untested. It is possible that many halibut anglers in rural Alaska areas do not obtain sport fishing licenses, because they do not consider their harvest activities to be sport fishing. Fishers who do not obtain licenses will be missed as part of the sampling universe, will not be surveyed, and will not be expanded to in statistical analysis. It is also probable that fishers from small rural communities do not respond to mailed surveys at the same rates as urban anglers. This may be particularly true of Alaska Native fishers who have less cultural experience with complex mailed surveys. The poorer response rate is likely to introduce a bias in the extrapolated harvest, as fishing patterns by urban anglers differ considerably from those of small rural communities.

A second set of assumptions pertain to extrapolating from the harvest data set collected from household interviews conducted by the ADF&G Division of Subsistence. One problem with this data set is the age of the data for particular areas. In particular, the last household interviews in rural southeast Alaska communities, a major area for halibut fishing, were conducted in 1987. Extrapolating old harvests to current fishing conditions is only valid if there have been no major changes in the fisheries. This assumption has not been examined by repeat interviews. A second problem is that some of the older interviews did not consistently ask about harvests from all gear types. For instance, in the 1987 southeast Alaska interviews, fishers were asked about retaining halibut from commercial harvests and about fishing with rod and reel, but were not asked about harvests with long line hooks set outside the commercial fishing season. Because of this missing information, the percentage of take by gear type used to extrapolate the harvest is suspect (that is a report of 0 lb reported as subsistence halibut removals is obviously not valid). Some rural communities have never been surveyed, such as the Yup'ik communities of the Nelson and Nunivak islands area in western Alaska. A third problem is how to expand from surveyed to unsurveyed communities. The IPHC expansion of rural harvests to certain unsurveyed areas (such as the road-connected southcentral area) resulted in overestimates of the noncommercial takes. Communities should be grouped into strata by catch characteristics and expansion should be done for each stratum separately to reduce this expansion bias. However, the basis for these groupings has not been established.

2.6 Biological Concerns

The IPHC is tasked with the management of Pacific halibut related to biological or conservation issues. In this regard, the IPHC has found personal use halibut harvests troublesome since these harvests are not strictly

monitored. Rural Alaskans were estimated to take home approximately 607,600 lb of halibut each year (IPHC 1994). Most are taken in Area 2C, and the least, in Area 4. This amount included commercially harvested halibut that were taken home by the crew. Beginning with initial implementation of the IFQ fishery in 1995, these commercial harvests were required to be counted against IFQs. Consequently, current accounting for "take home" or subsistence halibut is estimated to be 228,000 lb RWT (IPHC 1994). The total sums catches by area: 0 lb in Area 2C; 97,000 lb in Area 3A; 37,000 lb in Area 3B; and 94,000 in Area 4 (IPHC 1997).

It is apparent from the lack of reported subsistence landings from Area 2C, that current reporting does not accurately reflect current levels of halibut subsistence removals. Some harvests taken on sportfishing gear by Alaska Native in rural communities have been traditionally sold and some harvests to feed families in rural, coastal Alaska Native villages by Tribal members are counted as sport harvests. All halibut takes are reported as either commercial or sport harvests. Since "take home" harvests from commercial gear are required to be counted against IFQs and all other non-commercial harvests are limited to the sportfish bag limit and gear restrictions, the confounding of subsistence statistics is not surprising. IPHC and ADF&G are currently consulting on an improved determination of "personal use" removals. However, since all harvests are accounted for, although misreported, it has not been considered a threat to the biological resource. Estimates of halibut subsistence removals are estimated at less than a few percent of total removals and are discussed further in Section 3. Improved estimates of halibut removals for personal use/sportfish/subsistence should result from the proposed Council action.

3.0 DESCRIPTION OF THE SOCIAL ENVIRONMENT

This chapter describes the dependence of fishermen and communities on the halibut fishery, with special attention given to the differing economies found in rural and urban communities. The Council's choice for a preferred alternative for defining halibut subsistence in Alaska will result in a variety of effects on those who participate in halibut fisheries and to the communities that are involved in them. Of particular concern are the expected effects on the participation in the fisheries by residents of rural areas adjacent to subsistence fishing grounds.

The material presented in this chapter is adapted from the public review draft of the EIS/RIR/IRFA for the Proposed Individual Fishing Quota Management Alternatives for the Halibut Fisheries in the GOA and BSAI (NPFMC 1991). It has been updated using ADF&G Subsistence Division household surveys, where available. More specific information on individual Alaskan coastal communities can be found in *Faces of the Fisheries* prepared for the Council's 'Comprehensive Rationalization' Process in 1994.

Information considered in this chapter has been drawn from published materials (see bibliography) and the data files of the Alaska Commercial Fisheries Entry Commission (CFEC), Alaska Department of Fish and Game Subsistence Division (Subsistence Division), and the International Pacific Halibut Commission (IPHC). Additional data has been provided by the U.S. Department of Agriculture [Forest Service (USFS)], U.S. Department of Commerce [Bureau of Census and National Marine Fisheries Service (NMFS)], and the U.S. Department of Interior [Minerals Management Service (MMS) and Park Service].

3.1 The Halibut Fishery

Alaskan rural communities, in which the preponderance of smaller vessels are based, are socially and culturally tied to local fishing areas. In the case of Alaska Natives these areas have been defined since before the start of the commercial halibut fishery in 1878 (Betts and Wolfe, 1990). Thus investment in the smaller vessels is related to local operating areas, and this segment of the fleet is less mobile and thus less able to seek out new fishing areas. In 1990, nearly 40% of vessels fishing for halibut were less than 36 feet in length and their proportion of the total catch landed was less than 9%. These smaller vessels totaled 1,811 in 1990, increasing 32% from 1984, mostly in vessels between 31 and 35 feet. Vessels between 36 and 55 ft more than doubled to 1,955 by 1990. Larger vessels greater than 56 feet tripled to 728 in 1990.

Some rural communities, and some urban communities, engage in a seasonal round of fisheries for commercial and subsistence purposes. Typically these fisheries include salmon, halibut, herring, crab, sablefish and rockfish. The fishermen who participate in the halibut fishery usually fish commercially in at least two other fisheries (Langdon and Miller 1984). With the increasing restrictions on days fished in the open access halibut fishery, and occasional conflicts with seasonal openings in other fisheries, the small boat fleet took fewer halibut in the open access commercial fishery because they are less mobile (and unable to fish in other areas) and have less fishing power. Heavy weather on fishing days also restricted the activities of the small boat fleet during halibut openings. The same segment of the fleet is also active in the subsistence fisheries, often using "commercial" gear, and halibut harvests in the subsistence sector are often substantial. Most rural Alaskan communities have mixed cash-subsistence economies; of which neither sector is sufficient to support the community's population. Rural communities which experience a loss of income from commercial fishing experience disruption in the balance between cash economy and subsistence economy activities, to the detriment of the local economy, society, and traditional culture (R.J. Wolfe 1991, pers. commun. to P. Fricke). Alaskan rural communities strike a balance in their mixed cash-subsistence economy in order to maintain community viability (Wolfe and Walker 1987).

From a review of communities involved in the commercial or subsistence use of halibut, 115 Alaskan communities were found to have active participants in the fishery. Of these Alaskan communities, 101 were rural with mixed cash-subsistence economies (as determined by the Federal Subsistence Board), while 14 communities

were urban centers with cash-based economies. In Alaska, Wolfe and Bosworth (1990) estimated that approximately 80% of the population lives in urban areas, principally in and around Anchorage, Fairbanks, Juneau, the Kenai Peninsula, Kodiak City, and Sitka. One-fifth of the population, or some 110,000 people, lives in mixed-economy rural communities. Of this rural population, some 50,000 are Alaska Natives while 60,000 are non-Natives.

Participation in the fishery varies from IPHC region to region. Overall, Langdon and Miller (1984) reported that one-fifth of their study sample of fishermen in 1982 derived 100% of their gross fishing income from the halibut fishery. Given the length of seasons in the open access fishery, measured in days and hours, it can be surmised that these fishermen were part-time fishermen, who held other jobs. Area 2C, in particular, had this level of involvement in the halibut fishery but Area 3A also had a number of halibut-only fishermen (Wilkinson 1990). Both areas have significant numbers of small boats under 31 feet in length, and access to alternative employment. Wolfe (1991) reported that families in mixed cash-subsistence economies typically patch together multiple income streams because individual sources of income tend to be small and insecure. Langdon and Miller found that 45% of commercial halibut fishermen worked solely in the fishing industry; 55% of the 1982 sample had at least one shore-side job.

Langdon and Miller (1984) reported the average size of crew on halibut vessels, including captain, to be 3.7 persons. Noting that the structure of the fleet has changed and there are more larger vessels than before, but also that there have been technological advances in fishing gear and vessel design, it is estimated that there were some 16,920 fishermen active in the fishery in 1990. Average plant employment in Kodiak per day/shift was estimated to be 60 persons (Fricke 1991) and the average involvement of plants in processing halibut was four days of processing for every day of fishing activity (Impact Assessment Inc. 1991a: Kodiak 21; Fricke 1991). Thus, a "guesstimate" of involvement of processing workers in the 176 plants reported handling halibut from the 36 days of halibut fishing in 1990 can be derived. This "guesstimate" is that some 10,560 plant employees processed halibut at the point of landing and that the equivalent of 2,315 person-years of employment was generated.

The principal gear used in the directed halibut fishery is longline gear, but there are a number of hand and power trollers in the fishery in Area 2C. Longline vessels commonly fish for sablefish, Pacific cod, rockfish and halibut fisheries. Many vessels also fish for salmon in season. The dominance of the 35-55 feet-long size class can be attributed to the State of Alaska's 58-feet length overall rule for salmon seiners in the Gulf of Alaska. Similarly, the dominance of the 31-35 feet-long class in Area 4E (East Bering Sea) can be attributed to the 32-feet length-overall rule for Bristol Bay salmon seiners. Seine vessels, typically with a forward house, can be easily rigged for longlining (Bell 1981) but the traditional halibut schooner is less able to engage in the salmon fishery. The Alaska Native halibut fishery traditionally used hand lines with one or two hooks, or short skates of longline fished from canoes or bidarkas. Today, handlines are used in the commercial halibut fishery by Alaska Natives in only a few places (for example, Nelson Island) with most Alaska Native fishermen using long line gear from small boats. Handlines continue to be used in the subsistence halibut fishery. Alaska Native fishermen traditionally also trolled with their hand lines, and some modern salmon trollers also use troll gear for halibut today (Kelley 1991). Since the key to present-day fisheries in the waters off Alaska is flexibility in gear and vessel configuration, combination vessels designed for multiple gears and fisheries have evolved and now dominate the fleet.

3.1.1. Participation in the Fishery

In this section, information on participation in the fishery is summarized by IPHC halibut area. Overall, however, participation in the halibut fishery has been reduced under the IFQ program (CFEC 1996). Initial QS issuees totaled 7,391 at the start of the initial IFQ season in 1995, and were consolidated to 6,729 QS holders by the end of the season; a reduction of 9% as a result of voluntary transactions in areas 2C-4B. No transactions occurred in areas 4C-E. Alaskans represented the majority of QS both at the start and end of the 1995 season, ranging

from 31% of QS holders in Area 4D to 91% in Area 4E, although the overall number of QS holders declined.

3.1.1.1 Southeast Alaska (Area 2C)

Area 2C extends northwest from the United boundary line in the Dixon Passage to Cape Spencer. The Alexander Archipelago and an adjacent narrow coastal strip of mountains, glaciers, and icefields comprise this region of Alaska. With the exception of roads linking Haines and Skagway with the interior, transportation in Area 2C is by air or sea. The Alaskan ferry system, or "marine highway," links the majority of communities with Haines and Skagway to the north, and Prince Rupert, B.C. and Bellingham, WA to the south. The region's climate is relatively mild and wet, and supports extensive coastal forests. Most of the land area in Area 2C is held by USFS in the Tongass National Forest, but the Park Service also has extensive holdings of land in the Glacier Bay National Park. The activities of both agencies affect land and marine resource use by the approximately 65,000 residents of Area 2C.

While the region's major population center (Juneau) is fully integrated into the national economy, most of the region's smaller communities are supported by a traditional mixed cash-subsistence economy, in which there co-exist a subsistence sector and a market sector (Wolfe and Walker 1987). In the region's market sector economy, four industries dominate: commercial fishing, timber products, tourism, and employment generated by State oil revenues (Alaska Dept. of Fish and Game 1989). State, local, and Federal government employment is of considerable importance, particularly in the vicinity of Juneau, the State capital. In Area 2C, the commercial fishing industry employed 25% of the labor force (Langdon and Miller 1983). During the 1980s, logging or timber products were important sources of employment (i.e., over 25%) in Coffman Cove, Craig, Hoonah, Hydaburg, Klawock, North Whale Pass, and Thorne Bay. Fish processing plants are located in the predominantly non-Native communities of Ketchikan, Craig, Petersburg, Wrangell, Sitka, Juneau, Gustavus, and Pelican, and seasonal plants are in six other communities. In the ten predominantly Alaska Native and nine non-Native rural communities of southeast Alaska, commercial fishing is an important element in the cash or market sector of the local economy. During the 1980s, in the subsistence sector of the regional economy, about 4.5 million pounds of wild foods were processed annually by rural communities for family consumption. Of these foods about 51% was fish, including halibut; 27% was game; 19% was marine invertebrates, and 3% marine mammals.

Commercial and subsistence fishing for halibut are found in nearly every community in southeast Alaska (Table 3.1). In 1987, subsistence harvest of fish and shellfish included 235,000 pounds of Dungeness crab, 565,000 pounds of halibut, and 131,000 salmon. The take of subsistence halibut was equivalent to 5% of the commercial harvest in 1987 (Alaska Dept. of Fish and Game 1989). Subsistence harvest information is available for all Southeast Alaskan communities except Juneau and Ketchikan for which surveys of subsistence harvest and use have not been carried out. The most important commercial fishery to local communities, whose residents have limited entry permits, is that for salmon. Halibut fishing has occupied an important place in the spring, fall and winter fisheries, and herring, crab, sablefish, and rockfish complement the fisheries for halibut and salmon in the seasonal round of activities in Area 2C.

In 1984, 55% of commercial vessels fishing in Area 2C for halibut were less than 36 feet in length; this proportion of the fleet had decreased to 44.5% in 1990 although the absolute number of fishing boats in this size class increased to 662 (Table 3.2). The catch of the smallest boats, less than 26 feet long, totaled 1,195 pounds (3.8%) in 1990. Boats less than 26 feet long form 21% of Area 2Cs fleet. Vessels between 36 and 55 feet long formed 49% of the fleet and took 68% of the catch in 1990, with average individual boat catches of 9,101 pounds in 1990. These vessels, and larger classes too, were typically mobile within the Archipelago and would then move to the west following the sablefish and halibut openings in Area 3A. It has been estimated that approximately 12% of the fleet which longlines for sablefish and halibut in the southeast Alaska and East Yakutat districts moved further west as the open access season advanced and continued longlining in the West Yakutat, Kodiak, and southwest districts (J. Gharrett, pers. commun. to P. Fricke 1991). The smaller vessels (less than 30 feet in length) rarely fished outside southeast Alaska.

Table 3.1 1990 Population, Distribution of Halibut Permits and Landings in Southeast Alaskan Communities (Area 2C)

			Halibut		
Community	Pop. N	Native Pop %	Permits N	Commerc lb	Subsist lb*
Juneau	26,751	11.2	213	390,151	n/a
Ketchikan	13,459	11.1	128	1,036,245	n/a
Sitka	8,588	21.4	278	3,638,138	206,112
Petersburg	3,207	10.9	215	2,283,585	102,303
Wrangell	2,479	17.9	109	556,897	47,597
Metlakatla	1,407	80.2	27	234,650	11,256
Craig	1,260	32.3	65	677,596	16,884
Haines	1,238	18.9	74	44,198	18,322
Hoonah	795	79.9	59	703,747	29,733
Klawock	722	66.0	13	**	22,815
Kake	700	84.1	43	**	14,700
Skagway	692	4.6	2	**	4,429
Angoon	638	88.6	53	**	14,929
Thorne Bay	569	2.8	6	**	22,020
Hydaburg	384	84.9	28	**	9,178
Saxman	369	71.1	#	**	3,727
Gustavus	258	2.0	17	39,327	16,202
Pelican	222	18.3	40	1,132,088	12,632
Coffman Cove	186	0.0		**	5,264
Klukwan	129	83.7	#	**	150
Port Alexander	119	5.8	17	**	3,713
Hollis	111	18.0		**	1,032
Hyder	99	1.3	2	**	4,712
Tenakee Springs	94	5.1	5	**	4,362
Edna Bay	86	0.0	23	**	5,452
North Whale Pass	75	0.0	0	**	1,586
Port Protection	62	5.6	#	**	2,220
Elfin Cove	57	7.1	19	**	1,767
Kasaan	54	56.0	1	**	540
Point Baker	39	5.6	18	**	1,365
Meyers Chuck	37	0.0	5	**	2,853
Excursion Inlet##				1,052,386	
Killisnoo##				245	
Misc. SE Alaska Ports				3,676	
Totals	64,886		1,460	11,792,929	

Population data are from the 1990 Census 1990 permit and commercial landings data are from IPHC files.
* = 1990 Subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G).
** = Any commercial landings were at other ports.
n/a = Data not available.
= IPHC permit data are based upon postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.
= These are cannery/floating processor sites.

Table 3.2	Fleet Composition, Size Class, and Percent of Catch in the Halibut Fishery Off Alaska, 1990 (Area 2C)			
		1990		
IPHC Area	Vessel Size (ft)	N	% Fleet	% Catch
2C	<26'	308	20.7	3.8
	26-30'	132	8.9	3.0
	31-35'	222	14.9	8.7
	36-55'	722	48.5	67.8
	56'>	84	5.6	16.2
	n/a	22	1.5	0.6

Area, vessel, and catch data provided by IPHC 1991; all%ages are rounded
n/a = Vessel size data not available for these vessels.

Fishermen

Langdon and Miller's survey of fishermen found that crew size on vessels in Area 2C varied with the rural or urban nature of the community in which the fishermen resided. For urban communities, from which the larger vessels fished, crew size including captain averaged 3.6 persons in 1982, while for rural communities crew size averaged 3.0 persons. If crew sizes remained equivalent to those in 1982, it is estimated that 4,768 fishermen fished commercially for halibut in 1990 in Area 2C. At the start of the initial IFQ season in 1995, 1,963 Alaskans were awarded QS in Area 2C; by the end of the season 191 Alaskan QS holders transferred their shares to other individuals, leaving 1,772 active fishermen in the fishery. Crew sizes were reported to have declined, as QS holders pooled their IFQs and fished on fewer vessels during the longer, eight month season.

A similar disparity between urban and rural residence was found in kinship and crew patterns; Langdon and Miller found that rural crews were more likely to be formed with kinfolks than those fishing from urban communities. It should be noted here that crews from Alaska Native villages tend to be larger, and with greater involvement of kin, because of the cultural basis of fishing as a family economic activity and the cultural pattern of initiating young people into traditional occupations. Since the family is the "economic firm" in subsistence activities (a "domestic mode of production"), transfer of this pattern of activity to the commercial fishery is appropriate both culturally and economically in the mixed economy of rural communities.

The fishermen of southeast Alaska participate in a number of commercial fisheries. Langdon and Miller's data showed that halibut fishermen fished for a mean of 2.62 species, with a median of 2.48 species, during the fishing year. A 45-year old non-Native fisherman, self-described as a "seiner," from Angoon reported his seasonal round of fishing in 1990 as follows: "January: bait; February: crab; March: sac roe [herring], brown crab, and get ready for black cod; April, May: black cod (2 weeks here, 6 weeks off Seward coast); June: halibut (hits third opening), get ready for seining; July, August: seining; September: one day black cod, halibut, and usually fall dogs [salmon]" (Martha Betts 1991). According to Betts (1991), the pattern described by the seiner above is atypical; he fishes for crab and black cod "outside" the islands of the Alexander Archipelago while most seiners do not. Angoon and Kake fishermen, mostly Tlingit, seine for salmon, hand-troll for salmon (during seine closures) using skiffs, and long-line for halibut using seine boats. Some fishermen also use their boats as halibut tenders for other fishermen fishing from skiffs. Langdon and Miller (1983) reported that only 7.9% of the fishermen interviewed in Area 2C fished in just one fishery, while 42.9% fished in two directed fisheries, typically halibut and salmon. One-fifth of the fishermen in Langdon and Miller's sample fished for four or more species during the course of the year.

The demography of fishermen varies with residence in rural or urban communities. The mean age of all fishermen

surveyed by Langdon and Miller in 1982 was 38.8 years, with a median of 34.6 years. Fishermen from urban communities were younger, however, with an average age of 37 years compared to the mean age of 44 years in rural communities. Urban fishermen had completed more years of formal education than those from rural communities in Langdon and Miller's sample; 13.1 years of schooling compared to 10.1 years. Both of these indicators suggest that life in urban communities offers more opportunities for training and employment.

Income from the fishery varied considerably. For the communities with a mixed cash-subsistence economy, the halibut fishery is very important. A 50-year old Tlingit hand troller from Angoon, reporting on his 1990 season, said that "Angoon just wants to make living, not be huge highliners . . . one quarter of total income from fishery is from halibut. It's an important fishery. There are three 24-hour openings, whole summer of trolling [for salmon] won't equal what you make on halibut, considering costs" (Martha Betts 1991). As shown in Table 3.3, the mean personal taxable income in the rural community of Angoon is approximately half that of Juneau, emphasizing the importance of earnings from the commercial fishery to the small communities of Area 2C.

Table 3.3: Population, Mean Household Size, and Mean Taxable Income for Selected Communities with Halibut Harvests (Area 2C)

Community	Population (N)	Native Pop (%)	Household Size (N)*	Mean Taxable Income ($)**
Alaska, State	530,043	16.2	2.80	
Juneau	26,751	11.2	2.66	24,250
Petersburg	3,207	10.9	2.77	21,211
Angoon	638	88.6	4.09	11,563

Population data is from the 1990 census, U.S. Bureau of Census
* = Household size in mean number of persons
** = Mean taxable income per income return, 1981-1985; Alaska Department of Revenue

Fish Processing

In 1984, IPHC reported that there were 28 plants processing halibut in Area 2C communities. By 1990, this number had grown to 38 plants, reflecting the 167% increase in halibut catch to some 9,693,000 pounds. Table 3.1 shows the ports in which landings were made in southeast Alaska. With the exception of Craig, Hoonah, and Metlakatla, all the ports in which landings were made to processors had Alaska Native populations of less than 25% of their overall population. Employment in the plants in 1990 is estimated to be of the order of 3,800 persons on a seasonal basis. Sablefish, salmon, halibut, and herring, with some crab and rockfish are processed by these plants. The halibut fishery is estimated, conservatively, to provide the equivalent of 180 full-time year-round jobs in processing plants in southeast Alaska. Table 2.12 lists the ports and landings for IFQ halibut in 1996. Sitka was the top port in number of landing for all areas and ranked fifth in pounds landed. Petersburg and Hoonah ranked fourth and fifth for number of landings and fifth and seventh in total IFQ pounds landed.

3.1.1.2 Gulf of Alaska - Area 3A

Area 3A extends from the western end of Kodiak Island eastwards across the Gulf of Alaska to Cape Spencer. Within this region, three sub-regions can be easily defined - Prince William Sound, including Yakutat; Cook Inlet and the Kenai Peninsula; and Kodiak Island. This region had the largest halibut catches off Alaska, and the highest number of halibut fishery permit holders (1,602 or 42% of permits) in 1990. Tables 3.4 and 3.5 detail the population and communities, and the commercial and estimated subsistence landings in the region.

As in southeast Alaska, communities fall into rural and urban types. The urban areas of the Kenai peninsula and Anchorage dominate the economy of Alaska since more than half the population of the state lives in this sub-region. Valdez, Whittier, and Seward have primarily market-oriented economies in contrast to the other communities in the other sub-regions in Area 3A. Because the Division of Subsistence, Alaska Department of Fish and Game, has focused its research on those communities defined as rural by the Alaska Boards of Fish and Game, the non-commercial harvest of fish in this area is sketchily known for the communities of the Kenai Peninsula. Mixed cash-subsistence economies are found in the rural villages of Area 3A. The Kodiak Island communities produce about 5.5 million pounds of subsistence foods for family use annually; data for Prince William Sound communities for subsistence harvests prior to 1989 suggest a similar level of family consumption of wild foods (Wolfe 1991).

Kodiak, Homer, and Seward are the principal halibut ports and the sites of 31 processing plants in 1990. Cordova, Kenai, and Yakutat are the next most important ports, with 1.5 processing plants. Kodiak, Homer, and Seward ranked second, third, and sixth in pounds landed in 1996 (Table 2.12). For the initial year of IFQ fishing, 2,418 Alaskans received initial QS for Area 3A. By the end of the season, 2,211 QS holders (-9%) remained in the fishery (CFEC 1996).

This rural/urban split can be seen in the distribution of income in communities in Area 3A. In Table 3.6, the communities with processing facilities have incomes nearly double those without. The villages with no processing facilities are also those with high Alaska Native populations although, as we have seen in southeast Alaska, this is not necessarily concomitant with rural, low-income, mixed economy communities. The lack of available capital in the rural communities, and lack of diversified employment, serves to keep investment in the fisheries by residents of these communities relatively low, and promotes the use of a mixed cash-subsistence economy as the most economically efficient. Where rural communities have both a high Alaska Native population and relatively low cash incomes, investment in vessels is lower as is the harvest of halibut. These relationships can be found in Table 3.7.

The seiners with Alaskan limited entry permits are limited to 58 feet in length overall (50 feet between rudder and stemposts), and these vessels dominate the halibut fleet (Table 3.8). In 1990, there were 1,005 boats in the 36-55 feet-long size class operating in area 3A. The average catch per boat in this size class was 11,501 pounds of halibut in 1990. Vessels 56 feet or more in length totaled 423 in 1990, and their average halibut catch per boat was 35,073 pounds. The small boats totaled 504 boats in 1990 and averaged 1,049 pounds.

Increased fishing effort in Area 3A is attributed largely to vessels over 35 feet in length moving from Area 2C to fish halibut openings further to the west and to fish in the sablefish fishery. While investment in new vessels did occur, the restrictions on fishing days and areas caused vessel owners to move to new regions in order to find fish and meet their bills. The small boats, however, were not mobile and thus their reduced catches could not be increased by fishing in other areas.

Table 3.4 1990 Population and Distribution of Halibut Permits and Landings in Southcentral Alaskan Communities (Area 3A)--Kodiak Island, Prince William Sound and Yakutat Communities

			Halibut		
Community	Pop. N	Native Pop %	Permits	Commerc lb	Subsist lb*
Kodiak City	6,365	14.0	404	11,573,328	325,252
Valdez	4,068	5.7	29	598,497	n/a
Other Kodiak	3,643	9.5	#	**	n/a
Kodiak Station	2,291	0.6	0	**	n/a
Cordova (Eyak)	2,110	14.9	114	1,816,665	33,971
Yakutat	534	62.1	39	918,046	22,428
Old Harbor	284	92.6	12	**	16,103
Whittier	243	8.6	8	280,882	n/a
Port Lions	222	73.5	21	**	19,003
Ouzinkie	209	94.2	20	**	7,064
Larsen Bay	147	71.4	6	**	6,806
Tatitlek	119	77.9	1	**	2,785
Chenega Bay	94	77.0	0	**	3,882
Akhiok	77	96.2	#	**	1,871
Karluk	71	100.0	#	**	3,202
Port Bailey ##				728,754	n/a
Alitak ##				689,458	n/a
Totals	20,477		654	16,605,630	
Other Area 3A Communities	306,832		948	12,965,282	
Totals	327,309		1602	29,570,912	

Population data are from the 1990 Census 1990 permit and commercial landings data are from IPHC files.
* = 1990 Subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G).
** = Any commercial landings were at other ports.
n/a = Data not available.
= IPHC permit data are based upon postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.
= These are cannery/floating processor sites.

Table 3.5 1990 Population and Distribution of Halibut Permits and Landings in Southcentral Alaskan Communities (Area 3A)--Kenai Peninsula and Anchorage Area Communities

			Halibut		
Community	Pop. N	Native Pop %	Permits	Commerc lb	Subsist lb*
Anchorage	226,338	5.1	196	42,994	n/a
Matsu area	31,027	3.7	#	**	n/a
Kenai area	13,522	3.2	#	**	n/a
Kenai City	6,327	6.1	99	1,223,591	53,147
Wasilla	4,028	4.7	23	**	n/a
Sterling	3,802	1.7	9	**	n/a
Homer	3,660	3.0	293	5,877,869	94,428
Soldotna	3,482	3.1	73	**	n/a
Palmer	2,866	3.5	9	**	n/a
Nikiski	2,743	4.0	14	**	n/a
Seward	2,699	12.9	52	5,183,281	n/a
Big Lake	1,477	0.7	2	**	n/a
Fritz Creek	1,426	1.0	0	**	n/a
Anchor Point	866	1.8	53	**	n/a
Ninilchik	456	17.0	30	195,724	5,700
Kasilof	383	0.0	47	**	n/a
Seldovia	316	24.4	29	441,823	2,496
Willow	285	1.4	4	**	n/a
Cooper Landing	243	1.7	1	**	n/a
Port Graham	166	87.6	#	**	7,736
Hope	161	2.9	0	**	n/a
English Bay	158	79.0	#	**	6,051
Tyonek	154	92.9	0	**	n/a
Moose Pass	81	6.6	0	**	n/a
Clam Gulch	79	0.0	14	**	n/a
Halibut Cove	78	0.0	#	**	n/a
Sub-totals	306,832		948	12,965,282	
Other Area 3A Communities	20,477		654	16,605,630	
Totals	327,309		1,602	29,570,912	

Population data are from the 1990 Census 1990 permit and commercial landings data are from IPHC files.
* = 1990 Subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G).
** = Any commercial landings were at other ports.
n/a = Data not available.
= IPHC permit data are based upon postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.
= These are cannery/floating processor sites.

Table 3.6 Population, Mean Household Size, and Mean Taxable Income for Selected Alaskan communities with Halibut Harvests

Community	Population (N)	Native Pop. (%)	Household Size (N)*	Mean Taxable Income ($)**
Alaska, State	530,043	16.2	2.80	
Kodiak (City)	6,356	14.0	2.92	19,953
Kenai	6,327	6.1	2.70	24,995
Homer	3,660	3.0	2.54	18,515
Cordova	2,110	14.9	2.61	20,560
Yakutat	534	62.1	2.94	19,166
Ouzinkie	209	94.2	3.07	11,204
Port Graham	166	87.6	2.77	10,682

Population data is from the 1990 census, U.S. Bureau of Census
* = Household size in mean number of persons
** = Mean taxable income per income return, 1981-1985; Alaska Department of Revenue.

Table 3.7 Numbers and size of vessels used for commercial halibut fishing and catch, by community type, defined by proportion of Native population and mean personal income.*

Community Type	Vessel Size		
	<5 tons (N) a	>5 tons (N) b	Ratio of b/a (%)
Population with less than 25% Native	1217	1199	98.5
Population with more than 25% Native	355	157	44.2
Mean personal income less than $17,000	285	167	58.6
Mean personal income more than $17,000	1284	1183	92.1
	Mean Commercial Halibut Catch by Vessel Size (lb)		
Population with less than 25% Native	1306	16788	1285.4
Population with more than 25% Native	1498	8915	595.1
Mean personal annual income per income tax return, 1981-1985			

Table 3.8	Fleet Composition by Area, Size Class, and % of Catch in the Halibut Fishery Off Alaska, 1990			
		1990		
IPHC Area	Vessel Size (ft)	N	% Fleet	% Catch
3A	<26'	327	13.9	1.0
	26-30'	177	7.5	0.9
	31-35'	371	15.8	5.7
	36-55'	1005	42.8	40.1
	56'>	423	18.0	51.5
	n/a	43	1.8	0.7

Area, vessel, and catch data provided by IPHC, 1991; all % ages are rounded.
n/a = Vessel size data not available for these vessels.

Prince William Sound Sub-Region

In the Prince William Sound sub-region, the principal fisheries are for salmon using seines, drift gillnets and set gillnets. Crab, herring and sablefish are also important commercial and subsistence species. Processors operated in four ports, Yakutat, Cordova, Valdez, and Whittier, and vessels fished for halibut throughout Area 3A in 1990. Langdon and Miller (1984) noted that smaller boats (up to 15 nrt) predominated in the local fleet fishing for halibut in 1982. Valdez, an urban community, and Cordova are the major population centers, and there are six rural villages, including Yakutat, in this sub-region. Two villages can be considered to be Alaska Native villages. Total population for the sub-region's fishing communities in 1990 was 7,003, of whom 58% lived in Valdez. Subsistence fishing was an important part of the mixed economy of the rural communities, both Alaska Native and non-Native villages.

The Prince William Sound sub-region is a meeting place for Alaska Native cultures, due to its rich and diversified marine habitat, including significant marine mammal populations. The Eyak Indians have lived in the Cordova and Copper River area for some 3,000 years. Tlingit Indians are found in Yakutat and Cordova, while Athabaskan Indians remain in the Copper River area. Members of the Chugach Eskimos are in Tatitlek and Cordova, and in many of the other communities, too. Aleuts live in all the coastal communities of the sub-region. Principal land holder is the Federal government; the Chugach National Forest covers much of the Prince William Sound and Copper River watersheds.

Employment in the area has historically revolved around commercial fishing and the mining of gold, copper and other minerals (Schroeder et al. 1987). Tourism has increased as an economic activity, with development of guided and charter boat fishing services and the cruise ship services. Yakutat has a mixed cash-subsistence economy, for example, in which the cash employment sector includes government services (7%), schools (22%), commercial fishing and fish processing (32%), tourism (22%), and transportation (10%). With the exception of government employment, all wage-sector employment is seasonal. The development of Valdez as the terminus for the Trans-Alaska Pipeline and the Richardson Highway has led to rapid development of a marine services and transportation sector in that port coupled with a diversified industrial base supporting the oil industry. Whittier is also a transportation center as it is the terminus of the Alaskan Railroad, which links it, and western Prince William Sound to Anchorage. Cordova was the site of large scale copper mining activities between 1905 and the 1930s, when the mines closed; it and the other, smaller communities depended upon the seafood industry as the basis of the cash economy since that time. Employment of local residents in the commercial halibut fishery in the Prince William Sound sub-region was estimated to be 698 fishermen and 146 full-time equivalent (FTE) workers in processing plants in 1990. Seasonally, it was estimated that 2,805 individual workers process halibut.

Cook Inlet/Kenai Peninsula Sub-Region

Some 307,000 people resided in the communities in or abutting this sub-region in 1990. Residents held 948 halibut permits and it is estimated that the fishery employed some 3,120 fishermen and 294 FTE processing workers. The number of processing jobs has increased with the addition of 12 new plants since 1984 for a total of 34 processing halibut in 1990. The fish processing sector of the sub-region's economy employed 1,838 FTE workers; because of the seasonal nature of processing operations some 6,000 workers were involved during the course of a year.

The economy of the region is dominated by that of Anchorage and the development of the Cook Inlet and Kenai Peninsula oilfields. Founded in 1914 as a railroad construction camp, Anchorage is now the principal transportation center for central, western and Arctic Alaska, and is the state's center for banking and financial services, industry, and the wholesale and retail trades and their distribution networks. The city has grown very rapidly since the 1960s and has absorbed many local communities into its suburbs. The Kenai Peninsula/Cook Inlet communities have developed recreational and charter-boat fishing and other tourist facilities to serve Anchorage's population. Anchorage has a fleet of fishing vessels and 4 fish processing plants which handled 42,994 pounds of halibut in 1990. Persons with Anchorage addresses held 196 halibut permits in 1990.

The Kenai Peninsula has developed a diversified economy including oil production and refining, recreation and tourism, commercial fishing and fish processing, transportation and communications, and government services (Schroeder 1987). The majority of the communities are "new" non-Native towns; in 1890 only English Bay, Kasilof, Kenai, Ninilchik, Seldovia, and Seward were settlements. These towns, and Tyonek, had the only substantial proportions, that is more than 12%, of Alaska Native people in their populations. English Bay, Port Graham and Tyonek are in fact Alaska Native communities.

Homer, sometimes referred to as the "halibut capital," was developed as a farming, ranching, and fishing community. Some 293 halibut permits were held by persons with Homer addresses in 1990. However, since Homer shares its postal zip code with English Bay, Halibut Cove and Port Graham, some permits are in fact held by residents of those communities. Ten fish processing plants handled 5,877,869 pounds of halibut in 1990. Principal employment opportunities in Homer are divided between fishing and fish processing (23%), commercial services and government (38%), and farming or homesteading (10%).

Kenai and Seward also handle major landings of halibut. Seward, the southern terminus of the Alaska railroad, has 8 fish processing plants and some 52 residents hold halibut permits. Seward receives landings from vessels fishing in the Prince William Sound sub-region in addition to those of the local fleet fishing off the Kenai Peninsula, in the lower Cook Inlet, and southwesterly towards Kodiak.

Kodiak Sub-Region

Kodiak Island has a major urban center, the city of Kodiak, and five Alaska Native villages. Kodiak City is a predominantly Euro-American community with substantial Alaska Native and Filipino minority populations. Most of the Filipino, and the newly established Latin-American community work in the 12 fish processing plants active in the port in 1990. Crab, halibut, salmon and groundfish - including sablefish and Pacific cod - are the principal commercial fisheries, with herring and shrimp as secondary fisheries. The groundfish fleet based in Kodiak has switched from an emphasis on trawling to fishing with longlines and pot gear (for Pacific cod); this gear is similar to that used for halibut. Langdon and Miller (1984) report that the specialized, larger Kodiak halibut vessels fished throughout the Gulf of Alaska and Bering Sea grounds. Both Langdon and Miller (1984) and Tetra Tech (1981) reported that the smaller vessels fished close to Kodiak Island, and Tetra Tech reported that 80% of the small boat fleet fished exclusively for halibut on the grounds adjacent to Kodiak Island.

Kodiak Island and other nearby islands, including Afognak, Sitkalidak, and the Trinity Islands form a network of bays, fjords, and other bottom habitat which support an extremely productive fishery. The communities of the islands are accessible by sea or air, but the road system only extends from Kodiak to its immediate satellite communities. The remote villages, all with predominantly Alaska Native populations, are Ahkiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. None of the villages have fish processing plants, although there are seasonal canneries at Port Bailey and Alitak. Mixed cash-subsistence economies are found in all the communities, and halibut is important both for subsistence use and commercial sale. Alaska Native employment is in fishing rather than processing; most processing workers in Kodiak are Filipinos or Latin Americans. Seasonal summer employment is also available, but the majority of these employees are recruited from other states (Impact Assessment, Inc 1991). It is estimated that there is year-round employment for some 2,800 FTE workers in fish processing on the Island (of which 336 FTE jobs are related to halibut), and some 1,523 fishermen are employed in the halibut fishery. Impact Assessment, Inc. (1991) reported that 3,200 fishermen worked in Kodiak's fisheries, of whom 672 were skippers and 2,500 crew.

Fishermen

Estimates for the number of fishermen engaged in the halibut fishery were 1,523 in the Kodiak sub-region, some 3,120 in the cook Inlet/Kenai Peninsula area, and 698 for the Prince William Sound sub-region, for an estimated total of 5,341 in Area 3A. These fishermen do not include those from other areas who fish for and/or land halibut in Area 3A, nor does it include all fishermen who fish for subsistence use.

Langdon and Miller (1984) reported that the mean age of Kodiak halibut fishermen was 37.1 years, with a median age of 34.5. The rural/urban difference in demographic patterns discussed earlier is evident in the fishermen interviewed by Langdon and Miller; fishermen from the rural villages had a mean of 10.6 years of formal education, while those resident in Kodiak had a mean of 14.2 years. Rural fishermen had a mean of 14.4 years of experience in the halibut fishery in 1982, while Kodiak City fishermen had 6.8 years of experience. Some 88% of rural fishermen in Langdon and Miller's study were Aleuts, which is comparable to the proportion of Aleuts in the villages, and the urban sample was 95% Euro-American. Rural fishermen in Langdon and Miller's Kodiak Island sample received, in 1982, 39% of their gross earnings from the halibut fishery, while urban fishermen earned 31%. Of those vessel owners in the Kodiak study, 73% were sole owners of their vessels, and the balance had partners in their fishing vessel financing.

Fish Processing

There were 66 processing plants active in the halibut fishery in Area 3A in 1990. Some 786 full-time equivalent (FTE) jobs were created in the processing sector by the halibut fishery in 1990; this is approximately 15% of the 5,153 FTE employees in the area's fish processing industry. Because of the seasonal nature of the fishery, the number of processing workers who actually worked on halibut lines is estimated to be of the order of 11,000.

Processing line workers in Kodiak have been largely of Filipino descent. Relatively few, in proportion to their numbers in the population at large, Alaska Native work in the processing plants. Much of the seasonal labor for the processing of salmon is recruited outside the region.

3.1.1.3 Alaska Peninsula (Area 3B)

Seven of the ten fishing communities of the southwestern Alaska Peninsula are involved with the Area 3B halibut fishery (Table 3.9). Some 50% of halibut permit holders for 1990 have Sand Point addresses, and Langdon and Miller (1984) noted that 45% of the fishermen for halibut resided in Sand Point in 1982 at the time of their survey. The principal centers of fishing activity are Sand Point and King Cove, with Chignik also a major player. Although on the Peninsula, Nelson Lagoon is on the north side facing Bristol Bay and has no commercial or

subsistence fishery for halibut and pursues a salmon set-net fishery.

Table 3.9 1990 Population and Distribution of Halibut Permits and Landings in Southwest Alaskan Communities (Area 3B)

			Halibut		
Community	Pop. N	Alaska Native Pop. %	Permits N	Commerc. lb	Subsist. lb *
Sand Point	878	57.1	58	1,058,103	n/a
King Cove	541	79.8	38	1,598,466	n/a
Chignik Bay	188	53.4	9	918,322	9,062
Cold Bay	148	4.4	0	**	n/a
Chignik Lake	133	89.1	#	**	3,259
Perryville	108	92.8	2	**	5,130
Nelson Lagoon	83	93.2	0	**	0
False Pass	68	86.7	3	**	2,604
Chignik Lagoon	53	85.4	7	**	1,919
Ivanoff Bay	36	92.5	0	**	1,462
Totals	2,236		117	3,574,891	

Population data are from the 1990 U.S. census; 1990 permit and commercial landings data shown are from IPHC files.
* = 1990 Subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G).
** = Any commercial landings were at other ports.
# = IPHC permit data are based upon postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.

The villages active in the fishery have predominantly Alaska Native populations; however the population is a blend of Scandinavian, Scots, Aleut and Eskimo groups, and fishermen prefer to describe themselves as "locals." Sealers and fishermen from Seattle and the Pacific Northwest settled in Sand Point and King Cove at the turn of century, married Aleut or Eskimo women, and combined commercial fishing with the customary subsistence use of local resources to develop a very resilient mixed economy.

The major fisheries in the area are salmon, crab, Pacific cod and other groundfish, shrimp and halibut. A longline fishery for both halibut and Pacific cod has developed, and the catches are delivered to processors in Chignik, Sand Point and King Cove. In 1990, King Cove ranked 8th, Sand Point 14th, and Chignik ranked 18th in the volume of landings of halibut caught off Alaska according to IPHC landings data. Some 98% of these landings were taken in the immediate vicinity of the ports; the balance was caught in halibut openings to the West, in Area 4A, or in the Bering Sea.

The Area 3B fleet included 8 small skiffs with an average catch of halibut per boat of 940 pounds in 1990. The vessels in the 36-55 feet long class had an average catch of halibut per boat of 13,326 pounds. Vessels over 55 feet in length totaled 131 vessels and averaged 42,962 pounds per vessel in 1990 (Table 3.10).

Table 3.10	Fleet Composition by Area, Size Class and % of Catch in the Halibut Fishery off Alaska, 1990			
		1990		
IPHC Area	Vessel Size (ft)	N	% Fleet	% Catch
3B	<26'	5	1.3	0.1
	26-30'	3	0.8	<0.1
	31-35'	46	12.0	4.9
	36-55'	195	50.8	29.7
	56'>	131	34.1	64.7
	n/a	4	1.0	0.6

Area, vessel, and catch data provided by IPHC, 1991; all % ages are rounded.
n/a = Vessel size data not available for these vessels.

The communities in Area 3B are stable ones and growing steadily. In King Cove, for example, nearly 70% of the 1987 year-round population had lived in the community for 16 years or longer (Miller 1987). The movement of the fishing fleets through the area increases the population of King Cove by some 100 fishermen and 350 processing workers each summer. The processing workers live in company bunk houses, and are recruited from other parts of the United States. Chignik Lagoon has a similar in-migration of seasonal fishermen; in 1986, 36 houses (62% of the dwellings) in the community were owned by fishermen who lived in the community for three to six months each year. Seattle, Kodiak City and Anchorage were the most common winter addresses for these seasonal families (Morris 1987).

Although household size is high, relative to the state average, so are the relative incomes of residents of selected Area 3B communities (Table 3.11). Since there is a mixed cash-subsistence economy in Area 3B, the fishery makes a substantial contribution to both sectors. In Sand Point in 1987, 87% of employment was in commercial fishing and fish processing (Impact Assessment Inc 1991) and King Cove had a similar reliance on fishery employment. Construction trades, marine services, education and government, and trade accounted for the balance of employment in both communities.

Table 3.11	Population, Mean Household Size, and Mean Taxable Income for Selected Alaskan Communities with Halibut Harvests			
Community	Population N	Alaska Native Pop. (%)	Household Size (N)*	Mean Taxable Income ($)**
Alaska, State	530,043	16.2	2.80	
Sand Point	878	57.1	2.85	29,254
King Cove	541	79.8	2.98	19,197
Chignik Bay	188	53.4	3.48	16,403

Population data is from the 1990 census, U.S. Bureau or Census
Household size in mean number of persons
Mean taxable income per income tax return, 1981-1985; Alaska Department of Revenue.

Fishermen

Langdon and Miller note that the average age of Sand Point fishermen in 1982 was 40.7 years. Fishermen resident in Sand Point had a mean of 10.5 years of education. Halibut fishing in 1982 provided 35.9% of mean personal gross income, but the median gross personal income from halibut was 10%, indicating that some fishermen fished only for halibut, while the majority fished for salmon or other species in addition to halibut. Sand Point, unlike King Cove, had a fleet of vessels considered to be "local;" IAI note that, of the fleet of 21 groundfish vessels delivering to the Sand Point plant, 17 were 58 feet-long salmon limit seiners and only one boat was from "Outside," although some of the skippers and crew were seasonal residents from Anchorage and Seattle (IAI 1991a). The resident fleet in Sand Point numbered 127 in 1986. Of these vessels the majority fished in the salmon fishery and a few were involved in the halibut and herring fisheries (W 1991a: Sand Point Profile 18). It is estimated that 280 fishermen resident in Area 3B fished for halibut in 1990. For the initial year of IFQ fishing, 772 Alaskans received initial QS for Area 3B. By the end of the season, 706 QS holders (-9%) remained in the fishery (CFEC 1996).

A seasonal migration occurs of fishermen north and west from Washington State and, on a smaller scale, from Oregon. Area 3B provided 18.5% of the total catch of Washington-based vessels, which took 23.5% of Area 3B's halibut harvest. Prior to 1970, crews on "local" vessels were largely kin-based and few nonresidents were employed. In 1986, it was estimated, for Sand Point, that half of the crews on local seine vessels were non-residents outside the kinship system of hiring. Most of these fishermen came from Washington, Oregon and California, with some from the Mid-West (IAI 1991a). All "outside" boats were crewed by non-residents.

Fish Processing

In 1990 there were 4 fish processing plants in Area 3B, located in King Cove (1), Sand Point (1) and Chignik (2) (IPHC 1991). Chignik has had a commercial salmon and halibut processing plant (first in 1880, a saltery; then, a cannery, and now processor/freezer facilities) since the beginning of the halibut fishery. In 1982 it was estimated that some 600 non-resident seasonal workers worked on the processing lines of the original plant (Morris 1987), and the workforce has expanded with the building of the second plant in 1988. King Cove's processing facility was built in 1911 as a salmon packing plant, but it also handles halibut, crab, herring and groundfish in season. In 1987 the plant employed 336 seasonal workers and 5 permanent employees (Miller 1987). King Cove and Sand Point landed about one million pounds of IFQ halibut in 1996.

Sand Point has had a salmon processing plant since 1931, although the community had been active in the Pacific cod fishery since 1890 (Langdon 1982). Until 1986, processing workers had been principally local residents. However, the new owners of the plant, Trident Seafoods, adopted a policy of hiring non-residents on six-month contracts and lodging them in company bunkhouses. Employment at the plant ranged from 360 persons at the height of the Pacific cod fishery to between 60 and 180 workers at other times.

3.1.1.4 Aleutian and Pribilof Islands (4A, 4B, 4C and 4D)

These areas extend west of Unimak Pass (Cape Lutke) along both sides of the Aleutian Island chain, and west of a line running approximately from Unimak Pass to Cape Mohican on Nunivak Island and then to Cape Prince of Wales on the Seward Peninsula. The principal civilian communities with year-round settlements are Akutan, Unalaska/Dutch Harbor, Atka, and Nikolski on the Aleutian Islands, and St. Paul and St. George on the Pribilofs. While there was some commercial fishing for halibut by military personnel at Adak, none was reported from the base at Shemya Station in 1990 (IPHC 1991). The base was closed in 1996. Population and halibut harvest data is shown below in Table 3.12. This area is sparsely populated, with a civilian population of 4,688 in 1990. Landings from these sections of Area 4 are not negligible; Akutan ranked 9th in reported landings of halibut caught off Alaska while Unalaska ranked 12th. It should be noted that some deliveries to these two ports were

made by vessels fishing in the eastern Bering Sea and Bristol Bay (Area 4E), but the amounts in 1990 were of the order of 27,000 pounds only (IPHC 1991).

Table 3.12 1990 Population, Distribution of Halibut Permits and Landings in Aleutian Islands and West Bering Sea Communities (Areas 4A, B, C, D)

			Halibut		
Community	Pop. N	Alaska Native Pop. %	Permits N	Commerc. lb	Subsist. lb *
Adak Station	4,633	0.8	3	1,970	n/a
Unalaska/Dutch Harbor	3,089	15.1	10	1,096,677	n/a
Saint Paul	763	87.7	14	145,152	n/a
Shemya Station	664	0.2	0	**	n/a
Akutan	589	39.6	10	1,417,727	n/a
Saint George	138	96.8	10	43,587	n/a
Atka	73	96.8	4	12,604	n/a
Nikolski	36	96.0	#	**	n/a
Totals (Civilian)	9,985 (4,688)		51	2,717,717	

Population data are from the 1990 U.S. Census; 1990 permit and commercial landings data are from IPHC files.
* = 1990 subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G)
** = Any commercial landings were at other ports
n/a = Data not available
= IPHC permit data are based on postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.

The four Aleutian Island communities, Unalaska, Atka, Akutan and Nikolski, have been permanent year-round communities occupied by the Aleut peoples since pre-contact days. All are located in sites with good access to marine resources such as marine mammals, salmon streams, and marine fish and shell-fish grounds. Halibut has traditionally been a species sought and used by the Aleuts for subsistence (Schroeder et al 1987). The Aleuts of the Pribilofs are the descendants of Aleuts from Atka and Unalaska transported to the Pribilofs as seal hunters by Russian fur traders (Veltre and Veltre 1981).

Large scale commercial fishing, including halibut, has developed in the Aleutian Islands since 1970. Originally linked to the development of the king crab fishery, ports such as Unalaska and Akutan developed very rapidly. Unalaska had a population of 342 people in 1970; 1,322 people in 1980, and 3,089 people in 1990 (IAI 1991a). This growth has gone through boom and bust cycles; the crab fishery dramatically declined between 1981 and 1982, and the pollock fishery did not fully develop until 1988. There were no recorded commercial landings of halibut in the Aleutian Islands 1967 to 1973, and this fishery developed as stocks and fishing days declined in Areas 2A, 2C, and 3A, and vessels moved westward in search of fish.

Akutan is a village with 589 residents in 1990, and a large processing facility employing, in peak months from January through March, 500 or so non-resident seasonal employees. Akutan Bay has been a seasonal location for floating processors for crab and salmon since 1920, but the on-shore facility was not built until 1981 and began processing in 1982. The company which owns the plant, Trident Seafoods, also owns the plant in Sand Point and applies the same policy of preferring to employ temporary contract workers recruited outside the community. Year-round operation of these plants was feasible during the period 1985-89, but closures in the

groundfish fishery have led to seasonal closures of these plants in the early 1990s (IAI 1991b).

The use of contract, non-resident labor in fish processing in the Aleutian Islands has led to dual economies being developed. While Unalaska can be said to have an urban, cash-based economy, all the other communities have a mixed cash-subsistence economy. Table 3.13 showed the disparity in taxable income between Unalaska and Akutan residents which reflects this. Saint Paul, during 1981-1985, shows a relatively high level of personal income; it must be noted that these were the last of the years of Federal employment in fur sealing.

Table 3.13 Population, Mean Household Size, and Mean Taxable Income for Selected Alaskan Communities with Halibut Harvests

Community	Population N	Alaska Native Pop. (%)	Household Size (N)*	Mean Taxable Income ($)**
Alaska, State	530,043	16.2	2.80	
Unalaska	3,089	15.1	2.57	20,055
Saint Paul	763	87.7	3.68	17,369
Akutan	589	39.6	4.50	8,241

Population data is from the 1990 census, U.S. Bureau of Census
Household size in mean number of persons
Mean taxable income per income tax return, 1981-1985; Alaska Department of Revenue.

Subsistence harvests of marine resources have been described for Atka, Unalaska, and the Pribilofs by Veltre and Veltre (1981 1982 and 1983), but Schroeder et al. (1987) noted that no systematic measurement of harvest and use levels has been undertaken and thus baseline projections of use are not possible. Schroeder et al. reported that ethnographic accounts of the communities in the region indicate that there is a high dependence on fish, shellfish and marine mammals for subsistence purposes. They suggest that this dependence is probably higher in Atka, Akutan, Nikolski, St. George and St. Paul, where other food supplies are more expensive and often more difficult to obtain than in other communities. Veltre and Veltre recorded subsistence use of marine mammals and fish in a survey of Pribilovian communities in 1981. At that time halibut were the principal fish consumed; on St. Paul subsistence consumption per household was 513 pounds/year, while on St. George the subsistence use per household was 270 pounds/year.

Participation in the harvesting of fish by local residents of the Aleutian communities and the Pribilofs is also restricted. IAI (1991b) reported that Unalaska has three fleets of vessels using the port. It was estimated in 1991 that 33 vessels belong to local residents and operate year round from the port; these vessels are a mix of longliners and crabbers. A second fleet, owned and operated by nonresidents of Unalaska, had 507 vessels based in Unalaska each fishing season. The third, transient fleet had 575 vessels and used the port for supplies and occasional landings. Of these fleets it is estimated that 200 vessels longlined for halibut.

Similarly, Akutan has only 12 locally owned skiffs involved in fishing for the processor; between 90 and 100 company-owned vessels and non-resident vessels under contract to the plant supply most of the fish delivered to the plant. Some 40 of these larger vessels fished for halibut (IAI 1991b).

St. Paul and St. George have a different problem; their isolation and previous dependence upon commercial fur sealing have created difficulties in establishing a commercial fishing industry on the Pribilof Islands. St. Paul has one, recently developed, on-shore plant which processes groundfish, crab and halibut. In 1990 all halibut deliveries to the plant were made by 18 locally-owned vessels. St. George had a floating processor moored in the harbor and halibut was delivered there. Local vessels are small, between 18 and 40 feet in length, and unable

to fish far from the islands (Table 3.14). The IPHC created Area 4C as a fishery development area for the Pribilofs and stipulated that vessels which did not land halibut on the Pribilofs had to obtain a vessel clearance prior to the opening of Area 4C for fishing and before unloading catch (IPHC 1991 Regulation 13-2). IAI reports that in spite of these restrictions, "outside" vessels took two-thirds of the halibut quota in Area 4C in 1990 and landed their catches in Unalaska, and local fishermen made very little money and perhaps a net loss on their operations (IAI 1991b).

Table 3.14 Fleet Composition by Area, Size Class, and % of Catch in the Halibut Fishery Off Alaska, 1990

		1990		
IPHC Area	Vessel Size (ft)	N	% Fleet	% Catch
4	<26'	66	18.7	2.1
	26-30'	37	10.5	1.5
	31-35'	117	33.1	6.6
	36-55'	33	9.3	16.2
	56'>	90	25.4	73.0
	n/a	10	2.8	0.5

Area, vessel, and catch data provided by IPHC, 1991; all % ages are rounded.
n/a = Vessel size data not available for these vessels.

Fishermen

There is no information available in the literature on participants in the commercial halibut fishery in areas 4A, 4B, 4C, and 4D. The fishermen operating 26 local vessels in the Pribilofs are Aleuts from the Islands, as described above, who primarily fish for halibut, and there are local fishermen fishing from skiffs in Akutan and Unalaska (IAI 1991a). IAI reported that the out-of-state fishermen and processing workers who comprise the commercial fishing work-force are largely from the Pacific Northwest states and California, and state that, "as a group, locals, and Aleuts in particular, are very under-represented in the harvesting of marine resources" (IAI 1991a: Unalaska-19). The number of halibut fishing permits held by Unalaska residents totaled only 10 in 1990. Income earned from 13 permits fished in 1987 was $361,827 and 77 fishermen were employed on local halibut vessels fishing from Unalaska (IAI 1991a). Alaskan QS holders declined from 372 to 333 in the first year of IFQ fishing in 1995 (CFEC 1996). No consolidation occurred for areas 4B-D (4B increased by one QS holder).

Fish processing

Information on fish processing is described in the previous sections. Again there is no information in the literature on fish processing employment related to the halibut fishery. The plants on Saint Paul Island and in Akutan used seasonal workers from communities outside the region in 1990 (IAI 1991b), and the majority of workers in Unalaska and on the floating processors are also from outside the region. Year-round processing of seafood in Unalaska has promoted some stability in employment, and it appears that some of the seasonal employees have settled in the community, hence the population increase. Dutch Harbor/Unalaska ranked seventh in number of landings and third in halibut IFQ pounds landed in 1996. St. Paul had landings of 346,000 lb.

3.1.1.5 Bristol Bay-Eastern Bering Sea (Area 4E)

The principal communities involved in the halibut fishery are in the Nelson Island/Nunivak Island area. The broad shelf of the Bristol Bay seabed drops off into deeper water, and halibut grounds are found close to shore

in this area. Alaska Natives in this area are predominantly Yup'ik Eskimos, and with the exception of Bethel, Dillingham, and Nome, 20 rural villages engaged in the halibut fishery for commercial or subsistence use have populations less than 700 people in 1990. Population data and the distribution of halibut permits are shown in Table 3.15.

Table 3.15 1990 Population, Distribution of Halibut Permits and Landings in East Bering Sea Communities (Area 4E)

			Halibut		
Community	Pop. N	Alaska Native Pop. %	Permits N	Commerc. lb	Subsist. lb *
Bethel	4,674	67.6	#	**	n/a
Nome	3,500	58.5	1	**	n/a
Dillingham	2,017	57.0	20	**	0
King Salmon	696	5.9	2	**	n/a
Emmonak	642	91.29	0	**	n/a
Togiak	613	4.3	17	**	n/a
Naknek	575	50.6	13	**	n/a
Pilot Station	463	94.2	#	**	n/a
Toksook Bay	420	93.7	8	**	n/a
New Stuyahok	391	94.0	3	**	n/a
Manokotak	385	92.9	5	**	n/a
Chefornak	320	96.1	#	**	n/a
Tununak	316	95.0	#	3,413	29,514
Newtok	207	94.7	1	**	n/a
Aleknagik	185	89.6	2	**	n/a
Mekoryak	177	95.6	17	7,730	n/a
Nightmute	153	97.5	#	**	n/a
South Naknek	136	85.5	7	**	n/a
Egegik	122	76.0	1	**	268
Port Heiden	119	64.1	1	**	167
Sheldon Point	109	95.1	1	**	n/a
Levelock	88	100.0	0	**	396
Pilot Point	53	86.4	#	**	186
Ugashik	7	100.0	1	**	0
Bristol Bay (General)				25,401	n/a
Totals	16,369		100	36,544	

Population data are from the 1990 U.S. Census; 1990 permit and commercial landings data are from IPHC files.
* = 1990 subsistence landings data are estimated from Alaska Dept. of Fish and Game baseline studies for 1987; estimated landings are in pounds of dressed fish (H&G)
** = Any commercial landings were at other ports
n/a = Data not available
= IPHC permit data are based on postal zip codes; many Alaskan communities share zip codes, and CFEC data indicate that halibut permit holders reported elsewhere reside here.

Schroeder et al. reported that the communities of the region have been found to have mixed cash-subsistence economies (1987). In approximate order of importance, cash-economy employment available to residents of the

region include government, education and service sector jobs; commercial fishing for salmon in Bristol Bay, the Yukon and Kuskokwim Rivers; commercial fishing for herring and halibut in the Nelson Island and Nunivak area; and employment in sales and services. Schroeder et al. reported that limited employment was generated by a private business sector, which was virtually non-existent in most villages (1987).

Subsistence activities continued in all the communities of the region, with the exception of King Salmon which is a government "town" servicing the air strip, since these are the most economic activities which yield the most consistent return to families. Schroeder et al. noted that local residents continued to rely on local fish and wildlife resources for most of the protein and fats they consume. In the Nelson Island area, for example, the community of Tununak harvests halibut from June through August for subsistence use. Some 93% of the households in Tununak engage in this harvesting activity, and all households reported consuming halibut in 1987 (Table 3.16). The amount of halibut consumed was 93.4 pounds per capita in 1987.

Table 3.16 Population, Mean Household Size, and Mean Taxable Income for Selected Alaskan Communities with Halibut Harvests in 1990.

Community	Population N	Alaska Native Pop. (%)	Household Size (N)*	Mean Taxable Income ($)**
Alaska, State	530,043	16.2	2.80	
Tooksook Bay	420	93.7	4.77	10,034
Tununak	316	95.0	4.05	8,223
Nightmute	153	97.5	5.28	8,112

Population data is from the 1990 census, U.S. Bureau of Census
Household size in mean number of persons
Mean taxable income per income tax return, 1981-1985; Alaska Department of Revenue.

In 1990, the IPHC established a special commercial halibut fishery development zone in Area 4E, with similar rules to those established for Area 4C off the Pribilofs (see above). This change encouraged a number of local fishermen to fish in the halibut fishery using Bristol Bay limit seiners (i.e., under 32 feet in length). Vessels landed halibut at buying stations/processing plants at Mekoryak, on Nunivak Island, and at Tununak, Nelson Island. Other catches were landed in various ports around Bristol Bay and transhipped to processors. Four vessels from "Outside" took another 24,000 pounds and landed their catches in Unalaska (see Table 3.17).

Table 3.17 Fleet Composition by Area, Size Class, and % of Catch in the Halibut Fishery Off Alaska, 1990 (Areas 4A, 4B, 4C, 4D, and 4E)

		1990		
IPHC Area	Vessel Size (ft)	N	% Fleet	% Catch
4	<26'	66	18.7	2.1
	26-30'	37	10.5	1.5
	31-35'	117	33.1	6.6
	36-55'	33	9.3	16.2
	56'>	90	25.4	73.0
	n/a	10	2.8	0.5

Area, vessel, and catch data provided by IPHC, 1991; all % ages are rounded.
n/a = Vessel size data not available for these vessels.

Fishermen

There are no data available in the literature surveyed on the commercial fishermen participating in the eastern Bering Sea fishery for halibut. Forty-eight Alaskans were initially awarded QS for Area 4E in 1995. No consolidation has occurred here since this area is 100% CDQ and no IFQs are awarded to those QS.

Fish processing

Halibut buying stations and/or processing plants are reported by the IPHC for Mekoryak and Tununak. There is no information about these operations in the literature surveyed.

3.1.2 Historical Fishing Practices and Dependence on the Fishery

The fisheries for halibut off Alaska have been prosecuted since prehistoric times by Alaska Natives. In historic times and to the present the halibut fisheries have continued to provide food for local people and fish for trade and commerce. The development of the commercial fishery in the late 1800s by schooner and dory fishermen from Washington, Oregon and California has resulted in long standing ties to the present fishery by fishermen from those states. The linkages have changed over time; halibut schooner and, later, steamer fishermen settled in communities such as Ketchikan, Petersburg, Kodiak, Sand Point, and King Cove. From these communities they developed local halibut fisheries and fisheries for other species as part of an annual round of commercial fishing.

Processing plants were built in many communities, and the large schooners and steamers delivering fresh halibut on ice to the States of Washington and Oregon in the first quarter of this century have been replaced by the container shipment of frozen product to reprocessing plants in those states or abroad. Changes in the management of fisheries, to the derby fishery for example, hastened the demise of historic patterns of involvement in the commercial halibut fishery. It is now largely an Alaskan-based fishery, with some 88% of permit holders having postal addresses in the state in 1990. Involvement in the fishery by fishermen from Washington and Oregon is usually with vessels which travel to Alaska, and then are based in a port for the duration of the fishing year. These vessels typically land at local plants and to all intents and purposes are indistinguishable from their Alaskan counterparts.

Historically, economic dependence on the fishery for a year-round livelihood by individual fishermen lasted from 1900 to 1950. Fishing companies relinquished their company vessels and concentrated on the businesses of processing and marketing fish in the period after the First World War, permitting independent fishing ventures to increase and prosper for a while. Overfishing of the resource, stagnant or declining over-the-dock prices, and increasing operating costs were offset by investment in new technologies, different approaches to management, and finally diversification into other fisheries. Bell reports that the average fishing season, measured from first port clearance to last landing, for a Seattle-based vessel participating in the halibut fishery was 272 days in 1930, 224 days in 1931, 99 days in 1954, and 173 days in 1965 (Bell 1981). Over the same period productivity per fisherman increased by a factor of 2.34, and crew size shrank by a third from an average of 9.3 men per vessel to 6 men.

The number of days actually spent fishing for halibut has decreased over time; in some years voluntary industry schemes had vessels laying-up for periods of time. In other years maximum poundage per fisherman was set as the cut-off point. By 1977, the IPHC had established a season of four "openings" totaling 73 fishing days for Southeast Alaska during the fishing year. In the same year, Area 3A had three openings totaling 47 days; 3B was open for a total of 65 days on four occasions; and Area 4A was open for 227 days consecutively (TetraTech 1981). In 1991, the halibut fishery in Areas 2C, 3A, and 3B is scheduled for three 24-hour openings; in Area 4A, there will be four 24-hour openings (IPHC 1991). To reduce fishing pressure further, the openings coincide

so that vessels cannot move from one area to another. The Alaskan halibut fishery has been under an Individual Fishing Program and an eight month fishing season (March 15-November 15) since 1995.

Thus, the historical dependence on the fishery for a livelihood by some fishermen has been replaced by dependence on the fishery as part of a seasonal round of other fishing activities. Or, in the case of some part-time fishermen, by periods of employment ashore between fishing seasons.

3.1.2.1 Historic Participation of Southeast Alaska Fishermen

The Alaska Natives of the Alexander Archipelago have fished for halibut from "time immemorial" (General J. Davis, 1870, cited in Price 1990). The Tlingit, Haida, and Tsimshian Indian tribes had developed specialized fishing gear for taking halibut by the time of first contact and used the fish for subsistence and for customary trade with other, inland, groups. Halibut were, and are, not as important as salmon to the existence of Alaska Natives. They are part of the myth/belief/folklore systems of each of the tribes and considerable cultural value is ascribed to the fish and fishery. Halibut contributed a significant portion of the mixed economy of cash-subsistence activities after the development of the commercial fishery, and continues to do so to present times. Alaska Natives worked in the salteries and processing plants of the early fishery and caught fish for the plants and tenders, too. This participation has continued, and the fisheries from ports such as Angoon, Hoonah,

Hydaburg, Kake, and Metlakatla are prosecuted in the main by Alaska Natives fishing traditional grounds.

Southeastern Alaska fisheries were developed by fishermen, many of Scandinavian origin, and companies in the salmon fishery. Canneries were located at a number of communities by the mid-1880s, and the first recorded halibut processing was done at the newly-built salmon cannery in Klawock in 1878 (Bell 1981). The development of the commercial fishery for halibut was attempted in 1888 with Gloucester-style schooners fishing dories, but the narrow island passages and difficult weather delayed any major fishery until the mid-1890s when auxiliary powered vessels based in Puget Sound began fishing the relatively-sheltered inside waters during the fall and winter. Their catches were iced down and shipped to Seattle and Vancouver by tender (Bell 1981).

Ketchikan prospered from this fishery as it was the U.S. Customs point of entry and departure. A salmon cannery was built in the port in 1887, and a cold storage plant for halibut was completed in 1910. Fishermen and process workers for these ventures were drawn, in part, from the neighboring Alaska Native communities of Craig, Hydaburg, and Metlakatla. As the halibut fishery in the central Gulf of Alaska, that is west of Cape Spencer, developed after 1913, Ketchikan became a principal supply port for the Puget Sound vessels fishing in the new fishery. The importance of the commercial halibut fishery to Ketchikan continues to this day and in 1990, the port handled some 1,036,245 pounds of commercially caught halibut.

Petersburg was created as a "green field" site port in 1897. The early Norwegian settlers chose as the site for their fishing port a spot which lay close to the boundaries of the traditional fishing areas of the Tlingit villages of Kake and Wrangell, and thus provided access to fishing grounds with a minimum of disturbance of traditional property rights. Construction of a wharf and salmon cannery in 1899, permitted development of a year-round halibut fishery. Particularly important was the fall and winter fishery, in which Puget Sound vessels participated. Bell notes that, in 1906, there were 23 Puget Sound vessels fishing for halibut from Petersburg and 18 local vessels (1981). As the grounds west of Cape Spencer developed in the 1920s, the Puget Sound vessels shifted westwards and Petersburg developed its own fleet of medium-sized vessels fishing for halibut and salmon. Local fishermen operated a marketing cooperative and later purchased the processing plant to ensure stable markets for locally caught fish. In 1990, Petersburg ranked fifth in halibut landings with 2,283,525 pounds or 4.3% of all landings. As the halibut season has shortened due to fishing pressure and stock decline, full-time employment in longlining for halibut has ceased to be possible. In consequence the Petersburg fleet has diversified, and vessels now round out their fishing year with salmon and herring seining, longlining for sablefish, or pot fishing

(Langdon and Miller 1984). The number of commercial halibut permits fished has remained fairly constant between 1980 and 1990 at approximately 210, and the halibut fishery continues to be of importance to the community.

The other communities in Southeast Alaska have also seen their fisheries for halibut change in ways similar to those in Petersburg and Ketchikan. The predominantly Alaska Native communities, such as Angoon and Hoonah, have seen their commercial halibut catches decrease but since they were already fully exploiting a diversified "portfolio" of fisheries in the vicinity of their villages, the impact was somewhat sharper as there was a real loss of economic opportunity and of subsistence food. In addition, processing ventures in Kake and Angoon failed. Sitka and Pelican, communities with processors and links with the Area 3A halibut fisheries, have continued to lead in halibut production but their larger Gulf of Alaska vessels have had to develop new longline fisheries, and there has been major growth in fisheries such as that for sablefish.

3.1.2.2 Historic Participation in the Fisheries in Area 3A

As noted elsewhere, the larger Puget Sound vessels began developing the fishery for halibut west of Cape Spencer in 1913. Commercial fishing for halibut moved steadily westwards as stocks were depleted. Since the spawning grounds for halibut are in the Bering Sea, the move westward further increased the possibility of overfishing as more juvenile fish were encountered in the fishery (Bell 1981).

The rural communities of Area 3, as in Southeast Alaska, had relied upon halibut as an element in their mixed cash-subsistence economy from the beginning of the fishery. Changes in the commercial halibut fishery have impacted these communities in terms of reduced economic opportunity and reduced subsistence harvests. Port Graham and English Bay, for example, have been shown by Schroeder et al. (1987) to be part of a system of resource use that is important economically, socially and culturally. The mixed cash-subsistence economy in Port Graham was severely impacted by closure of the local processing plant from 1960 to 1968, and again after 1984 when the plant closed.

The rural communities of Kodiak Borough have high%ages of Alaska Natives as population and continue a mixed cash-subsistence economy. Langdon and Miller note that the skiff fishery (vessels of less than 5 net tonnes) was largely prosecuted by Alaska Natives, and that in 1984 the fishermen of Ouzinkie relied almost entirely upon the halibut fishery for the cash segment of their economy (1984). Schroeder et al. report similar findings for the importance of the commercial fishery and fish processing to the inhabitants of these rural Kodiak communities (1987).

Non-Native communities such as Homer, which was founded in 1895 as a coal port, did not enter the halibut fisheries until the 1920s (Schroeder et al. 1987), and the fishery -- although of importance -- is part of a diversified fishing economy and the local dependence upon the halibut fishery is lessened. Homer is, however, the second port in volume of halibut landings in the Northwest Pacific. Some 11% of all landings (5,877,869 pounds of halibut) were made in Homer in 1990.

Similarly, Seward was developed as a railroad port and terminus in 1903, and a cold storage plant was built there in 1917 to service the Gulf of Alaska halibut fishery (Bell 1981). Bell reports that after 1931, and the first major downturn in the fishery, few halibut were landed in Seward until the 1960s. In 1990, some 9% of all halibut landings were made in Seward. In part this was because of its role as a transportation center, but also because it was a convenient landing point for the halibut harvested in the openings in Area 3A. In all, 5,183,281 pounds of halibut were landed in Seward from 72-hours of fishing activity in 1990.

Kodiak City was the leading port for halibut landings in 1990, with 22% of all landings, but played a minor role in the fishery prior to 1960. Bell notes that the development of the productive halibut grounds west of, and

contiguous to, Kodiak in the 1930s was at a time when vessels returned to their home-ports to land catches and "fulfill their self-imposed between-trip lay-ins" (Bell 1981). After the Second World War, there was ample cold storage in other ports, including Sand Point, to handle halibut catches and thus no reason to select Kodiak as a landing point. However, with the growth of the crab and shrimp fisheries in the 1960s additional cold storage and other facilities were built in Kodiak which were attractive to the halibut vessels. Smaller catches in the 1970s made intermediate off-loading ports, such as Kodiak and Seward even more attractive and the switch to short openings in 1977 confirmed the economic attractiveness of the port to vessels in the fishery.

Thus the present day dependence of the Kodiak City fleet on the halibut fishery as part of the seasonal round is because of the development of the fleet for other fisheries and the imposition of fishing season management on the halibut fishery. The dependence is no less real for all that. Langdon and Miller reported that two-thirds of the halibut fishermen resident in Kodiak in 1982 were born in states other than Alaska, and had resided in Kodiak City between 6 and 10 years on average (1994). Langdon and Miller note that, in 1982, there was a small fleet of Aleut-owned vessels, some 10 to 15% of the total fleet at the time, fishing from Kodiak City. These vessels participated in a mixed cash-subsistence economy typical of the six Alaska Native communities in the Kodiak Borough (1984).

3.1.2.3 Historic Participation in the Fisheries of Area 3B

Some 45% of all halibut fishermen resident in Area 3B were estimated by Langdon and Miller to live in Sand Point (1984). The communities of Chignik Lake, Chignik Lagoon, Chignik, Perryville, and King Cove are homes to the balance of the resident fishermen. Halibut processing began in Sand Point in 1946 when a former military cold store was sold as surplus (Bell 1981). When Langdon and Miller interviewed fishermen in 1983, it was found that the mean length of participation in the commercial halibut fishery by Sand Point residents was 9.1 years, with a median of 7.5 years (1984). Such a short participation span can be indicative of a recently developed fishery. In recent years the halibut landings at Sand Point, although 1,058,103 pounds in 1990, have been small relative to the groundfish landings (IAI 1991). The structure of the fleet has also changed since the Langdon and Miller study in 1983, and the dependence on halibut as a commercial fishery is part of a seasonal round, which includes salmon and crab fishing, by a segment of the fishing industry based at Sand Point.

Halibut is traditionally part of the mixed cash-subsistence economy of the Aleut population of Area 3B. Subsistence harvests range between 36 and 48 pounds per capita for the communities studied (ADF&G 1988), and some 85% of the population uses subsistence halibut.

3.1.2.4 Historic Participation in the Fisheries of Area 4A, B, C, D

The Aleut population of the Aleutian Islands and the Pribilof Islands has traditionally harvested halibut for subsistence use (Schroeder 1987; Veltre and Veltre 1981 and 1983; Orbach and Holmes 1983). The local communities of Atka, Nikolski, Akutan, Saint George and Saint Paul harvest halibut as part of a seasonal round of commercial and subsistence fisheries. The commercial fishery, with halibut landed in the Aleutian Islands, is a development of the past twenty years as the halibut longliners sought new grounds. Between 1967 and 1973 there were no recorded commercial halibut landings in the Aleutian communities.

Akutan and Unalaska rank 9th and 12th respectively in commercial landings of Pacific halibut in 1990. However, the majority of vessels landing at the processing plants are non-resident. IAI report that the halibut harvesting sector in Unalaska employed 77 people locally in 1987, a gain of 30 people since 1981, and this is appropriate given the 11 commercial halibut permits held by local residents in 1986 (IAI 1991). Of these permits, IAI report that 3 were for longline vessels less than 5 net tonnes, and 8 permits were for vessels over 5 net tonnes.

In the processing sector, groundfish processing dominates but all Unalaska plants process halibut when available although IAI report that one plant discontinued halibut processing at the end of the halibut season in 1990. Fish delivered to the plants comes from throughout Area 4 (including 4E), even though vessel clearance requirements militated against catches from the area of the Pribilofs and Area 4E. Local residents fish for halibut as part of a mixed cash-subsistence economy, and as such are more dependent on the fishery.

The Aleuts of the Pribilof Islands have used the halibut resources of the Islands for subsistence since they were moved there by Russian fur traders (Veltre and Veltre 1981). With the termination of the fur seal harvest, the Pribilovians have turned to commercial fishing as their primary economic activity, with halibut as their principal resource. To this end, the IPHC declared Area 4C as a fishery development area for the Pribilofs with a view to assisting islanders in becoming economically self-sufficient. In 1990, however, 44.6% of the halibut catches taken in Area 4C were landed by vessels owned by Washington State permit holders.

3.1.2.5 Historic Participation in the Halibut Fishery of Area 4E

The Yup'ik peoples of Area 4E have traditionally used halibut for subsistence purposes. In particular, Nelson Island communities, such as Tununak, have relied on the resource. Communities further south, along the shores of Bristol Bay, have used halibut when available, but the principal subsistence fishery has been for salmon.

As the Yup'ik villages have developed cash economies, they have turned to harvesting marine resources. To this end they have begun to participate in the halibut fishery. Area 4E was designated in 1990 as a fishery development area by the IPHC, and there was a increase in the number of local fishermen and permit holders participating in the fishery. However, 36% of the halibut harvested in Area 4E in 1990 was taken by vessels owned by Washington State permit holders.

3.1.3. Alaska Native Fisheries

The 1990 census reported that of the 550,043 people living in Alaska, 21 % (116,653) were rural residents (Wolfe and Bosworth 1994). Of these, 48% were Alaska Natives (55,888) and 52% were non-Native (60,765). Of the remaining 433,390 urban residents, 16% were Natives (29,810) and 84% were non-Natives (403,580).

In this section, the participation of Alaska Natives in the fisheries in each area will be considered. General Jefferson Davis, in his report to the U.S. Congress in 1870 on his administration of Alaska, wrote: "Fish form the chief and most easily procured food of the natives, and has from time immemorial" (cited in Price 1990). Fishing has historically been an important component of the lives of Alaska Natives, and the exploitation of halibut for subsistence and trading purposes is well documented. Each major Alaska Native group active in the halibut fishery will be reviewed in turn, beginning with those fishing in Area 2C and moving northwest.

In previous sections in this chapter it has been noted that the Alaska Native populations are largely found in the rural communities, and blend subsistence activities with fishing in the market economy. Traditionally, coastal Alaska Natives fished in waters near to their settlements and established a pattern of fishing rights and obligations recognized by other Alaska Native groups. In a report prepared for Congress by Lieutenant G.T. Emmons in 1905 at the request of President Roosevelt, it is noted that "the whole country was portioned off among the [Alaska Native] families as hunting reserves, berry grounds, or fishing sites, and their laws of property and rights were very clearly defined and strictly observed" (cited in Price 1990). These "territorial user rights in fisheries" (TURFS, as described by Pollnac 1983) correspond to the areas and resources needed for subsistence by the group or clan. Mapping of traditional fishing grounds, as presently observed by Alaska Natives, by the Alaska Department of Fish and Game show these areas to have minimum overlap between communities and an agreed upon scope embodied in folk lore and the cultures of the communities.

Similarly, fishing patterns and gears were, and are, developed to fit the particular needs of the local fishery. In all these activities related to fishing for subsistence and trade, the Alaska Native communities seek social and economic efficiency; that is, the maximum return to the community for the minimum investment of labor and capital. Thus a pattern of seasonal fishing and hunting is tailored to local needs; when a sufficiency of one good, say firewood or seal oil, has been collected, effort will be directed to the harvesting of other needed subsistence items. Thus the use of commercial fishing gears for subsistence harvesting is commonplace.

In this survey it has been found that there is a confusion in the reporting of subsistence harvests in general, and by Alaska Natives in particular, since IPHC lumps subsistence harvesting with recreational fishing as activities using non-commercial gears and with a bag-limit of two fish per day (G. Williams, IPHC; pers. commun. to P. Fricke). Information provided by Alaska Department of Fish and Game's Subsistence Division for rural communities show that, regardless of the IPHC definition, subsistence fishing for halibut is conducted in traditional patterns of seasonality and intensity that are socially and economically efficient for the harvesters. The scale of harvesting is in excess of the recreational harvest's bag-limits, but is self-limiting in that the harvest is tailored to the need of the individual, family, or extended family unit as culturally defined.

3.1.3.1 Traditional and Customary Fishing Practices of Alaska Native Peoples

The following is adapted from Wolfe (1993). More than 55,000 Alaska Natives live in about 250 rural settlements, including Tlingit, Haida, Tsimshian, Aleut, Alutiiq, Yup'ik, Inupiat, and several Athabaskan tribal groups (Figure 3.1). The economies, cultures, and spiritual well-being of Alaska's indigenous societies are heavily dependent upon customary and traditional fishing and hunting practices (Wolfe and Walker 1987). Subsistence activities of Alaska Natives are usually conducted by traditional, kinship-based groups using small-scale efficient harvesting technologies. The food is preserved by traditional, labor-intensive methods including air-drying, smoking, freezing, salting, and fermenting. Traditional foods are distributed along non-commercial networks of sharing and exchange and consumed primarily by families in rural areas. Fishing occurs in traditional areas following customary principles of the local society. During the past century, traditional subsistence practices have been substantially eroded by competing commercial and sport fishing by non-Natives and other factors. These interests have exerted considerable political influence on federal and state governments that manage fish and game. These influences have resulted in many fishing and hunting regulations that substantially restrict traditional fishing and hunting by Alaska Native groups.

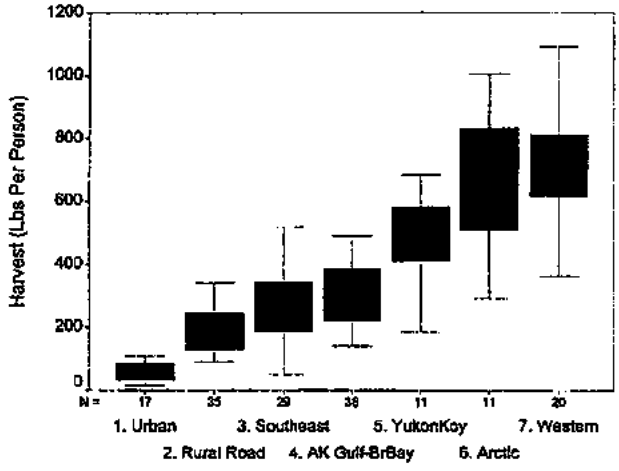


Figure 3.1. Wild food harvests in Alaska communities.

The following section is adapted from Smith and Kancewick (1995) Alaska Native subsistence occurs not only to obtain food, but is also part of a cultural/socioeconomic system that has six basic characteristics: a community-wide seasonal round of subsistence activities; high participation rates in fishing and hunting activities; substantial outputs of fish and game products for local use; a domestic mode of production; extensive non-commercial distribution and exchange networks; traditional systems of land use and occupancy; and a mixed economy combining subsistence and commercial sectors (Wolfe 1984).

A crucial cultural aspect also occurs for Alaska Native subsistence uses: the territorial nature of subsistence; the reliance on taking fish and game when available and needed; the importance of the manner of take; and the way

in which subsistence activities are a group effort. The location of subsistence harvests is not a matter of preference, but a key element of the 'customary and traditional uses' of fish and game. The place one takes fish and game helps define the group to which one belongs, and hence the particular rules that one may follow. Subsistence is, by its very nature, a local activity.

The systems of land use represent a sociopolitical organization of fishing and hunting whereby access to resources is defined and control exerted (Wolfe 1984). The locations of fishing and hunting activities by residents of a community are influenced by systems of non-codified customary laws defining rights of access. Trap lines, fish camps, set net sites, big game areas, and other areas are recognized as the use areas of particular kinship groups and communities. ADFG studies indicate that subsistence users tend to harvest in traditional use areas surrounding their communities, therefore, most subsistence harvests tend to be relatively accessible from the community (Wolfe and Bosworth 1990). Subsistence harvest areas for particular groups of people are definable and relatively predictable. Subsistence users generally do not harvest outside their community's traditional use area.

A second defining characteristic of subsistence uses is that resource harvesting is seasonal in nature; resources are taken when they are available and needed. The seasonal round o f subsistence is a built-in aspect of the entire custom and tradition of subsistence harvesting. A third component is the interplay of spiritual beliefs and subsistence fishing. These beliefs define those between harvester and prey and those within the community itself. The continuity of these hunting patterns throughout the generations is a reflection of the strength of these cultural ties. A fourth component relates to subsistence as a group activity. Subsistence is in part an economic system whereby subsistence harvesting and processing are engaged in by small groups within a village, usually families, (Wolfe et al. 1984).

Figure 3.2 (from Wolfe and Bosworth 1994) demonstrates that a substantial portion of rural households harvest and use wild foods. For surveyed rural communities, 75-98% harvested fish and 92-100% of households used fish; 48-70% harvested wildlife and 75-98% used wildlife. These patterns indicate that many households shared harvested fish with non-harvesting community members. The composition of wild food harvests by rural residents is 90% fish, 20% land mammals, 14% marine mammals, 2% shellfish, 2% birds, and 2% plants.

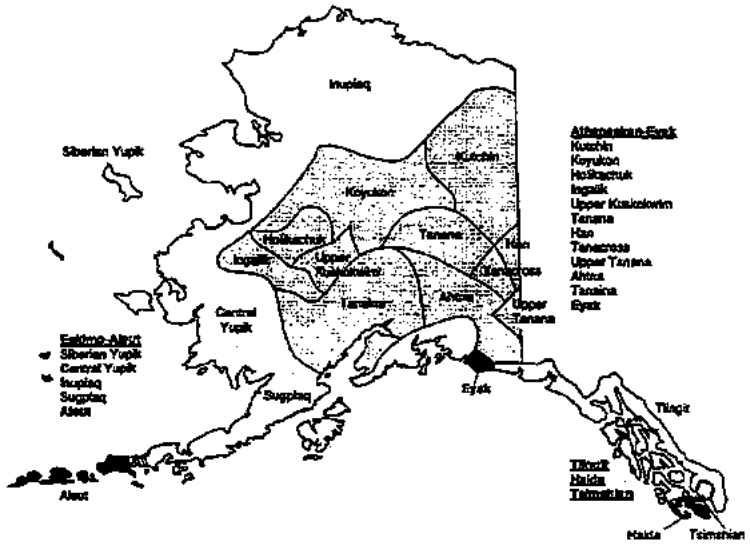


Figure 3.2 Distribution of Alaska Native Tribal groups, based on language groups (from Alaska Historical Society 1982).

Subsistence food harvests provide a major part of the nutritional requirements of Alaska's rural population (Wolfe and Bosworth 1994). The annual rural harvest of 375 lb of wild food per person contains 243% of the protein requirements of the rural population (i.e., about 107 g of protein per person per day compared to a mean daily requirement of 44 g). Subsistence harvests, however, contains only about 35% of the necessary caloric requirements (i.e., it contains about 840 Kcal daily of the 2,400 Kcal daily requirement).

3.1.3.2 Alaska Natives of Area 2C

In Area 2C, three tribal groups have been involved in the subsistence and commercial halibut fisheries from the time of the Seward Purchase. These groups are the Haida, Tlingit, and Tsimshian tribes. The Tlingit and Haida inhabited the Alexander Archipelago prior to contact with non-Natives, and the archaeological record suggests that habitation goes back at least 9,000 years before present. The Tsimshian are a tribe that, like the Haida, is also found in British Columbia, and the principal settlement of Tsimshian in Area 2C, at Metlakatla, was founded in the 1870.

Communities in Area 2C with more than 20 per cent Alaska Native population include Sitka, Metlakatla, Craig, Hoonah, Klawock, Kake, Angoon, Hydaburg, Saxman, Klukwan, and Kasaan.

3.1.3.2.1 The Haida

The Haida have lived, and utilized marine resources, in southeast Alaska since before historic contact (Stewart 1977). Halibut, in combination with other marine fish, made up the backbone of the economies of the southeast communities at the time of contact. The fish catches of the southeast region were so large and dependable that they functioned as the basis for the development of one of the most complex cultures on the northwest coast. The Haida culture is multi-faceted, including but not limited to large populations, a stratified society, and elaborate systems of art and ceremony, which find expression through complex networks of sharing and exchange (Spencer and Jennings 1965; Alaska Department of Fish and Game 1991).

Fish, and halibut in particular, have long been important for the Haida. Like other Alaska Native tribes and communities, the fish that are caught in the subsistence fishery are shared among their large extended-family groups, defined by ancestry to ancient clans and lineages (Alaska Department of Fish and Game 1991).

Halibut is still a highly valued resource in the region today. Continuing in the traditions of their forefathers, many Haida still catch halibut with baited hooks on weighted lines that are set with floats or held by hand. The younger generation of harvesters continue to learn the techniques for harvesting and processing halibut and other bottomfish by watching their elders and joining them in subsistence fishing activities (Alaska Department of Fish and Game 1991). And many still prefer the traditional methods of drying and smoking the halibut as was done in the past. As discussed by an Alaska Department of Fish and Game report (1991), halibut that is smoked and dried is still a highly valued food by southeast residents.

While commercial fishing for salmon and halibut have been a principal source of income to the Haida, non-Native practices in the development of commercial fisheries in the region have been costly to them. For example, fish stocks have been greatly depleted. And, along with non-local control of profit from fishing enterprises, have been restrictions on Haida subsistence practices. Nevertheless, subsistence activities have persevered in these mixed, subsistence-market communities, although at a lower level than in other Alaska Native Alaskan groups (Betts and Wolfe 1991). And as the Haida have been, they continue to be dependent on halibut and other marine fish not only as a source of nutrition and potential capital but also for the significant cultural and psychological benefits they attain from subsistence activities.

Haida participation in the commercial halibut fishery is not documented, but some 100 commercial licenses are estimated to be fished by Haida resident in rural communities.

3.1.3.2.2 The Tlingit

Tlingit Indians have lived in the southwest archipelago area and utilized the marine environment there for nearly 3,000 years (Langdon 1989; Moss 1989) and have, perhaps, lived in Hoonah for as long as 9,000 years

(Ackerman 1968). Tlingit artifacts that date back 900 years, and oral history that tells of their presence in the Cross Sound area hundreds of years ago (Schroeder and Kookesh 1990), clearly establish their constancy in the region. In Angoon, evidence for Tlingit occupation, such as a salmon weir and village and fishing sites, has been found for 3,000, 1,600, and 1,000 years before present.

As with all Alaska Native American tribes or communities, Tlingit culture and well-being are inextricably tied to the use of the natural resources that surround them (Gmelch and Gmelch 1985). Fish and halibut, in particular, have been very important for the Tlingit. As stated in a recent report by the Alaska Department of Fish and Game (1991), "Historically, the fish produced by the Tlingit . . . were shared and consumed among large extended family groups who traced ancestry as lineages and clans who resided within large plank clan houses." In addition, large amounts of food were prepared and given away in elaborate feasts, and ceremonies to assert their status, rank, and prestige in the social group.

The people of Angoon and Hoonah, for example, still adhere to many of their traditions that are related to obtaining and using wild resources. This enables them to maintain deep cultural ties with important land and water areas, and with the resources that have sustained their culture for thousands of years (George and Bosworth 1988). In keeping with past traditions, modern Tlingit place a great deal of value on their Alaska Native cultural heritage. This includes subsistence hunting, fishing, and gathering as well as sharing the harvested food (George and Bosworth 1988). Stated simply, "Alaska Native Tlingit culture has traditionally been defined largely by its relationship to the environment. The survival of the Tlingit tradition depends on the sea and land continuing to provide resources; if the foundation of Alaska Native subsistence is weakened, other elements of the culture will begin to crumble" (Gmelch and Gmelch 1985).

The Tlingit continue to fish in the commercial and subsistence fisheries for halibut. While there are no survey data on Tlingit participation in the commercial halibut fishery, it is estimated that some 150 halibut permits are held by Tlingit in rural communities such as Angoon and Kake. Participation in fishing crews and processing is an important activity for tribal members, but again there are no survey data available.

3.1.3.2.3 The Tsimshian

The Tsimshian have utilized halibut and other bottomfish since before historic contact (Stewart 1977). Archaeological studies show evidence of halibut bones, among other types of fish, in prehistoric village sites (de Laguna 1960), in addition to evidence that the Tsimshian had developed special methods and gear for harvesting bottomfish (Stewart 1977).

As with other Alaska Native groups and communities, Tsimshian culture is intricately tied to the surrounding natural resources. As stated in a recent report by the Alaska Department of Fish and Game (1991), "Historically, the fish produced by the . . . Tsimshian were shared and consumed among large extended family groups who traced ancestry back as lineages and clans . . . Large quantities of food also [were] prepared and given away by the headmen of the extended families in elaborate feasts and ceremonies to publicly demonstrate and validate rank, status, and prestige within the social group."

The abundance and reliability of marine resources enabled fish to serve as the basis for the development of the complex non-agrarian Northwest Coast culture area (Spencer and Jennings 1965). As Bell (1981) states, "With fishery products being so important in the lives of the coastal tribes both as a direct source of food and as trade items with inland groups, it is not surprising to find fish, including halibut, commemorated in the heraldry on the totem poles."

Marine resources continue to play an important role in Tsimshian daily life. Following in the steps of their forefathers, many Tsimshian still harvest halibut by traditional methods. And many residents continue to value

highly halibut that is smoked and dried in the traditional way (Alaska Department of Fish and Game 1991).

As Irwin (1984) states, "The people of the Northwest Coast practiced no agriculture. Rather, they were children of the sea. Their life was dominated by a benevolent ocean that teemed with life." Although commercial fishing and other industrialized influences have reduced Tsimshian ability to completely keep their old life ways, the importance of subsistence fishing to their culture and well-being cannot be overstated.

The Tsimshian settlement, and tribal reservation, at Metlakatla is active in the halibut fishery. With reserved water areas and fishing sites, the village harvested 0.45% of all commercially caught halibut in 1990 and ranked 31st of the 48 individual ports with reported landings. Residents of Metlakatla held 27 permits and landed 234,650 pounds of halibut in the commercial fishery and an 11,256 pounds in the subsistence fishery in 1990.

3.1.3.2.4 Customary and Traditional Practices of Alaska Natives in Area 2C

This section is adapted from ADFG (1991) and describes the 1987 halibut fisheries for Southeast Alaska communities excluding Juneau and Ketchikan. Bottomfish, including halibut, have been an important food fish utilized by the Tlingit, Haida, and Tsimshian in southeast Alaska since before historic contact and continuing to the present. These tribes developed specialized gear and harvesting methods, but have adopted recent modifications of fishing techniques introduced by Euro-American settlers.

Three types of hooks were developed for harvesting halibut. Steam-bent U-shaped hooks of various sizes made of wood tipped with slender bone (and later iron) barbs were used by the Haida and Tsimshian. Carved V-shaped hooks made of two wood arms, fitted and lashed, and tipped with bone or iron barb were used in the northern portions of the southeast by the Tlingits. Bi-pointed throat gorges were also use. All three types of hooks were commonly set as single hooks, in pairs with rig spreaders, or as multiple hooks along longlines. Bait was typically octopus or whole small fish. Set hooks were attached to wood or bladder floats, and were weighted with sinker stones. Sets were checked with open boats. Line was made from spruce root or sinew in the north, and bull kelp, nettle fiber, and cedar bark fiber in the south.

Trolling techniques and rod and reel gear also underwent technological modifications over the years. Skiffs and larger vessels are currently used. Currently, as in the past, most halibut are taken with baited hooks on weighted lines. Lines are set with float, held by hand, or attached to a pole with a reel. Although set lines with multiple hooks are not allowed by regulation for the non-commercial harvest of halibut, this practice does occur and appears to be a continuation of historical harvest methods.

Non-commercial use of halibut has continued alongside the development of commercial fisheries which began in the 1880s. Halibut harvests totaled 705,126 lb in 1987 for Southeast Alaska (Figure 3.3). Estimated total community harvests ranged from five communities with under 1,500 lb of halibut to thirteen communities with greater than 10,000 lb but less than 75,000 lb, and two communities with greater than 150,000 lb. Per person halibut harvests ranged from 1 pound in Klukwan to 77 lb in Meyers Chuck (Figure 3.4). Most harvests occurred in relatively deep, open marine waters near the main winter settlement, but seasonal moves also occurred to camps nearer to halibut.

Halibut were shared and consumed among large extended family groups who traced common ancestry (Figures 3.5 and 3.6). The Tlingit, Haida, and Tsimshian were also avid traders. Halibut were eaten fresh, but also thinly cut, dried, and smoke over racks for later use, especially in northern southeast. Today halibut is halved smoked and frozen. Some use a dehydrator to replace the old system of air drying.

Figure 3.3 **Estimated Total Pounds of Halibut Harvested, 1987 Data, by Community**

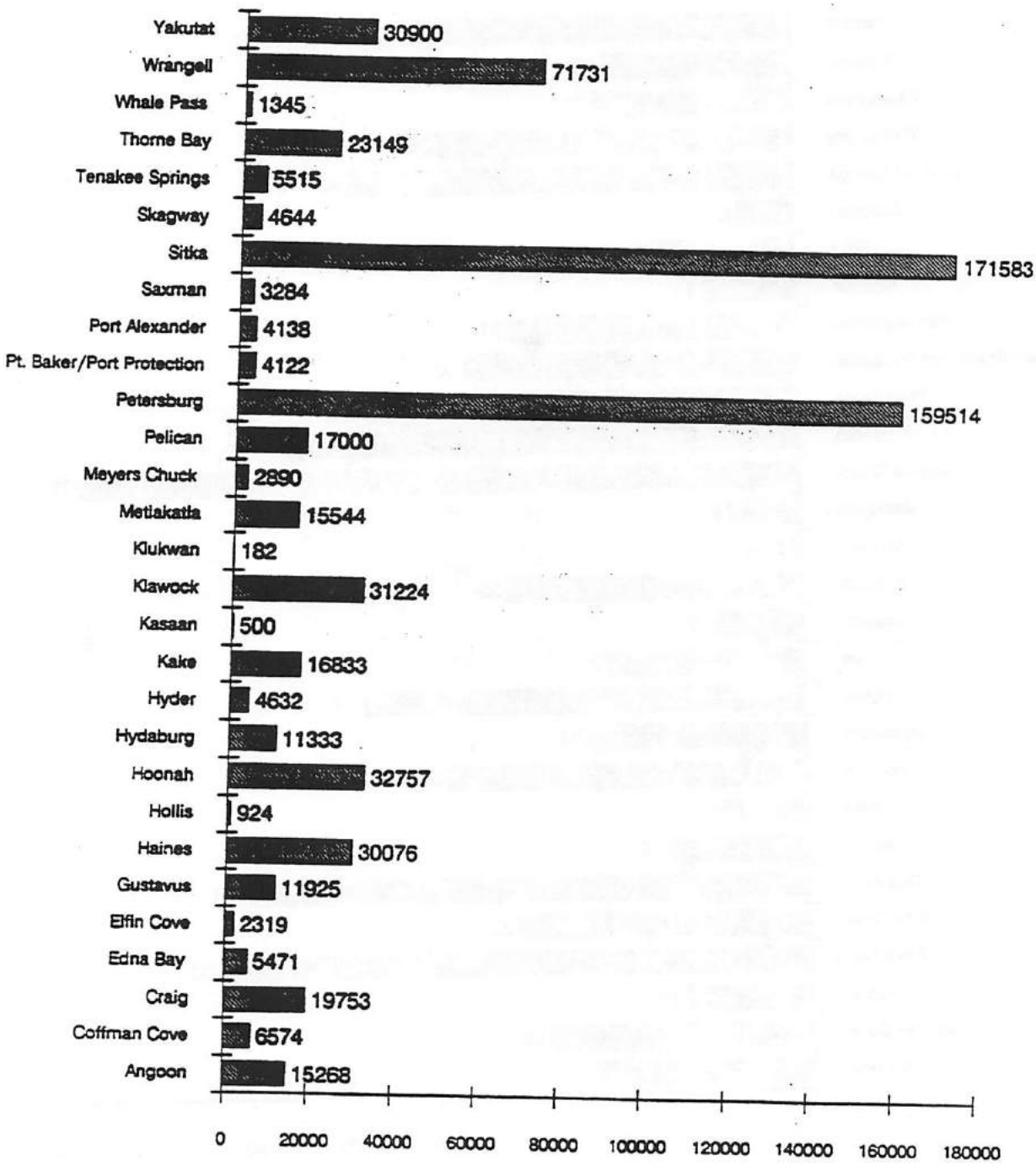


Figure 3.4 **Estimated Pounds Per Capita of Halibut 1987 Data, by Community**

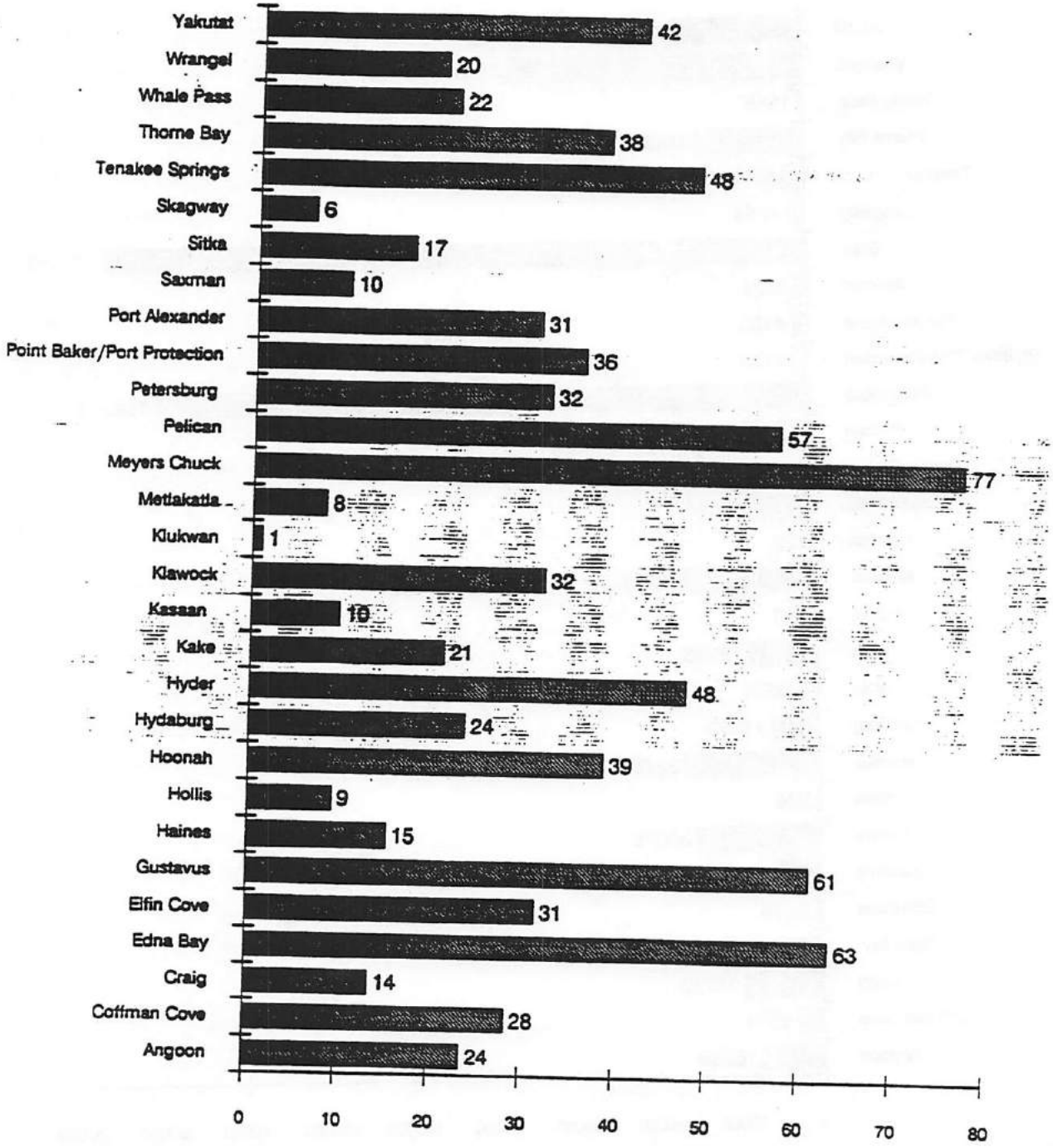


Figure 3.5 **Estimated Percent of Households Harvesting & Utilizing Halibut, 1987 Data, by Community**

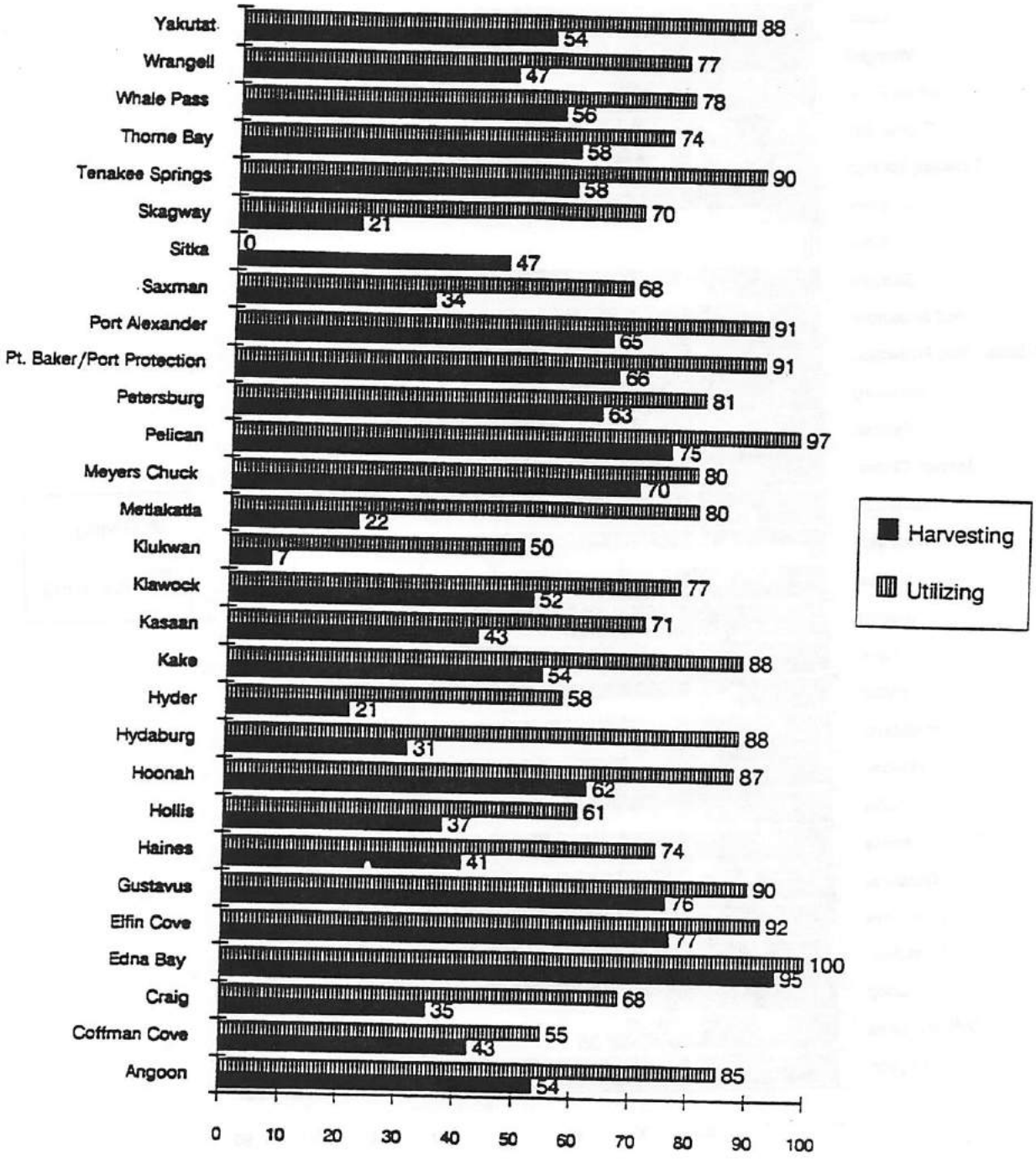
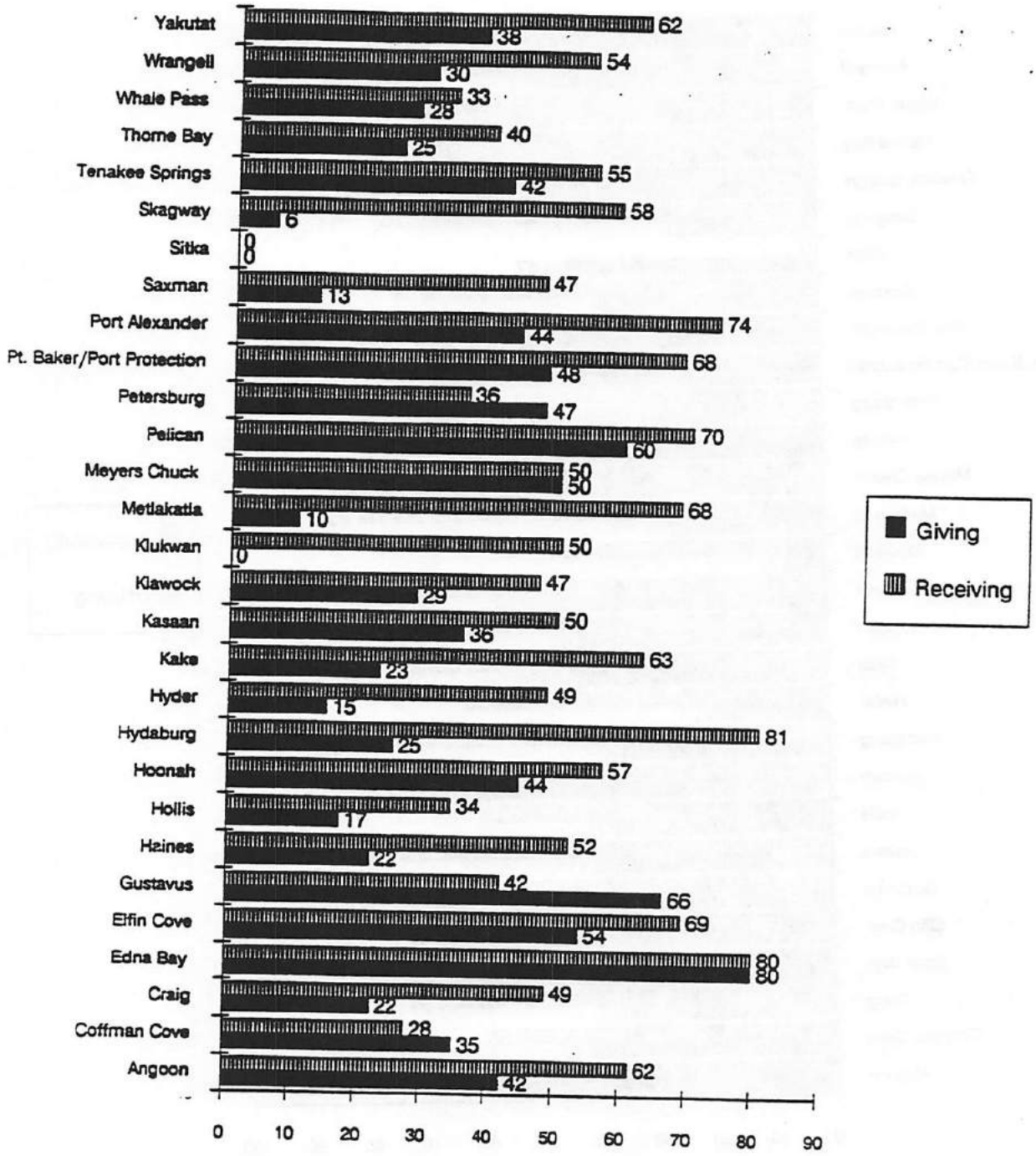


Figure 3.6 **Estimated Percent of Households Giving & Receiving Halibut, 1987 Data, by Community**



3.1.3.3 Alaska Natives of Area 3A

Area 3A has a number of tribal groups intermingled along the coast. Tlingit live in Yakutat together with Athapaskans, Chugach Eskimo are found throughout the Prince William Sound area, Tanaina Athapaskan Indians are found throughout the Cook Inlet area, Sugpiaq and Koniag Eskimos (who refer to themselves as "Aleuts") are found in Lower Cook Inlet and on Kodiak Island respectively, and Aleuts are scattered throughout Area 3A. Eyak Athapaskan Indians, once widespread from south of Yakutat through the Copper River Delta, are now found only in the Cordova region. The dispersion of Aleuts through the region is in part due to the resettlement of these peoples from the Aleutian Islands during World War II and in part to the Russian settlers who recruited (some sources say "enslaved") Aleuts as workers.

Little information is available on the involvement of Alaska Natives in the commercial fishery for halibut in Area 3A. Estimates of permit holders, based on community of residence, suggest that between 100 and 150 Alaska Natives hold permits to fish in the area. Estimates are difficult to arrive at because, for example, the zip code of two Sugpiaq Eskimo communities, English Bay and Port Graham, is the same as that for Homer, a predominantly non-Native settlement. Communities with an Alaska Native population greater than 20% in the region include Old Harbor, Port Lions, Ouzinkie, Larsen Bay, Ahkiok and Karluk on Kodiak Island (Koniag Eskimo); Yakutat (Tlingit); Chenega and Tatitlek (Chugach Eskimo); Port Graham, Seldovia, and English Bay (Sugpiaq Eskimo); and Tyonek (Tanaina).

3.1.3.3.1 The Chugach Eskimo

The Chugach Eskimo have a long history of living throughout Prince William Sound, and have resided there at least since Captain James Cook made the first recorded contact with them in 1778 (Stratton 1989). According to oral tradition and based on research done in the 1930's, there were 8 geographical groups of Chugach residing in the Prince William Sound area. Their villages were always located on the shore line to provide easy access to marine resources (Stratton 1989). These geographical groups or tribes shared their culture and language and came together for feasts, but maintained political independence from each other (Birket-Smith 1953; de Laguna 1956).

Marine resources such as sea mammals and a variety of fish, including salmon, halibut, red snapper, and cod are the staple foods of the Chugach. Dependent on the weather, the Chugach fished for halibut with hooks and lines. They had the most success in this pursuit in the early summer (Birket-Smith 1953).

By the early 1960s, in Chenega, a Chugach Eskimo community, halibut had become the most commonly harvested bottom fish. Like other Alaska Native American tribes and communities, subsistence food sharing was prevalent. Ten out of fourteen households fished for halibut, primarily from late spring to early fall and shared the catch with any member of the community who wished to partake (Stratton and Chisum 1986). By the mid-1980s, sharing halibut had become even more common, with ten households (67%) reporting that they gave away halibut and twelve households reporting they had received it (Stratton and Chisum 1986). Following the Exxon Valdez oil spill 1990 subsistence harvests were 60% less than previous years in Chenega.

3.1.3.3.2 Koniag Eskimos

Kodiak-area Alaska Natives refer to themselves as Aleuts, but ethnographically they are Koniag Eskimos, using the Sugpiaq Eskimo dialect (Schroeder, et al; 1987). Archaeological data shows that Kodiak Island was first settled some 8,000 years before present, and the Koniag Eskimos have occupied the island for at least 700 years.

Schroeder et al. (1987) report that "Koniag culture has been strongly focused on the sea, and major subsistence use has been made of marine fish, mammals, and invertebrates" (1987). The wealth of marine resources was such

that it is estimated that the population in pre-contact times was between 6,500 and 10,000 people. It is estimated that some 3,100 Koniag Eskimos lived on Kodiak Island and the out-islands in 1983 (Schroeder et al. 1987). Subsistence harvest of halibut is important to Alaska Natives in the six non-road-connected communities of Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions, as well as in Kodiak City. Highest per-capita levels of halibut subsistence harvest were in Port Lions (85.6 pounds/capita) and Old Harbor (56.7 pounds/capita). Akhiok residents had the lowest halibut subsistence catch and harvested 24.3 pounds/capita in 1987.

The participation of Alaska Natives in the commercial fishery for halibut on and around Kodiak Island is not known, but it is estimated that at least 60 Koniag hold commercial fishing permits. Some Alaska Natives work in the fish processing plants, but the majority of the processing workforce is Filipino.

3.1.3.4 Alaska Natives of Area 3B

Two groups of Alaska Natives inhabit the communities of this area. Chignik, Chignik Lake, Chignik Lagoon, Perryville, and Ivanof on the Lower Alaska Peninsula was populated by Kaniagmuit Eskimos at the time of Russian contact (Schroeder, et al; 1987). The population relocations during the Russian period led to mixing of, and inter-marriage between, Eskimo, Aleut and other Alaska Native groups and families and with Europeans. The communities of Sand Point, King Cove, Cold Bay, and False Pass were developed with the commercial sealing and fishing industry. Their Alaska Native population was drawn from in-migration of Aleut groups from communities further west on the Aleutian Chain. Inter-marriage with European fishermen and sealers has also been frequent, and some Aleuts who were moved to Southeast Alaska during World War II or were sent to a Bureau of Indian Affairs school in Sitka returned to the region with Tlingit spouses. The residents of the area prefer to call themselves "locals" rather than Alaska Natives, although all the communities (with the exception of Cold Bay) have an Alaska Native population greater than 50 per cent of the whole (see Table 3.9). When an Alaska Native descriptor is sought, residents refer to themselves as Aleuts (Schroeder et al. 1987).

Commercial and subsistence fishing are important activities of these communities and halibut features in both. It is estimated that some 40 Alaska Natives hold commercial halibut fishing permits in Area 3B of the 117 permits issued. Employment as crew and in processing plants is unknown at this time.

3.1.3.5 Alaska Natives of Area 4

Area 4 includes the waters surrounding the Aleutian Chain and the Bering Sea. The Alaska Native population of the Pribilof and Aleutian Islands is Aleut. Saint George, Saint Paul, Akutan, Atka, and Nikolski have Alaska Native populations in excess of 39% of the whole population (see Table 3.12). The four Aleutian communities have been year-round Aleut settlements since pre-contact days, and the Aleuts of the Pribilofs were transported to the Islands as seal hunters by the Russians in the late eighteenth century (Schroeder et al. 1987; Veltre and Veltre 1981).

The East Bering Sea communities are populated by Yup'ik Eskimos, and only regional centers such as Nome, Dillingham, Bethel, or special function towns like King Salmon, Naknek, and Port Heiden, have an Alaska Native population of less than 85%.

3.1.3.5.1 The Aleut

Based on archaeological data, the Aleut Indians have lived in the Aleutian archipelago area for at least 4,000 years and probably have been living there for as long as 8,500 years before present. Throughout this time, they have maintained their cultural adaptation to the sea, which serves as the essential provider of nearly all of the basic necessities of life (Veltre and Veltre 1983). As Orbach and Holmes (1983) state, "...fishing in the Pribilofs

is centered about a species which is both an Aleut tradition and a commercial prize: halibut."

Aleuts, like other Alaska Native American tribes/communities, are enmeshed culturally and economically with the surrounding natural resources (Veltre and Veltre 1983; Orbach and Holmes 1983; Schroeder, Andersen, Bosworth, Morris, and Wright 1987). In most communities halibut is harvested year round, providing a constant supply of this important resource (Schroeder, Andersen, Bosworth, Morris, and Wright 1987). Most people prefer to eat traditional foods over many of the commercial items that are available. For some, traditional foods comprise as much as 50% of the diet. In addition, many people prefer traditional preservation methods, salting and drying, for example, even though most have freezers (Veltre and Veltre 1983).

Fishing for halibut provides not only valuable nutrition but is important for maintaining social ties within families and between various members of the community. In Atka, most of the fishing is done by men, either alone or in small groups. Women, who normally do not participate in subsistence activities, may sometimes fish for halibut from the shore (Veltre and Veltre 1983) or may even go along on fishing trips with the men (Orbach and Holmes 1983). Besides berry-picking, this is the only harvesting activity where the women are relatively equal partners in the acquisition of resources (Orbach and Holmes 1983).

Once the halibut is brought back, it is shared with the community (Orbach and Holmes 1983; Veltre and Veltre 1983; Schroeder et al. 1987). As Veltre and Veltre state, "Two of the basic tenets of the Aleut subsistence economy since pre-contract times have been cooperation in subsistence endeavors and sharing of the products of hunting, gathering, and fishing. Both cooperation and sharing are still very much a part of resource utilization in Atka today . . ." (1983). Members of Aleut communities derive great satisfaction and pride in being able to share traditional foods that they have caught with their families and with the community as a whole (Veltre and Veltre 1983). As Orbach and Holmes (1983) note, "it is the kindness, remembrance and satisfaction of this activity as much as its support of tradition or sustenance which gives it its value."

3.1.3.5.2 The Yup'ik

Although the area where the Yup'ik live has been inhabited by several different human groups in the last 10,000 years, archaeological evidence suggests that by A.D. 1000 the cultural ancestors of present-day western region Yup'ik Eskimos were living in and utilizing the subsistence resources of the area (Schroeder et al. 1987).

In Togiak, for example, halibut is harvested for subsistence whenever available. However, not being able to rely on halibut year-round in no way detracts from the importance of subsistence fishing for halibut for the Yup'ik. Like other Alaska Native tribes and communities, the Yup'ik will save these catches of halibut for eating at home or will share them with others in the village (Schroeder et al. 1987; Wright, Morris, and Schroeder 1985).

The Yup'ik way of life in intricately entwined with the natural environment and the resources therein. Natural resources are valued not only for their obvious nutritional and economic components but for the cultural and familial glue they provide to the members of the community, particularly for the elderly and those in need. As noted in Schroeder et al. "Family activities, particularly in the Yup'ik and Athapaskan communities, are centered around fishing and hunting. Families are bound together by the distinctive labor roles of men and women and different responsibilities of different age groups. The distribution and exchange of subsistence products link families and provide an expression of kinship ties and social order" (1987).

A Yup'ik individual's psychological well-being and social adjustment are dependent upon fishing and hunting and gathering. Those who participate in the acquisition of the resources as well as those who receive them attach deep personal meaning to the process of harvesting, processing, and sharing subsistence foods. These are based upon traditional values, belief systems, and ideological structures that are culturally learned and culturally maintained (Schroeder et al. 1987). For many Yup'ik men, much like their counterparts in the commercial fishing industry,

self-worth is measured by their ability to provide for their families and their community. Disruption of this way of life could lead to many negative consequences, from shaking up the family and social order to substance abuse (Schroeder et al. 1987).

3.1.3.5.3 Kuskokwim

The following is adapted from an ADFG Subsistence Division report (ADFG 1993) describing the long term, consistent customary and traditional pattern of use of halibut and Pacific cod in the Kuskokwim area. Halibut, along with a variety of other marine fish species, have been historically harvested in this area since the 1840s. Most of the directed marine fish harvest is conducted by coastal community residents of all ages, and dried halibut is also traded and bartered along local networks. Jigging, spearing, and handpicking are especially important activities for children and youth who learn the practice from elder women and men.

Kuskokwim fishermen have developed a use pattern consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost. Directed fishing for halibut and Pacific cod begins immediately after herring fishing in June and extends through August in the Nunivak and Nelson Island areas, although July affords the best weather and most productive fishing. Halibut are caught by jigging or longlining, but also in salmon nets in Kuskokwim Bay. Locally made hand-held jigs typically contain two or three baited hooks and weight attached to the center hook; this gear is a traditional method described as early as the 1880s. Manufactured surf-casting rod-and-reel containing one baited circle hook with weight attached is also frequently used, particularly by younger fishermen. Commercial longline gear is also set for halibut, and undersized fish are kept for subsistence. Most halibut fishing crews are composed of both commercial and subsistence fishermen during commercial fishing periods because most families have one marine fishing boat and one set of longline gear. Further, weather and rough seas generally restrict the opportunities for effective fishing, so combining commercial and subsistence efforts takes advantage of limited good weather and saves on gear and gasoline.

Halibut fishing areas are generally in deep waters near each community. Mekoryuk fishermen fish from Cape Etolin south and east along Nunivak island. Halibut are believed to travel northward as the summer progresses, so Nelson Island fishermen follow the schools between the south side of the island and north of Chinit Point by August. Chefornak and Kipnuk fishermen occasionally fish for halibut along the coast of their communities. Along southern Kuskokwim Bay, halibut are caught incidentally in commercial salmon nets. The proximity, economy, and ease of harvest make halibut an important resource.

Halibut are eaten fresh, dried, and frozen to be cooked in the winter. Halibut heads are highly prized; they are boiled fresh or partially dried. They are filleted and scored like salmon for drying, and are also smoked.

Halibut and other marine fish are shared among community households, particularly the first harvests of the season. A 1986 subsistence survey in Tununak showed that 97% of households participated in halibut harvesting. Halibut was the second single highest species produced for subsistence at 93.5 lb per person. Irregular trade and barter exchanges occurred in which dried and frozen halibut was traded for dried salmon with Kuskokwim River residents.

3.1.3.5.4 Tununak

The following is taken from a description of the 1986 Tununak halibut fishery from a memo from M. Pete to R. Wolfe, ADFG Subsistence Division (1988). Both commercial and subsistence fishing is conducted primarily with either locally-made, hand-held jigging gear or purchased deep-sea rod-and-reel gear. Although the number has been slowly increasing since the inception of the commercial fishery in 1982, few fishermen use longline gear to catch halibut. Thirty-one of 33 Tununak households sampled (total of 64 households and 325 residents) owned an average of 2.7 units of home-made jigging or purchased rod-and-reel gear; 16 of the 33 owned an average of

1.2 units of longline gear. In 1986, 76% of sampled households reported using only rod-and-reel or home-made jigging gear to catch halibut; 6.1% only used longline gear; and 15% used a combination of jigging, longline and set net gear to catch halibut. Halibut caught in salmon set gill nets is an incidental catch, but taken for subsistence. In all Nelson Island area communities, most area residents retain halibut less than the 32 inch commercial minimum size caught on longlines for subsistence.

3.1.3.5.4.1 Subsistence Fishery

All but one of 33 households sampled attempted to fish for halibut in 1986. The total harvest was 790 halibut, ranging between 1 and 120 and averaging 24 fish/household and 7-11 fish/person. Ten% of the households provided 55 % of the total harvest. The halibut harvest totaled 15,800 lb round weight, approximately 9% of the total subsistence harvest of all resources. All fish harvests accounted for 71% by weight, and halibut accounted for 12% of usable pounds of fish. It provided 94 lb per capita of food, which was second only to herring (439 lb per capita). Expanding the subsample subsistence harvest to the entire Tununak village yields an estimated 30,000 lb in 1986. The annual subsistence harvest for the Nelson Island region may exceed the commercial harvest. The annual quota ranged between 35,000 and 75,000 lb. Expanding the 94 lb of halibut per capita generated from the subsample yields an estimated 94,000 lb of subsistence halibut, greater than the commercial catch for any year prior to 1986.

The implementation of Individual Fishing Quotas (IFQs) and Community Development Quotas (CDQs) for halibut and sablefish in 1995, has resulted in increased fishing opportunities for Western Alaska rural communities. The CDQ program has redirected set%ages of the commercial quota to coastal communities in the BSAI (Table q). Approximately 20% of the halibut commercial quota is allocated to Western Alaska coastal communities. The economic effects of the CDQ program on Western Alaskan communities are discussed below.

3.1.3.5.4.2 Commercial Fishery

Twenty-five of 33 sampled households had members involved in commercial fishing in 1986. Of these, 19 had members involved in the commercial halibut fishery, compared with 20 and 6 households, with members in herring and salmon fisheries, respectively. Mean household income from commercial halibut fishing was $488. Twenty-seven persons earned between $15 and $2,000 for a total income of $16,090 for the community. In 1984, a total of $10,882 was earned from commercial halibut fishing. Commercial fishing produced 10% of total income, and halibut fishing produced 2%. These income amounts may be misleading because wage employment (buyers, cleaners, packers, etc.) is not included. It is important to note that because incomes in rural Western Alaskan communities are low and cost of living is high, the contributions made by subsistence fishing are important.

3.2 Description of Affected Communities

3.2.1 Relevant Community Profiles

Previous community profiles developed by the Council are to be found in Langdon and Miller (1983, 1984a and 1984b) and IAI (1991). The communities profiled are those of Akutan, Kodiak, Petersburg, Saint Paul, Sand Point, and Unalaska, Alaska; Bellingham and Seattle, Washington; and Newport, Oregon. The Langdon and Miller study was of the halibut fishery; that by IAI was of the North Pacific groundfish fishery. Both data sets have been fully utilized in this literature review and are the basis for the descriptions in Sections 3.1.1 and 3.1.2 above. Extensive additional material has been drawn from the community profiles developed by the Subsistence Division, Alaska Department of Fish and Game of rural Alaskan coastal communities. This material has been incorporated into Sections 3.1.1 and 3.1.3 above. Information from social impact studies undertaken for or by the Minerals Management Service and the National Park Service, U.S. Department of the Interior, and for the

Forest Service, U.S. Department of Agriculture has been incorporated where appropriate.

3.2.2 Size, Composition, and Stability of Affected Work Force

No comprehensive survey of halibut fishermen and processing workers has been undertaken for this FMP amendment. Estimates based on the studies reviewed in Section 3.1.1 are that, in 1990, there were 14,889 fishermen and 4,500 point-of-landing processing workers involved in the halibut fishery. (The estimates of the number of fishermen employed in the fishery developed as part of the economic analysis in Section 3.1.13 above is 14,721; since these estimates were developed separately from different source materials, their similarity indicates that they are realistic.) Langdon and Miller (1984b), using IPHC survey data of the fishery, showed that there were 2,050 halibut fishermen in 1978 and 2,809 fishermen in 1982. The increase was attributed to the shift to the open access "derby" fishery in 1977.

Between 1984 and 1990, 8,212 vessel owners have participated in the fishery, and, in 1990, there were 3,823 permit holders.

In Tables 3.15 and 3.16 the movement in and out of the fishery since 1984 is shown. Only 6% of vessels fished in all seven years between 1984 and 1990. This movement in and out of the fishery has three explanations. First, the short seasons made it possible for fishermen to fish for halibut without affecting their participation in other fisheries. Second, the development of the longline fishery for Pacific cod and sablefish increased the number of larger vessels able to fish for halibut. Finally, a number of fishermen sought to develop a record of participation in the fishery prior to any consideration of access controls by the Council. For these reasons, the number of fishermen and vessels in the fishery has grown rapidly. Langdon and Miller (1984b) showed that the fishery in 1982 had offered relatively stable and continuous employment for fishermen. The mean age of fishermen in their sample was 40.66 years, and the mean number of years of experience in the halibut fishery was 13.05 years.

The fishery has three principal components; the vessels from "Outside" which tend to be larger and exploit the western halibut fisheries; the vessels from urban Alaskan communities; and the vessels associated with rural Alaskan communities. The rural communities have, in the main, higher proportions of Alaska Natives as residents and fishermen and greater numbers of smaller vessels, particularly skiffs. The Alaskan urban communities, with their better support facilities, have fleets of vessels which include larger longliners similar to those from "Outside" as well as vessels fishing in the local fisheries.

As noted above, this analysis is based upon a study of the literature related to the halibut fishery. The most recent survey of halibut fishermen, carried out in 1982 by Langdon and Miller, showed that 7% of the fishermen were residents of Washington State; 37.5% lived in Southeast Alaska (including Yakutat); 3.2% lived in Prince William Sound communities; 35.6% resided in Cook Inlet communities; 11.1 lived on Kodiak Island, and 3% in the Lower Alaska Peninsula and Aleutian Islands. Of the Alaskan fishermen, 72% lived in urban communities.

The crews are typically paid on a crew-share/boat-share basis. This pattern of payment extends back to the early days of the halibut fishery. The Deep Sea Fishermen's Union (DSFU) founded in 1912, has represented the Puget Sound fishermen in negotiations about pay and conditions with the Fishing Vessel Owner's Association (FVOA) since 1914. This is the only example of organized labor-owner agreements in the fishery.

3.2.3 Relative Economic Importance of the Halibut Fishery

The literature survey did not provided sufficient specific information to assess the economic importance of the halibut fishery to communities. In general, there are few employment opportunities other than commercial fishing available to residents of rural Alaskan communities described in Section 3.1.

ADFG studies indicate that in many rural areas, subsistence is part of a traditional regional economy, termed a "mixed, subsistence-market economy" (Wolfe and Bosworth 1990). Fishing and hunting are central activities conducted by extended family groups. The family invests in small-scale, efficient technologies, such as fishwheels, gill nets, motorized skiffs and snow machines, for producing food. Subsistence production is not oriented toward market sale or accumulated profit, as is commercial market production. It is directed toward meeting the self-limiting needs of families and small communities (Wolfe and Bosworth 1990).

According to Wolfe and Bosworth (1990), a family's subsistence production is augmented and supported by cash employment by family members. Depending upon the region, employment commonly is in commercial fishing, commercial trapping, and public sector wage employment. Typically, but not always, mean annual monetary incomes in the region are modest and intermittent. Families follow an economic strategy of using a portion of the annual monetary earnings to capitalize in subsistence technologies for producing food. This combination of subsistence and commercial-wage activities by extended family groups characterizes the mixed, subsistence-market economy.

While subsistence halibut fishing is important to the local economies of some rural Alaska communities, quantifying the economic value of those harvests is difficult since these harvests generally are not sold. However, one method of estimating the economic value of halibut subsistence would be to estimate the replacement costs if rural residents were to purchase and import substitutes. If one assumes $3-5 per pound as replacement expenses, the simple "replacement costs" of halibut harvests in rural Alaska is $852,000 - $1,140,000 (Wolfe and Bosworth 1994).

4.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 1.1 and 1.2, and the list of preparers is in Section 10. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

4.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear.

A summary of the effects of the annual groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the annual groundfish total allowable catch specifications.

4.2 Impacts on Endangered or Threatened Species

Endangered and threatened species under the ESA that may be present in the Bering Sea include:

Endangered

Northern right whale	*Balaena glacialis*
Sei whale	*Balaenoptera borealis*
Blue whale	*Balaenoptera musculus*
Fin whale	*Baleanoptera physalus*
Humpback whale	*Megaptera novaeangliae*
Sperm whale	*Physeter macrocephalus*
Snake River sockeye salmon	*Oncorhynchus nerka*
Short-tailed albatross	*Diomedea albatrus*

Threatened

Steller sea lion	*Eumetopias jubatus*
Snake River spring and summer chinook salmon	*Oncorhynchus tshawytscha*
Snake River fall chinook salmon	*Oncorhynchus tshawytscha*
Spectacled eider	*Somateria fischeri*

None of the alternatives is expected to have a significant impact on endangered or threatened species.

4.3 Impacts on Marine Mammals

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

None of the alternatives are expected to have a significant impact on marine mammals.

4.4 Coastal Zone Management Act

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

4.5 Impacts on the Human Environment

An environmental assessment is required to reflect impacts of the fishery on the human environment of any Federal planning or rule-making. NEPA specifies that the term "human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment [40 CFR 1508.14]. The 1990 amendment to the Magnuson Act required that an FMP must assess, specify, and describe the likely effects of conservation and management measures on participants in the affected fisheries, and the effects on participants in other fisheries that may be affected directly or indirectly.

4.6 Conclusions or Finding of No Significant Impact

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

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

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, and quantification of the economic impacts where possible.

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

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

This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

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

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

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

A history of legal actions related to subsistence in Alaska is lengthy, complicated and unresolved. It is sufficient to understand that the federal and state governments have different and legitimate interpretations of subsistence and authorities for management and that the Council can choose from among the management alternatives and options presented below to address their stated goal of legitimizing the established halibut subsistence fishery in federal regulation.

5.1 Alternatives Considered

5.1.1 Alternative 1: No Action

Current personal use regulations developed by the International Pacific Halibut Commission and implemented by the National Marine Fisheries Service do not provide for customary and traditional subsistence practices by residents of rural Alaskan communities. The status quo alternative would continue the current application of halibut sportfishing regulations to subsistence harvests in Alaska. Continued conflict would occur between federal and state enforcement agencies and rural Alaskans engaging in customary and traditional halibut subsistence practices.

Under Alternative 1 (no action), the halibut regulations would not be revised to legitimize halibut subsistence fishing. There would be no change in the impacts to affected persons under this alternative.

5.1.2 Alternative 2: Allow the harvest of halibut for subsistence.

5.1.2.1 Option 1. Define subsistence.

The Council included the following definition, which was recommended to them by the Halibut Subsistence Committee, in the analysis. However, the definition of subsistence may be revised pending final action by the Council for Options 2 through 6. The recommended language, however, may remain appropriate.

Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.'

5.1.2.2 Option 2. Define eligibility.

Suboption A. Members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut. (Subsistence Committee definition)

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Alaska Native Groups with Subsistence Halibut Uses,' and also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

Suboption C. Tribal members and non-Native permanent residents of Alaska Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

The Council must weigh the proposed definitions for eligibility against its stated goal of legitimizing the existing halibut subsistence fishery, while increasing neither the number of subsistence fishers nor halibut removals. Defining who is eligible to participate in the fishery is an important aspect of designing a workable program. First, eligibility criteria must be fair and equitable. Second, the eligibility definition must match the current users.

Suboption A is the definition recommended by the Halibut Subsistence Committee appointed by the Council and is based on Alaska Native Groups living in areas identified as having halibut subsistence uses by the State of Alaska (Table 5.1). A total of 41,874 Alaska Native Alaskans reside in eligible communities.

Table 5.1. Alaska Native Groups in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Place	Organized Entity*	Number Alaska Natives in Community	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
District 2C				
Angoon	Angoon Community Association	495	2C	1
Craig	Craig Community Association	446	2C	1
Haines	Chilkoot Indian Association	247	2C	1
Hoonah	Hoonah Indian Association	607	2C	1
Hydaburg	Hydaburg Cooperative Assocation	362	2C	1
Juneau	Aukquan Traditional Council**	3,770	2C	1
	Central Council Tlingit & Haida Indian Tribes			
	Douglas Indian Association			
Kake	Organized Village of Kake	511	2C	1
Kasaan	Organized Village of Kasaan	22	2C	1
Ketchikan	Ketchikan Indian Corporation	1,717	2C	1
Klawock	Klawock Cooperative Association	412	2C	1
Klukwan	Chilkat Indian Village	143	2C	1
Metlakatla	Metlakatla Indian Community, Annette Island Reserve	1,277	2C	1
Petersburg	Petersburg Indian Association	341	2C	1
Saxman	Organized Village of Saxman	303	2C	1
Sitka	Sitka Tribe of Alaska	1,922	2C	1
Skagway	Skagway Village	45	2C	1
Wrangell	Wrangell Cooperative Association	552	2C	1
	District 2C Communities	*13,169*		
District 3A				
Akhiok	Native Village of Akhiok	75	3A	1
Chenega Bay	Native Village of Chanega	66	3A	1
Cordova	Native Village of Eyak	288	3A	1
Karluk	Native Village of Karluk	53	3A	1
Kenai-Soldotna	Kenaitze Indian Tribe	775	3A	1
	Village of Salamatoff	113		
Kodiak City	Lesnoi Village (Woody Island)	1,443	3A	1
	Native Village of Afognak			
	Shoonaq' Tribe of Kodiak**			
Larsen Bay	Native Village of Larsen Bay	110	3A	1
Nanwalek	Native Village of Nanwalek	148	3A	1
Ninilchik	Ninilchik Village	116	3A	1
Old Harbor	Village of Old Harbor	275	3A	1
Ouzinkie	Native Village of Ouzinkie	221	3A	1
Port Graham	Native Village of Port Graham	154	3A	1
Port Lions	Native Village of Port Lions	158	3A	1
Seldovia	Seldovia Village Tribe	44	3A	1
Tatitlek	Native Village of Tatitlek	107	3A	1
Yakutat	Yakutat Tlingit Tribe	441	3A	1
	District 3A Communities	*4,586*		
District 3B				
Chignik Bay	Native Village of Chignik	64	3B	1
Chignik Lagoon	Native Village of Chignik Lagoon	37	3B	1
Chignik Lake	Chignik Lake Village	141	3B	1
False Pass	Native Village of False Pass	56	3B	1
Ivanof Bay	Ivanoff Bay Village	26	3B	1
King Cove	Agdaagux Tribe of King Cove	281	3B	1

Table 5.1. Alaska Native Groups in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Place	Organized Entity*	Number Alaska Natives in Community	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
	Native Village of Belkofski			
Nelson Lagoon	Native Village of Nelson Lagoon	71	3B	1
Perryville	Native Village of Perryville	98	3B	1
Sand Point	Pauloff Harbor Village	416	3B	1
	Native Village of Unga			
	Qagan Toyagungin Tribe of Sand Point Village			
	District 3B Communities	*1,191*		
Districts 4A-D				
Akutan	Native Village of Akutan	59	4A-D	1
Atka	Native Village of Atka	71	4A-D	1
Nikolski	Native Village of Nikolski	22	4A-D	1
St. George	Pribilof Islands Aleut Communities of St. Paul Island & St. George Islands	143	4A-D	1
St. Paul	Pribilof Islands Aleut Communities of St. Paul Island & St. George Islands	507	4A-D	1
Unalaska	Qawalingin Tribe of Unalaska	342	4A-D	1
	District 4A-D Communities	*1,145*		
District 4E				
Chefornak	Village of Chefornak	362	4E	1
Gambell	Native Village of Gambell	604	4E	1
Mekoryak	Native Village of Mekoryak	211	4E	1
Newtok	Newtok Village	256	4E	1
Nightmute	Native Village of Nightmute	180	4E	1
	Umkumiute Native Village			
Savoonga	Native Village of Savoonga	575	4E	1
Toksook Bay	Native Village of Toksook Bay	463	4E	1
Tununak	Native Village of Tununak	341	4E	1
Wales	Native Village of Wales	154	4E	1
Aleknagik	Native Village of Aleknagik	151	4E	2
Clark's Point	Village of Clark's Point	56	4E	2
Dillingham	Native Village of Dillingham	1,252	4E	2
	Native Village of Ekuk			
Egegik	Egegik Village	101	4E	2
	Village of Kanatak			
Kipnuk	Native Village of Kipnuk	530	4E	2
Levelock	Levelock Village	96	4E	2
Manokotak	Manokotak Village	384	4E	2
Naknek Area	Naknek Native Village	337	4E	2
Nome	King Island Native Community	1,863	4E	2
	Nome Eskimo Community			
Pilot Point	Native Village of Pilot Point	63	4E	2
Port Heiden	Native Village of Port Heiden	91	4E	2
South Naknek	South Naknek Village	116	4E	2
Alakanuk	Village of Alakanuk	579	4E	3
Bethel	Orutsararmuit Native Village	3,319	4E	3
Brevig Mission	Native Village of Brevig Mission	245	4E	3
Chevak	Chevak Native Village	634	4E	3
Council	Native Village of Council	5	4E	3
Eek	Native Village of Eek	271	4E	3

Table 5.1. Alaska Native Groups in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Place	Organized Entity*	Number Alaska Natives in Community	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
Elim	Native Village of Elim	258	4E	3
Emmonak	Chuloonawick Native Village	702	4E	3
	Emmonak Village			
Golovin	Chinik Eskimo Community	137	4E	3
Goodnews Bay	Native Village of Goodnews Bay	243	4E	3
Hooper Bay	Native Village of Hooper Bay	955	4E	3
	Native Village of Paimiut			
Kongiganak	Native Village of Kongiganak	327	4E	3
Kotlik	Native Village of Hamilton	526	4E	3
	Village of Bill Moore's Slough			
	Village of Kotlik			
Koyuk	Native Village of Koyuk	245	4E	3
Kwigillingok	Native Village of Kwigillingok	310	4E	3
Napakiak	Native Village of Napakiak	308	4E	3
Napaskiak	Native Village of Napaskiak	383	4E	3
Oscarville	Oscarville Traditional Village	38	4E	3
Platinum	Platinum Traditional Village	41	4E	3
Quinhagak	Native Village of Kwinhagak	515	4E	3
Scammon Bay	Native Village of Scammon Bay	419	4E	3
Shaktoolik	Native Village of Shaktoolik	188	4E	3
Sheldon Point	Native Village of Sheldon's Point	121	4E	3
Solomon	Village of Solomon	6	4E	3
St. Michael	Native Village of Saint Michael	303	4E	3
Stebbins	Stebbins Community Association	450	4E	3
Teller	Native Village of Mary's Igloo	250	4E	3
	Native Village of Teller			
Togiak	Traditional Village of Togiak	611	4E	3
Tuntutuliak	Native Village of Tuntutuliak	329	4E	3
Twin Hills	Twin Hills Village	69	4E	3
Ugashik	Ugashik Village	4	4E	3
Unalakleet	Native Village of Unalakleet	625	4E	3
White Mountain	Native Village of White Mountain	184	4E	3
	District 4E Communities	*21,783*		
Total Districts		**41,874**		

* Indian entities recognized and eligible to receive services from the United States Bureau of Indian Affairs, cf., Federal Register, February 16, 1995, v. 60, no. 32, p. 9249-9255.

** Applying for recognized status.

The Halibut Subsistence Committee suggested that under Suboption A, Alaska Native Federally-recognized Tribes with customary and traditional use of halibut would be allowed to determine who is eligible from their own membership. This membership list can be provided to NMFS for monitoring and enforcement purposes. This method would avoid having to make individual determinations on who should be authorized to participate in the halibut subsistence fishery. Those on the "membership list" would be authorized. The only determination that would be necessary would be establishing which groups were "Alaska Native Federally-recognized Tribes with customary and traditional use of halibut," a much simpler task than determining whether individuals within that group had "legitimate subsistence needs." Individuals carrying an appropriate Tribal membership identification card (issued by the Tribe) and a subsistence permit would meet legal requirements to halibut subsistence fish.

Suboptions B and C are definitions based in part on other federal law. Suboption B is the ANILCA definition and the list of "Alaska Rural Places and Alaska Native Groups" was developed by the Alaska Board of Fisheries and Game based on that definition (Table 5.2). Suboption C (also referred to as "Native-plus") is the definition used in the Migratory Bird Treaty Act. As shown by the estimates in Table 5.3, under Suboption A (Alaska Federally-recognized Tribes), there are 41,874 persons eligible, of which 41,874 are Alaska Native; under Suboption B (Alaska Rural Residents), there are 82,171 persons eligible of which 35,512 are Alaska Natives and 46,659 are non-Natives; under Suboption C (Alaska Native Groups and Other Rural Residents), there are 88,533 persons eligible of which 41,879 are Alaska Native and 46,654 are non-Natives. The 6,367 fewer Alaska Natives eligible under Suboption B compared with the other two suboptions are Alaska Native tribal members residing in Juneau, Ketchikan, and the Kenai-Soldotna areas. The rural eligibility option excludes Alaska Native tribal members residing in these places, while Suboptions A and C include them.

Suboption B incorporates the ANILCA definition and an established table of eligible "Alaska Rural Places and Alaska Native Groups with Subsistence Halibut Uses" (Table 5.1). This definition is based on a rural vs. non-rural distinction, rather than a distinction based on ancestral origin. The ANILCA definition, and the process for determining eligibility under that definition, is clear, objective, and well-established. However, there are certain provisions of the ANILCA definition that must be considered if Suboption B was adopted without revision, especially those provisions concerning "customary trade" and "barter." These are considered under Option 5.

Suboption B is a choice, rather than a requirement, because Title VIII of ANILCA does not apply to Convention waters, which include the maritime areas off the west coast of the United States and Canada where halibut are found. The non-applicability of Title VIII eliminates some of the more confusing aspects of the subsistence issue currently being resolved by the federal government and the State of Alaska.

The most important consideration for the Council in its choice of a suboption for eligibility is to legitimize those individuals currently participating in the halibut subsistence fishery. Secondarily, the process of identifying legitimate subsistence users should be simple. The Council and NMFS would likely not want to have to develop a process whereby eligibility would be determined for *individuals*. Suboptions A and B would legitimize entire Alaska Native Tribes or both Alaska Native and non-Native rural residents from eligible communities. Suboption C would require a determination of "who has legitimate subsistence needs." Such eligibility determinations can be costly and time-consuming, especially if they are required for individuals. A method to avoid such determinations would use an objective standard for eligibility. An objective standard may already be established, as in the case of Suboption B, or can be established during program development, as in the case of Suboption A. In either case, the most important consideration is that objective criteria be established to avoid individual determinations.

Two other examples of subsistence user criteria in federal law are those found in the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The ESA provides a specific exemption for "any Indian, Aleut, or Eskimo who is an Alaska Native who resides in Alaska . . . or any non-native permanent resident of an Alaskan Alaska Native village . . . if such taking [by the non-Native] is primarily for subsistence purposes." There is an additional requirement that "any taking under [the exemption] may not be accomplished in a wasteful

Table 5.2. Alaska Rural Places in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Rural Place*	Organized Entity	Population (1995)	Percent Alaska Native	Number Alaska Natives	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
District 2C						
Angoon	Municipality	601	82.3%	495	2C	1
Coffman Cove	Municipality	254	6.9%	18	2C	1
Craig	Municipality	1,946	22.9%	446	2C	1
Edna Bay	Census Designated Place	79	0.0%	0	2C	1
Elfin Cove	Census Designated Place	48	1.8%	1	2C	1
Gustavus	Census Designated Place	328	3.9%	13	2C	1
Haines	Municipality	1,363	18.1%	247	2C	1
Hollis	Census Designated Place	106	2.7%	3	2C	1
Hoonah	Municipality	903	67.2%	607	2C	1
Hydaburg	Municipality	406	89.1%	362	2C	1
Hyder	Census Designated Place	138	1.0%	1	2C	1
Kake	Municipality	696	73.4%	511	2C	1
Kasaan	Municipality	41	53.7%	22	2C	1
Klawock	Municipality	759	54.3%	412	2C	1
Klukwan	Census Designated Place	165	86.8%	143	2C	1
Metlakatla	Census Designated Place	1,540	82.9%	1,277	2C	1
Meyers Chuck	Census Designated Place	35	10.8%	4	2C	1
Pelican	Municipality	209	29.3%	61	2C	1
Petersburg	Municipality	3,374	10.1%	341	2C	1
Point Baker	Census Designated Place	62	0.0%	0	2C	1
Port Alexander	Municipality	98	2.5%	2	2C	1
Port Protection	Census Designated Place	64	1.6%	1	2C	1
Saxman	Municipality	394	76.9%	303	2C	1
Sitka	Municipality	9,194	20.9%	1,922	2C	1
Skagway	Municipality	811	5.5%	45	2C	1
Tenakee Springs	Municipality	107	9.6%	10	2C	1
Thorne Bay	Municipality	650	1.2%	8	2C	1
Whale Pass	Census Designated Place	92	2.7%	2	2C	1
Wrangell	Municipality	2,758	20.0%	552	2C	1
	District 2C Communities	*27,221*	*28.7%*	*7,806*		
District 3A						
Akhiok	Municipality	80	93.5%	75	3A	1
Chenega Bay	Census Designated Place	96	69.2%	66	3A	1
Cordova	Municipality	2,568	11.2%	288	3A	1
Karluk	Census Designated Place	58	91.5%	53	3A	1
Kodiak City	Municipality	13,498	10.7%	1,443	3A	1
Larsen Bay	Municipality	130	84.4%	110	3A	1
Nanwalek	Census Designated Place	162	91.1%	148	3A	1
Old Harbor	Municipality	310	88.7%	275	3A	1
Ouzinkie	Municipality	259	85.2%	221	3A	1
Port Graham	Census Designated Place	170	90.4%	154	3A	1
Port Lions	Municipality	233	67.6%	158	3A	1
Seldovia	Municipality	289	15.2%	44	3A	1
Tatitlek	Census Designated Place	124	86.6%	107	3A	1
Yakutat	Municipality	801	55.1%	441	3A	1

Table 5.2. Alaska Rural Places in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Rural Place*	Organized Entity	Population (1995)	Percent Alaska Native	Number Alaska Natives	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
	District 3A Communities	*18,778*	*19.1%*	*3,582*		
District 3B						
Chignik Bay	Municipality	141	45.2%	64	3B	1
Chignik Lagoon	Census Designated Place	65	56.6%	37	3B	1
Chignik Lake	Census Designated Place	154	91.8%	141	3B	1
Cold Bay	Municipality	107	5.4%	6	3B	1
False Pass	Municipality	73	76.5%	56	3B	1
Ivanof Bay	Census Designated Place	28	94.3%	26	3B	1
King Cove	Municipality	716	39.3%	281	3B	1
Nelson Lagoon	Census Designated Place	88	80.7%	71	3B	1
Perryville	Census Designated Place	104	94.4%	98	3B	1
Sand Point	Municipality	844	49.3%	416	3B	1
	District 3B Communities	*2,320*	*51.6%*	*1,196*		
Districts 4A-D						
Akutan	Municipality	436	13.6%	59	4A-D	1
Atka	Municipality	77	92.9%	71	4A-D	1
Nikolski	Census Designated Place	27	82.9%	22	4A-D	1
St. George	Municipality	151	94.9%	143	4A-D	1
St. Paul	Municipality	767	66.1%	507	4A-D	1
Unalaska	Municipality	4,083	8.4%	342	4A-D	1
	Districts 4A-D Communities	*5,541*	*20.7%*	*1,145*		
District 4E						
Chefornak	Municipality	371	97.5%	362	4E	1
Gambell	Municipality	628	96.2%	604	4E	1
Mekoryak	Municipality	212	99.4%	211	4E	1
Newtok	Census Designated Place	275	93.2%	256	4E	1
Nightmute	Municipality	189	95.4%	180	4E	1
Savoonga	Municipality	604	95.2%	575	4E	1
Toksook Bay	Municipality	485	95.5%	463	4E	1
Tununak	Census Designated Place	354	96.2%	341	4E	1
Wales	Municipality	173	88.9%	154	4E	1
Aleknagik	Municipality	182	83.2%	151	4E	2
Clark's Point	Municipality	63	88.3%	56	4E	2
Dillingham	Municipality	2,243	55.8%	1,252	4E	2
Egegik	Municipality	143	70.5%	101	4E	2
King Salmon	Census Designated Place	539	15.5%	84	4E	2
Kipnuk	Census Designated Place	544	97.5%	530	4E	2
Kongiganak	Census Designated Place	336	97.3%	327	4E	2
Levelock	Census Designated Place	116	82.9%	96	4E	2
Manokotak	Municipality	402	95.6%	384	4E	2
Naknek	Census Designated Place	617	41.0%	253	4E	2
Nome	Municipality	3,576	52.1%	1,863	4E	2
Pilot Point	Municipality	74	84.9%	63	4E	2
Port Heiden	Municipality	126	72.3%	91	4E	2
South Naknek	Census Designated Place	146	79.4%	116	4E	2
Alakanuk	Municipality	604	95.8%	579	4E	3

Table 5.2. Alaska Rural Places in Areas with Subsistence Halibut Uses

Sources: Alaska Department of Fish and Game; Alaska Department of Labor

Rural Place*	Organized Entity	Population (1995)	Percent Alaska Native	Number Alaska Natives	Halibut Coastal District	Use Pattern 1 = regular 2 = periodic 3 = undocumented
Bethel	Municipality	5,195	63.9%	3,319	4E	3
Brevig Mission	Municipality	265	92.4%	245	4E	3
Chevak	Municipality	682	92.9%	634	4E	3
Council	Census Designated Place	8	62.5%	5	4E	3
Eek	Municipality	283	95.7%	271	4E	3
Elim	Municipality	281	91.7%	258	4E	3
Emmonak	Municipality	762	92.1%	702	4E	3
Golovin	Municipality	148	92.9%	137	4E	3
Goodnews Bay	Municipality	253	95.9%	243	4E	3
Hooper Bay	Municipality	996	95.9%	955	4E	3
Kotlik	Municipality	543	96.9%	526	4E	3
Koyuk	Municipality	258	94.8%	245	4E	3
Kwigillingok	Census Designated Place	326	95.0%	310	4E	3
Napakiak	Municipality	326	94.3%	308	4E	3
Napaskiak	Municipality	404	94.8%	383	4E	3
Oscarville	Census Designated Place	42	91.2%	38	4E	3
Platinum	Municipality	44	92.2%	41	4E	3
Quinhagak	Municipality	549	93.8%	515	4E	3
Scammon Bay	Municipality	434	96.5%	419	4E	3
Shaktoolik	Municipality	199	94.4%	188	4E	3
Sheldon Point	Municipality	131	92.7%	121	4E	3
Solomon	Census Designated Place	6	100.0%	6	4E	3
St. Michael	Municipality	332	91.2%	303	4E	3
Stebbins	Municipality	475	94.8%	450	4E	3
Teller	Municipality	274	91.3%	250	4E	3
Togiak	Municipality	700	87.3%	611	4E	3
Tuntutuliak	Census Designated Place	340	96.7%	329	4E	3
Twin Hills	Census Designated Place	75	92.4%	69	4E	3
Ugashik	Census Designated Place	5	85.7%	4	4E	3
Unalakleet	Municipality	764	81.8%	625	4E	3
White Mountain	Municipality	209	87.8%	184	4E	3
	District 4E Communities	*28,311*	*76.9%*	*21,783*		
Total Districts		**82,171**	**43.2%**	**35,512**		

* Places where subsistence (wild food harvest and use) is a principal characteristic of the community's economy and way of life, as determined by the Alaska Joint Board of Fisheries and Game

manner." The exemption under the ESA can be revoked if the "taking materially and negatively affects the endangered or threatened species." The MMPA also exempts "the taking of any marine mammals by any Indian, Aleut, or Eskimo who resides in Alaska *and who dwells on the coast of the North Pacific Ocean or the Arctic Ocean* if such taking . . . is for subsistence purposes; or ...for purposes of creating and selling authentic Alaska Native articles of handicrafts and clothing." (emphasis added)

Although these definitions are not suboptions in this analysis, a brief discussion about them may prove informative. Both the ESA and the MMPA provisions are exemptions, more similar to Suboption C than Suboptions A and B, which are definitions designed primarily for subsistence. Specifically, the taking of endangered species and marine mammals are prohibited unless an exemption is granted. Under the ESA, the exemption is granted to (1) any Indian, Aleut, or Eskimo who is an Alaska Native who resides in Alaska, or (2) any non-Native permanent resident of an Alaskan Alaska Native village; if the take of an endangered species is primarily for subsistence purposes. Notice that to qualify for the exemption an Indian, Aleut, or Eskimo need only reside in Alaska; however, a non-Native must be a permanent resident of an "Alaskan Alaska Native village." The MMPA exemption extends to Indians, Aleuts, and Eskimos who: (1) reside in Alaska; (2) dwell on the coast of the North Pacific Ocean or the Arctic Ocean; and (3) take for subsistence or handicraft purposes. The MMPA subsistence exemption does not extend to non-Native subsistence users.

The exemptions in the ESA and MMPA both have residency requirements. The MMPA also requires that a person be an "Indian, Aleut, or Eskimo." The difficulty with both of these definitions is the individual determination of whether the take was for "subsistence purposes." This difficulty, which is also a difficulty with Suboption C, can be avoided by defining the group of individuals that is authorized as subsistence users, rather than defining the behavior authorized, i.e., takes for "subsistence purposes." Suboptions A and B can be used to define the group of individuals that is authorized as subsistence users.

Determining who should be members of the group is another factor to consider. As explained earlier, this determination will potentially affect the resulting volume of harvest. Suboption A limits the group to "members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut." Suboption B limits the group to "Alaska rural residents" as defined in ANILCA *and* as identified in the table entitled "Alaska Rural Places and Alaska Native Groups with Subsistence Halibut Uses." Both of these suboptions can be used to define a group of individuals authorized to harvest subsistence halibut. The preferred suboption should be one that best describes the group to which the Council intends to grant subsistence use of halibut.

Suboptions A and C are consistent with the intent of ANCSA and ANILCA in developing a Alaska Native or Native-plus preference for subsistence fishing rights. Either option would be consistent with other federal law (ESA, MMPA, migratory bird treaty, Fur Seal treaty, and the International Whaling Convention. Congress has repeatedly granted exclusive or in-common harvest rights to Indian Tribes in the Lower 48. The U. S. Supreme Court has upheld these laws and treaties based upon the special federal trust responsibility and federal constitutional powers of Congress over Indian affairs. Thus Congress can constitutionally grant a subsistence priority limited solely to Alaska Natives or Alaska Natives and other legitimate non-Native subsistence users on federal and Alaska Native lands (Daniel and Starkey 1997). Suboption B is consistent with ANILCA, but as previously discussed ANILCA is not required to be applied for halibut in Convention waters.

5.1.2.2.1 Current Halibut Subsistence Harvests

Tables 2.17 - 2.19 report non-commercial halibut harvests from Alaskan rural places from Alaska Department of Fish and Game, Division of Subsistence, Community Profile Database. Population numbers in the Community Profile Database are derived from 1995 population estimates as reported by the Alaska Department of Labor, Alaska Population Overview, 1995 Estimates, July 1996. The number of Alaska Natives in a place are estimated by multiplying the 1995 ADOL population by the percent of Alaska Natives in a place as reported in the 1990 U.S. Census.

Rural places are areas outside the boundaries of nonsubsistence areas as identified by the Alaska Joint Board of Fisheries and Game. Prior to 1989, the Board identified rural places as places where subsistence (wild food harvest and use) is a principal characteristic of a community's economy and way of life. After 1992, the Board identified "nonsubsistence areas" as areas where wild food harvest and use is not a principal characteristic of the area's economy and way of life. The nonsubsistence areas identified by the Board are similar to the non-rural areas identified pre-1989. Therefore, you will see that the places called "rural places" in the tables are places which lie outside the boundaries of nonsubsistence areas designated by the Alaska Joint Board of Fisheries and Game.

The Alaska Board of Fisheries has identified areas with halibut fishing for subsistence or personal use. By and large, coastal areas with halibut stocks which lie outside of the nonsubsistence areas are open for subsistence (or personal use) fishing for halibut under state regulation. "Areas with Subsistence Halibut Uses" refer to areas with subsistence or personal halibut uses as identified by the Alaska Board of Fisheries

A rural place (or Alaska Native group) appears in the tables if the Division of Subsistence household surveys indicated that their residents (or members) have an established fishing pattern in coastal districts with halibut stocks. If the Division of Subsistence has no quantitative survey information for a community (mostly communities in District 4E), a community was included if qualitative information indicated that residents used coastal districts with halibut stocks (in the tables, the use pattern of these places are called "undocumented"). Some inland communities (or Alaska Native groups) may have been inadvertently left off the list by this procedure. The Council should consider development a process for communities or groups inadvertently left off the list to request consideration for future eligibility.

Alaska Native Tribal groups in the table are "Indian entities" recognized and eligible to receive services from the United States Bureau of Indian Affairs, cf., Federal Register, February 16, 1995, v. 60, no. 32, p. 9249-9255. Table 5.1 includes two groups applying for status -- the Aukquan Traditional Council in Juneau and the Shoonaq' Tribe of Kodiak. There may be other Tribal groups also applying for status. Also, there may other Tribal groups using halibut for which no information is available. Like for rural places, the Council should consider developing a process for Tribal groups inadvertently left off the list to request consideration for future eligibility.

The estimated number of Alaska Natives per Tribal group is estimated by the number of Alaska Natives residing in the place where the Tribal government is headquartered (see method above). This is a very rough estimate and over-estimates to some degree the number of Alaska Natives on Tribal roles in areas with established halibut uses (because it includes Alaska Natives on membership roles of non-coastal Tribes, but who are residing in coastal areas at the time of the U.S. Census). Also, the place of residency of Tribal members is not portrayed precisely by the estimate. A Tribe's members are commonly spread across several communities, and do not reside only in the place where the Tribe is headquartered. The Alaska Natives living in a rural place like Angoon will trace membership to several Tribal groups, because of marriages with neighboring Tribal members, mobility of Tribal members for work and school, and so forth. The best estimate for the number of Alaska Natives per Tribal group would derive from each Tribe's membership role.

5.1.2.2.2 Projected Halibut Subsistence Harvests under Alternative 2 Suboptions

Suboptions A, B, and C will result in significant differences in number of persons eligible for subsistence halibut fishing and their corresponding resource removals attributed to subsistence. Under Suboption A, 41,874 Alaska Native residents in 118 coastal communities would be eligible. Table 5.3 lists the estimated halibut removals for all non-commercial uses from all gear under the three proposed subsistence definitions, using per capita halibut harvest rates provided in Table 2.19. Alaska Native residents are projected to harvest over 1.8 million lb of halibut under Suboption A; however, this estimate includes subsistence, personal use, and recreational harvests. It is not possible to differentiate subsistence harvests from among these sources.

Table 5.3. Estimates of Population and Non-commercial Halibut Use under Alternative 2

Source: Alaska Department of Fish and Game; Alaska Department of Labor

	District 2C	District 3A	District 3B	Districts 4A-D	District 4E	Total
Suboption A. Alaska Federally-recognized Tribes						
Number of Tribal Entities	19	18	12	6	63	118
Number of Alaska Natives	13,169	4,586	1,191	1,145	21,783	41,874
Average Per Capita Halibut	32.7	46.2	39.3	125.8	44.9	43.3
Estimated Halibut Consumption	430,626	211,873	46,806	144,041	978,057	1,811,404
Suboption B. Alaska Rural Residents						
Number of Rural Places	29	14	10	6	55	114
Total Population	27,221	18,778	2,320	5,541	28,311	82,171
Number of Alaska Natives	7,806	3,582	1,196	1,145	21,783	35,512
Percent Alaska Native	28.7%	19.1%	51.6%	20.7%	76.9%	43.2%
Average Per Capita Halibut	32.7	46.2	39.3	125.8	44.9	43.3
Estimated Halibut Consumption	255,256	165,488	47,003	144,041	978,057	1,589,845
Number of Alaska Non-Natives	19,415	15,196	1,124	4,396	6,528	46,659
Percent Alaska Non-Native	71.3%	80.9%	48.4%	79.3%	23.1%	56.8%
Average Per Capita Halibut	44.5	46.8	34.4	28.8	0.0	37.3
Estimated Halibut Consumption	863,968	711,173	38,666	126,605	0	1,740,411
Total Est. Halibut Consumption	1,119,224	876,661	85,668	270,646	978,057	3,330,256
Suboption C. Alaska Native Groups and Other Rural Residents						
Number of Rural Places	29	14	10	6	55	114
Number of Tribal Entities	19	18	12	6	63	118
Total Population	32,584	19,782	2,315	5,541	28,311	88,533
Number of Alaska Natives	13,169	4,586	1,196	1,145	21,783	41,879
Percent Alaska Native	40.4%	23.2%	51.7%	20.7%	76.9%	47.3%
Average Per Capita Halibut	32.7	46.2	39.3	125.8	44.9	43.3
Estimated Halibut Consumption	430,626	211,873	47,003	144,041	978,057	1,811,600
Number of Alaska Non-Natives	19,415	15,196	1,119	4,396	6,528	46,654
Percent Alaska Non-Native	59.6%	76.8%	48.3%	79.3%	23.1%	52.7%
Average Per Capita Halibut	44.5	46.8	34.4	28.8	0.0	37.3
Estimated Halibut Consumption	863,968	711,173	38,494	126,605	0	1,740,239
Total Est. Halibut Consumption	1,294,594	923,046	85,496	270,646	978,057	3,551,839

Table 5.4. Estimates of Population and Non-commercial Halibut Use under Alternative 2*

Source: Alaska Department of Fish and Game; Alaska Department of Labor

		District 2C	District 3A	District 3B	Districts 4A-D	District 4E	Total
Suboption A.	**Alaska Federally-recognized Tribes**						
	Number of Alaska Natives	13,169	4,586	1,191	1,145	21,783	41,874
commercial	Average Per Capita Halibut	6.4	8.3	12.9	43.2	2.2	5.6
	Estimated Halibut Consumption	84,282	38,064	15,364	49,464	47,923	235,096
other non-	Average Per Capita Halibut	*	21.5	20.1	74.2	41.2	26.4
commercial	Estimated Halibut Consumption	0	98,599	23,939	84,959	897,460	1,104,957
rod &reel	Average Per Capita Halibut	26.3	16.4	6.3	8.4	1.5	11.3
	Estimated Halibut Consumption	346,345	75,210	7,503	9,618	32,675	471,351
all	Total Average Per Capita	32.7	46.2	39.3	125.8	44.9	43.3
	All Gear Total Consumption	430,626	211,873	46,806	144,041	978,057	1,811,404
Suboption B.	**Alaska Rural Residents**						
	Number of Alaska Natives	7,806	3,582	1,196	1,145	21,783	35,512
commercial	Average Per Capita Halibut	6.4	8.3	12.9	43.2	2.2	5.4
	Estimated Halibut Consumption	49,958	29,731	15,428	49,464	47,923	192,504
other non-	Average Per Capita Halibut	*	21.5	20.1	74.2	41.2	30.5
commercial	Estimated Halibut Consumption	0	77,013	24,040	84,959	897,460	1,083,471
rod & reel	Average Per Capita Halibut	26.3	16.4	6.3	8.4	1.5	8.8
	Estimated Halibut Consumption	205,298	58,745	7,535	9,618	32,675	313,870
all	Total Average Per Capita	32.7	46.2	39.3	125.8	44.9	44.8
	All Gear Total Consumption	255,256	165,488	47,003	144,041	978,057	1,589,845
	Number of Alaska Non-Natives	19,415	15,196	1,124	4,396	6,528	46,659
commercial	Average Per Capita Halibut	6.5	3.2	8.8	12.7	*	5.2
	Estimated Halibut Consumption	126,198	48,627	9,891	55,829	0	240,545
other non-	Average Per Capita Halibut	*	0.9	21.3	4.4	*	1.2
commercial	Estimated Halibut Consumption	0	13,676	23,941	19,342	0	56,960
rod & reel	Average Per Capita Halibut	38.0	42.7	4.3	11.7	*	30.9
	Estimated Halibut Consumption	737,770	648,869	4,833	51,433	0	1,442,906
all	Total Average Per Capita	44.5	46.8	34.4	28.8	0.0	37.3
	All Gear Total Consumption	863,968	711,173	38,666	126,605	0	1,740,411
	Average Per Capita - All Gears	41.1	46.7	36.9	48.8	34.5	40.5
	Native and Non-Native Total	1,119,224	876,661	85,668	270,646	978,057	3,330,256
Suboption C.	**Alaska Native Groups and Other Rural Residents**						
	Number of Alaska Natives	13,169	4,586	1,196	1,145	21,783	41,879
commercial	Average Per Capita Halibut	6.4	8.3	12.9	43.2	2.2	5.6
	Estimated Halibut Consumption	84,282	38,064	15,428	49,464	47,923	235,160
other non-	Average Per Capita Halibut	*	21.5	20.1	74.2	41.2	26.4
commercial	Estimated Halibut Consumption	0	98,599	24,040	84,959	897,460	1,105,057
rod & reel	Average Per Capita Halibut	26.3	16.4	6.3	8.4	1.5	11.3
	Estimated Halibut Consumption	346,345	75,210	7,535	9,618	32,675	471,382
all	Total Average Per Capita	32.7	46.2	39.3	125.8	44.9	43.3
	All Gear Total Consumption	430,626	211,873	47,003	144,041	978,057	1,811,600
	Number of Alaska Non-Natives	19,415	15,196	1,119	4,396	6,528	46,654
commercial	Average Per Capita Halibut	6.5	3.2	8.8	12.7	*	5.2
	Estimated Halibut Consumption	126,198	48,627	9,847	55,829	0	240,501
other non-	Average Per Capita Halibut	*	0.9	21.3	4.4	*	1.2
commercial	Estimated Halibut Consumption	0	13,676	23,835	19,342	0	56,854
rod & reel	Average Per Capita Halibut	38.0	42.7	4.3	11.7	*	30.9
	Estimated Halibut Consumption	737,770	648,869	4,812	51,433	0	1,442,884
all	Total Average Per Capita	44.5	46.8	34.4	28.8	0.0	37.3
	All Gear Total Consumption	863,968	711,173	38,494	126,605	0	1,740,239
	Average Per Capita - All Gears	39.7	46.7	36.9	48.8	34.5	40.1
	Native and Non-Native Total	1,294,594	923,046	85,496	270,646	978,057	3,551,839

*In 2C, household surveys did not ask about "other non-commercial" gear

Table 5.4 reports the same information by gear. It may be possible to apply a qualitative assessment from type of use to these harvests. It is expected that under proposed subsistence regulations, reports of "subsistence" halibut harvests would increase in accuracy while total "personal use" and "sport fish" harvests would decline; however, the same amount of fish would actually be harvested.

Under Suboption B, all rural residents of Alaskan coastal communities identified with halibut subsistence uses would qualify for subsistence halibut fishing. Under Suboption B, 84,171 persons in 114 rural places are eligible (35,512 Alaska Natives and 46,659 Alaskan non-Native residents). Those residents are projected to harvest over 3.3 million lb of halibut for non-commercial purposes. As it is currently proposed, a total of 6,367 fewer Alaska Natives and four rural communities would be excluded from proposed subsistence regulations. In Area 2C, Suboption B excludes 14,052 Tlingit-Haida-Tsimshian Tribal members in ten coastal communities. In Area 3A it excludes 1,004 Kenaitze Tribal members residing in the Kenai-Soldotna-Ninilchik area. In Area 3B, 5 members and two communities are excluded.

The most inclusive standard occurs under Suboption C, which includes Alaska Natives and other rural residents in areas with established halibut uses (the Migratory Bird Treaty protocol language allows for reducing the number of non-Natives in rural areas through some additional individually-based eligibility criteria -- dependency on subsistence; these additional potential individual criterion have not been applied here). Under Suboption C, 88,533 persons in 114 rural places and 118 Alaska Native groups are eligible (including 41,879 Alaska Natives and 46,654 non-Natives). Those residents are projected to harvest over 3.5 million lb of halibut.

For all gear types, Alaska Native and non-Native non-commercial per capita halibut harvests are very similar (43.3 and 37.3 lb, respectively). The question before the Council is whether non-Native needs for halibut for consumption are met by the two-fish per person per day sport bag limit. A second question would be how the Council and NMFS would develop a protocol for non-Native eligibility, application criteria, appeals board, etc. A third question is the potential effect of the sale provision on the number of participants (see Option 6).

5.1.2.3 Option 3. Define legal gear.

Suboption A. rod-and-reel gear

Suboption B. hook-and-line gear (including set and hand-held gear) with a range of:

1. 10 hooks
2. 30 hooks
3. 60 hooks.

Suboption C. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:

1. 1 - 3 skates of gear, up to 60 hooks each
2. any gear type

Option 3 would define legal halibut subsistence gear. The Council may choose any or all of the suboptions as legal subsistence gear. Suboption A is currently allowed under the status quo. Current regulations also allow the use of a spear to harvest halibut for personal use. The Council may wish to clarify its intent to allow the continued use of spears under this action.

The Council should consider foremost that 'true' subsistence fishing, that is fishing to feed families, should remain at current per capita levels regardless of the allowed gear. If halibut are truly to be harvested to feed families, those rates of consumption should not increase measurably due to harvesting efficiency. Whether the

physical costs of harvesting halibut arise from rod and reel gear with two hooks or a longline skate with 60 hooks, an individual can consume only a certain amount of halibut. Removals are likely to increase, however, if the Council allows trade or sale of these fish. Trade is considered under Option 5; sale, under Option 6.

Suboption A would allow the use of rod-and-reel gear, with a two hook maximum for subsistence halibut fishing. Suboption B would allow the use of hook-and-line gear (including set and hand-held gear) with a range of 10 hooks, 30 hooks, and 60 hooks. An individual would be limited to one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy. Suboption C would allow designated fishermen to use either 1-3 skates of longline gear, with up to 60 hooks, or any gear type. This suboption would require individual or community agreements with NMFS.

The halibut harvest with rod and reel by Alaska Native households and by rural communities is listed in Table 5.4. Under current regulations, it is legal for anyone in rural areas to fish with rod and reel, using two hooks, and taking two fish per day. So, given these current regulations, what should the theoretical maximum harvest be, and how does it compare with actual harvests? The model assumes that there is one fisher per household of four people. Each fisher fishes for 30 days (although the theoretical maximum is much more than that), taking 2 fish per day, weighing 30 lb each.

The predicted maximum harvest with rod and reel under the model's assumptions is 18.8 million lb under suboption A (Alaska Natives) and 37 million lb under suboption B (rural places) (Table 5.5). How does this compare with the actual known harvest? Based on household survey data, the actual observed harvest by Alaska Natives with rod and reel under current regulations is only 298,796 lb (not 18.8 million lb predicted by the model) and the actual observed harvest by residents of rural communities with rod and reel is only 1.1 million lb (not 37 million lb predicted by the model). The model's estimates are off by astronomical factors of 6,300% for suboption A and by a factor of 3,400% for Suboption B. The two hook model is included in the analysis to illustrate the inaccuracies of this type of modeling for predicting the way that subsistence production actually takes place.

Another model assumes potential consumption capacity in rural communities rather than assumed potential production capacity (recognizing that subsistence production is production for use values as food in small populations). In this second model, it is assumed that households under potential multiple-hook subsistence halibut regulations start fishing halibut to the exclusion of all other subsistence fish species currently harvested and consumed; that is, families replace all the subsistence fish currently in their diet solely with halibut, because it is so efficient to catch. While this may be an extreme assumption, this would reflect a very high estimate of a theoretical maximum harvest for halibut, in that halibut would replace pound for pound all the subsistence salmon, cod, herring, smelt, and other fish species in the diet of Alaska Native and other rural residents. As shown in Table 5.6, the theoretical maximum take is 3.5 million lbs for Suboption A, 7.4 million lbs for suboption B, and 8.0 million lbs for suboption C. Again, this model does not represent what will actually take place if multiple hooks are recognized a legal gear in villages, but this theoretical maximum based on potential consumption capacity better reflects anticipated removals under the different eligibility and gear options.

The reason for the smaller actual subsistence harvests, even given relatively unrestricted fishing days and gear, is as follows. In small villages, regulations allowing for more efficient gear for taking halibut (such as 30-hook skates) is not likely to measurably increase the total use of halibut in those places. As a prediction, subsistence halibut harvesting may become more efficient for some households, the types of gear used may shift somewhat between rod-and-reel, set hooks, and retention from commercial catches, but the total number of halibut harvested and used in a community are likely to be similar to the range of harvests under previous management regimes. This is because total use levels of halibut are constained by the consumption needs of families in small communities. Families quit subsistence fishing when their food requirements for a species are met (and collectively, when the food requirements of a rural community are met). Subsistence food use levels are self-

limiting, and for species like halibut, use levels magnitudes below a household's harvest potential, as shown by the rod and reel exercise. This is the central point in analyzing potential effects of regulation changes regarding gear -- because subsistence harvests are for use values in a limited community of consuming families, changes in halibut gear are not by themselves likely to measurably increase the use of halibut in small communities.

The pattern of subsistence food production in a village shows how this occurs in practice at the household level. First, a large percentage of households in a village do not harvest their own wild foods, but receive it from others. Any model is incorrect if it assumes that most households will use a new gear type. Table 5.7 shows the percent of households using, trying to harvest, harvesting, receiving, or giving non-commercial halibut, by community and year. In a village like Kake, where halibut is an important subsistence food source, only about half the households report harvesting halibut during a yearly survey period under the current management regime. This is likely to stay the same even though gear regulations are changed. Elderly households, households with single mothers and children, households of young couples without boats, and other non-fishing households prior to the regulation change will continue to be non-fishing households.

Second, most household who do fish for halibut will not be using a skate with 30 hooks -- they will be using gear with fewer hooks. It stands to reason that a theoretical household of four members fishing only for their own consumption will not be putting in a 30-hook skate for 30 days a year -- what would they possibly do with all the halibut? It would be impossible for that household to consume. The majority of households who currently subsistence fish for halibut will continue to fish for a few days a year with smaller amounts of gear, and quit once their household needs for halibut are met.

Third, household surveys by the Division of Subsistence demonstrate that there is specialization in subsistence harvests. A relatively small subset of households in a village commonly assume the responsibility for harvesting extra fish which are distributed to other households in the village or tribal group through sharing, barter, or trade. This extra fish goes to households who want to eat halibut but are not able to produce it themselves (cf, Robert J. Wolfe, The Superhousehold: Specialization in Subsistence Economies, Division of Subsistence, Alaska Department of Fish and Game, Juneau, Alaska.) It is this relatively small subset of households that likely will use skates with multiple hooks to efficiently take this extra harvest to feed people outside their own household. Even this set of households using skates will set only a few days a year, and will stop harvesting once the needs of the households they are supplying are met. The regulation allowing for multiple hooks is designed to provide for this established pattern of wild food production in a community.

There is an important exception to this prediction about relatively stable harvest levels -- potential harvests in mid-sized towns with a mix of cultural traditions, such as Kodiak City, Unalaska, Sitka, Petersburg, and Cordova. In these places, there currently is a great mix of fishing traditions, with substantial proportions of halibut being taken for sport values and some portion of halibut being taken for subsistence values. These places experience significant seasonal increases of non-residents for commercial fish catching-processing and guided- and unguided-recreational fishing. There are also fewer constraints on capital formation (gear upgrading) in mid-sized towns, where the wage sectors are more developed in comparison with small villages. In these few mid-sized towns, regulations allowing for multiple hooks likely would result in measurable increases in total halibut harvests, as some households who previously fished for recreational values try a hand at newly-authorized subsistence fishing with newly-purchased gear, and where some significant portion of the halibut taken locally is exported from the community with seasonal migrants. Keeping a two-hook, two fish per day regulation may be warranted around mid-sized towns like Kodiak City, Unalaska, Sitka, Petersburg, and Cordova, if the intent of the Council is to provide for established subsistence patterns while not stimulating the creation of unusual new patterns of fishing for halibut. A process for the creation of fishery area management plans around mid-sized towns may be a preferred method under Option 7. Appropriate gear types to accommodate established subsistence patterns can be identified in the local management plans specific to areas around those places.

Table 5.5 Estimates of Theoretical Maximum Halibut Removals under Current 2-Fish per Day Limit

Theoretical Maximum Harvest (2 fish per day, 30 lbs per fish)

Suboption A	Area 2C	Area 3A	Area 3B	Area 4A-D	Area 4E	Total
Eligible Users	13,169	4,586	1,191	1,145	21,783	41,874
Households Fishing	3,292	1,147	298	286	5,446	10,469
Catch per day	197,535	68,790	17,865	17,175	326,745	628,110
Catch per 30 days	5,926,050	2,063,700	535,950	515,250	9,802,350	18,843,300
Suboption B						
Eligible Users	27,221	18,778	2,320	5,541	28,311	82,171
Households Fishing	6,805	4,695	580	1,385	7,078	20,543
Catch per day	408,315	281,670	34,800	83,115	424,665	1,232,565
Catch per 30 days	12,249,450	8,450,100	1,044,000	2,493,450	12,739,950	36,976,950
Suboption C						
Eligible Users	32,584	19,782	2,315	5,541	28,311	88,533
Households Fishing	8,146	4,946	579	1,385	7,078	22,133
Catch per day	488,760	296,730	34,725	83,115	424,665	1,327,995
Catch per 30 days	14,662,800	8,901,900	1,041,750	2,493,450	12,739,950	39,839,850

Documented Harvest by Rod and Reel Under Current Regulations

	Area 2C	Area 3A	Area 3B	Area 4A-D	Area 4E	Total
Suboption A	145,481	44,240	3,971	11,816	93,288	298,796
Suboption B	666,793	195,094	5,369	118,449	93,288	1,078,993
Suboption C	?	?	?	?	?	?

Percent Overestimate by Model

	Area 2C	Area 3A	Area 3B	Area 4A-D	Area 4E	Total
Suboption A	4073%	4655%	13497%	4361%	10508%	6306%
Suboption B	1837%	4331%	19445%	2105%	13657%	3427%
Suboption C	?	?	?	?	?	?

Table 5.6 Estimates of Theoretical Maximum Halibut Removals under Multiple Hooks If Halibut Replaced All Other Subsistence Fish Consumed (Salmon, Cod, etc.)

Suboption A	Area 2C	Area 3A	Area 3B	Area 4A-D	Area 4E*	Total
Eligible Users	13,169	4,586	1,191	1,145	3,291	23,382
Total Per Capita Fish Consumption	96	94	211	218	400	150
Theoretical Maximum Halibut	1,264,224	431,084	251,301	249,610	1,316,400	3,512,619
Suboption B						
Eligible Users	27,221	18,778	2,320	5,541	3,291	57,151
Total Per Capita Fish Consumption	96	94	211	218	400	129
Theoretical Maximum Halibut	2,613,216	1,765,132	489,520	1,207,938	1,316,400	7,392,206
Suboption C						
Eligible Users	32,584	19,782	2,315	5,541	3,291	63,513
Total Per Capita Fish Consumption	96	94	211	218	400	126
Theoretical Maximum Halibut	3,128,064	1,859,508	488,465	1,207,938	1,316,400	8,000,375

* District 4E communities with regular use pattern of halibut listed in Table 5.2

Table 5.7 Percent of Households Using, Trying to Harvest, Harvesting, Receiving, or Giving Non-Commercial Halibut, by Community and Year

Source: ADF&G Division of Subsistence Household Surveys

Community	Survey Year	Using	Trying	Harvesting	Receiving	Giving
Akhiok	82	81.00		81.00		
Akhiok	86	33.30	25.00	25.00	8.30	25.00
Akhiok	89	100.00	70.00	70.00	60.00	70.00
Akhiok	92	75.00	50.00	45.80	41.70	33.30
Akutan	90	100.00	80.00	80.00	76.00	64.00
Aleknagik	89	5.30	2.60	0.00	5.30	2.60
Angoon	84	84.20	81.60	81.60	26.30	39.50
Angoon	87	85.40		53.70	61.70	42.30
Atka	94	85.70	57.10	53.60	71.40	42.90
Chenega Bay	84	87.50	75.00	43.80	81.30	62.50
Chenega Bay	85	93.80	81.30	68.80	75.00	62.50
Chenega Bay	89	55.60	38.90	33.30	38.90	33.30
Chenega Bay	90	77.80	33.30	33.30	66.70	11.10
Chenega Bay	91	94.40	61.10	61.10	61.10	50.00
Chenega Bay	92	91.30	47.80	47.80	78.30	56.50
Chenega Bay	93	91.30	56.50	52.20	78.30	60.90
Chignik Bay	84	84.20	68.40	68.40	63.20	57.90
Chignik Bay	89	88.60	71.40	68.60	45.70	45.70
Chignik Bay	91	90.00	66.70	56.70	43.30	43.30
Chignik Lagoon	84	76.50	52.90	52.90	35.30	23.50
Chignik Lagoon	89	100.00	66.70	66.70	53.30	40.00
Chignik Lake	84	95.70	65.20	60.90	52.20	47.80
Chignik Lake	89	66.70	57.10	57.10	42.90	19.00
Chignik Lake	91	91.70	62.50	62.50	66.70	50.00
Clark's Point	89	0.00	0.00	0.00	0.00	0.00
Coffman Cove	87	55.00		42.60	27.80	35.10
Cordova	85	15.50	46.60	36.40	51.00	31.60
Cordova	88	87.20	63.90	54.80	47.20	49.30
Cordova	91	87.10	58.40	52.50	52.50	46.50
Cordova	92	90.20	65.90	63.40	51.20	56.10
Cordova	93	94.20	57.70	49.00	68.30	41.30
Craig	87	68.10		35.30	48.80	22.40
Dillingham	84		0.00	0.00		
Edna Bay	87	100.00		95.00	80.00	80.00
Egegik	84	12.00	4.00	4.00	8.00	8.00
Elfin Cove	87	92.30		76.90	69.20	53.80
False Pass	88	80.00	65.00	65.00	60.00	60.00
Gustavus	87	90.00		76.00	41.80	66.40
Haines	83	52.40	38.80	31.30	23.10	11.60
Haines	87	74.20		40.80	52.10	21.90
Hoonah	85	85.90	38.00	39.40	66.20	21.10
Hoonah	87	87.40		62.10	57.10	44.40
Hydaburg	87	88.10		31.30	80.60	25.30
Hyder	87	57.60		21.20	48.50	15.20
Igiugig	83		0.00	0.00	0.00	
Igiugig	92	50.00	0.00	0.00	50.00	0.00
Iliamna	83		0.00	0.00	5.00	
Iliamna	91	39.10	8.70	8.70	30.40	4.30
Ivanof Bay	84	66.70	33.30	33.30	33.30	33.30
Ivanof Bay	89	100.00	85.70	85.70	71.40	71.40
Kake	85	75.70	34.30	44.30	35.70	25.70
Kake	87	88.40		54.10	63.00	23.10

Table 5.7 Percent of Households Using, Trying to Harvest, Harvesting, Receiving, or Giving Non-Commercial Halibut, by Community and Year

Source: ADF&G Division of Subsistence Household Surveys

Community	Survey Year	Using	Trying	Harvesting	Receiving	Giving
Karluk	82	90.00		50.00		
Karluk	86	78.90	31.60	31.60	47.40	21.10
Karluk	89	64.30	50.00	50.00	35.70	35.70
Karluk	90	82.40	52.90	52.90	64.70	47.10
Karluk	91	92.30	69.20	61.50	76.90	46.20
Kasaan	87	71.40		42.90	50.00	35.70
King Cove	92	73.30	38.70	36.00	46.70	22.70
Klawock	84	69.40	38.90	33.30	47.20	19.40
Klawock	87	77.40		52.20	47.00	28.50
Klukwan	83	30.30	21.20	15.20	15.20	3.00
Klukwan	87	50.30		7.10	50.30	0.00
Kodiak City	91	89.00	54.00	48.00	61.00	43.00
Kodiak City	92	86.00	55.00	52.00	63.00	47.00
Kodiak City	93	85.70	58.10	50.50	61.00	54.30
Kokhanok	83		0.00	0.00	0.00	
Kokhanok	92	11.10	5.60	5.60	11.10	5.60
Larsen Bay	82	84.40		46.90		
Larsen Bay	86	81.10	35.10	32.40	67.60	18.90
Larsen Bay	89	94.10	52.90	52.90	52.90	41.20
Larsen Bay	90	85.70	54.30	54.30	65.70	51.40
Larsen Bay	91	89.50	55.30	55.30	60.50	47.40
Larsen Bay	92	83.80	62.20	56.80	56.80	54.10
Larsen Bay	93	82.50	50.00	50.00	62.50	47.50
Levelock	88	7.40	3.70	3.70	7.40	3.70
Levelock	92	0.00	0.00	0.00	0.00	0.00
Metlakatla	87	80.40		21.90	68.20	10.20
Meyers Chuck	87	80.00		70.00	50.00	50.00
Nanwalek	87	87.90	60.60	57.60	63.60	45.50
Nanwalek	89	30.30	27.30	18.20	18.20	15.20
Nanwalek	90	77.10	57.10	51.40	60.00	37.10
Nanwalek	91	93.10	65.50	55.20	69.00	48.30
Nanwalek	92	100.00	78.10	78.10	71.90	65.60
Nanwalek	93	100.00	72.70	72.70	84.80	78.80
Nelson Lagoon	87		0.00	0.00		0.00
Newhalen	91	11.50	0.00	0.00	11.50	3.80
Nikolski	90	100.00	71.40	71.40	71.40	64.30
Old Harbor	82	88.30		80.50		
Old Harbor	86	84.10	56.80	54.50	56.80	38.60
Old Harbor	89	81.30	54.20	54.20	58.30	39.60
Old Harbor	91	95.20	71.40	69.00	69.00	66.70
Ouzinkie	82	90.60		59.40		
Ouzinkie	86	85.30	61.80	55.90	52.90	32.40
Ouzinkie	89	48.60	31.40	28.60	34.30	17.10
Ouzinkie	90	77.40	39.60	39.60	52.80	32.10
Ouzinkie	91	93.80	62.50	53.10	65.60	40.60
Ouzinkie	92	84.60	57.70	53.80	59.60	59.60
Ouzinkie	93	83.60	54.10	50.80	60.70	47.50
Pedro Bay	82		5.90	5.90	0.00	
Pelican	87	97.20		75.40	69.80	59.60
Perryville	84	80.00	40.00	40.00	65.00	45.00
Perryville	89	96.30	48.10	40.70	77.80	29.60
Petersburg	87	81.40		63.50	35.80	47.30

Table 5.7 Percent of Households Using, Trying to Harvest, Harvesting, Receiving, or Giving Non-Commercial Halibut, by Community and Year

Source: ADF&G Division of Subsistence Household Surveys

Community	Survey Year	Using	Trying	Harvesting	Receiving	Giving
Pilot Point	87	29.40	23.50	23.50	5.90	5.90
Point Baker	87	84.20		63.20	63.20	42.10
Port Alexander	87	91.30		64.80	73.50	43.70
Port Alsworth	83		0.00	0.00	0.00	
Port Graham	87	90.70	74.10	66.70	59.30	40.70
Port Graham	89	62.50	52.10	47.90	35.40	18.80
Port Graham	90	89.10	67.40	58.70	47.80	50.00
Port Graham	91	95.90	65.30	61.20	73.50	57.10
Port Graham	92	91.70	72.90	70.80	64.60	60.40
Port Graham	93	96.10	68.60	60.80	64.70	60.80
Port Heiden	87	21.60	8.10	8.10	13.50	2.70
Port Lions	82	96.40		67.30		
Port Lions	86	95.40	63.10	60.00	63.10	44.60
Port Lions	89	83.30	52.80	50.00	44.40	25.00
Port Lions	93	93.30	66.70	66.70	64.40	42.20
Port Protection	87	96.00		68.00	72.00	52.00
Saint George	94	100.00	55.60	47.20	69.40	25.00
Saint Paul	94	90.50	56.00	54.80	60.70	48.80
Sand Point	92	89.40	60.60	59.60	47.10	32.70
Saxman	87	67.90		34.00	47.20	12.70
Seldovia	82	97.10		34.30	62.90	
Seldovia	91	89.40	63.60	62.10	48.50	40.90
Seldovia	92	86.20	58.50	53.80	52.30	43.10
Seldovia	93	84.60	58.50	56.90	50.80	44.60
Sitka	87	46.60		46.60	0.00	0.00
Skagway	87	69.70		21.20	58.40	6.20
South Naknek	92	54.30	11.40	11.40	45.70	14.30
Tatitlek	87	94.70	57.90	52.60	78.90	52.60
Tatitlek	88	85.70	57.10	42.90	66.70	42.90
Tatitlek	89	68.20	36.40	31.80	40.90	27.30
Tatitlek	90	64.70	29.40	29.40	41.20	41.20
Tatitlek	91	100.00	47.40	47.40	84.20	52.60
Tatitlek	93	90.00	50.00	35.00	65.00	55.00
Tenakee Springs	84	91.70	54.20	54.20	70.80	33.30
Tenakee Springs	87	90.30		58.00	54.90	41.90
Thorne Bay	87	74.30		58.30	39.50	25.30
Tununak	86	100.00	97.00	93.90	15.20	57.60
Ugashik	87	0.00	0.00	0.00	0.00	0.00
Unalaska	94	90.80	56.80	55.80	62.50	51.20
Whale Pass	87	77.80		55.60	33.30	27.80
Wrangell	87	76.60		47.30	54.10	30.20
Yakutat	84	92.00	58.00	58.00	58.00	40.00
Yakutat	87	87.60		53.60	61.90	37.60

Since longline skate gear is more clearly identified as a customary and traditional gear of some Southeast Tribes, the Council may wish to confine such a gear allowance to Alaska Native Alaskans in those communities (e.g., Gulf of Alaska only, Area 2C only, Alaska Native only).

ADFG Subsistence Division studies indicate that not all rural residents actually harvest subsistence food, but is in fact harvested by a minority of the rural population (Wolfe and Bosworth 1990). Suboption C would allow 'designated' fishermen to fish halibut for his community using any gear type or up to 3 skates, with up to 60 hooks per skate. This would be modeled after the designated hunter allowance. This option would require NMFS to develop a process to approve, monitor, and enforce individual agreements with either Tribes, communities, or individual rural residents for harvesting halibut for others. The State has a 'proxy' system of subsistence fishing for others that may serve as a model.

The effects of Suboptions B and C are expected to be greatly magnified by the sale provision discussed under Option 6. Depending on the gear type and level of sale allowed, subsistence halibut removals 'for sale' would be expected to increase proportionately. Due to efficiency of operations, more subsistence halibut 'for sale' would be expected to be harvested if longlines are allowed than if rod-and-reel gear is allowed. Similarly, three times more fish could be harvested using 30 hooks (Suboption B2) than if 10 hooks were allowed (Suboption B1) and six times more fish, if 60 hooks were allowed (Suboption B3).

5.1.2.3.1 Groundfish bycatch

Groundfish bycatch associated with halibut longlining could result in bycatch of 10-18%for rockfish in Area 2C, 27% for sablefish and 12% for Pacific cod bycatch in the GOA, and 15% for rockfish, 29% for sablefish, 14% for P. cod and 11% for Greenland turbot in the BSAI. Rockfish bycatch, in particular yelloweye in Southeast Alaska, may diminish local populations already at risk.

The DMRs outlined above depict the background bycatch rates of these species in commercial longline fisheries. The State strictly manages rockfish in State waters. State daily bag limits for pelagic shelf rockfish (black, blue, yellowtail, widow, and dusky) are 5 rockfish, 10 in possession. For other rockfish, the limit is: 5 per day, 10 in possession except for yelloweye rockfish for which the limit is only 2 per day, 4 in possession. An exception to these limits occurs for Ketchikan, Craig, and Sitka Sound: other than pelagic shelf rockfish the bag and the possession limit is 3 rockfish of which no more than one can be yelloweye.

Alaska Native Alaskans expressed a desire to retain all fish harvested while subsistence halibut fishing, including rockfish and sablefish. An upward bound for impacts on demersal shelf rockfish can be estimated using an assumption that *all* of the 1.3 million pounds of halibut for all non-commercial gear in Area 2C would be harvested using skate gear. Under this worst case scenario, a maximum of 234,000 lb of yelloweye rockfish could be harvested as bycatch (assuming a maximum of 18% bycatch; ranging between 10-18% for Area 2C). The 1997 discard mortality rate (DMR) for rockfish in the entire GOA halibut longline fishery was 6%. Using this rate results in bycatch of 78,000 lb of rockfish. The 1996 estimated biomass for yelloweye rockfish was 93.8 million lb.

The 27% sablefish bycatch rate used in the GOA commercial longline fishery may result in a maximum 350,000 lb of sablefish landed by subsistence skate gear, assuming that these rates are also applicable to the subsistence fishery which is likely to occur close to villages in nearshore waters. Pacific cod is also likely to be taken with subsistence skates, at a (commercial) rate of about 12%, resulting in maximum landings of about 156,000 lb.

5.1.2.4 Option 4. Define minimum size.

Suboption A. No minimum size be imposed for subsistence harvests of halibut.

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

The following discussion of the minimum size for halibut is taken from Clark and Parma (1995). Since 1973, the IPHC has set a coastwide minimum size limit of 32 inches (81 cm) for commercial halibut. The size limit was based on a study by Myhre (1974), who calculated yield per recruit for various ages of recruitment to the commercial fishery assuming a release mortality rate in the range of 0.2-0.4. Clark and Parma (1995) reaffirmed the appropriateness of the 32 inch minimum size and are planning to reanalyze the minimum size in context with an observed reduction in halibut growth and a shift of the maturity schedule to smaller sizes in 1997.

There is currently no minimum size in the sport halibut fishery, except off Oregon. Fish less than the commercial minimum size account for about half the sport caught fish by number, but only about a quarter of the weight coastwide. In some areas, however, the sport catch consists mostly of small fish.

Hooking mortality of halibut released by anglers and length selectivity of the sport fishery has been estimated to be quite similar to that in the commercial fishery. Few fish under 60 cm occur in the sport catch, with the mode around 80 cm, and large fish are well-represented. Therefore, the estimation of halibut landed in the sport fishery is similar to that in the commercial fishery. And since subsistence harvests has been legally limited to sportfish limits and Western Alaska traditional subsistence harvests have been reported from hand-held lines with 3-hooks, the subsistence fishery may also be assumed to be similar to the commercial fishery in terms of hooking mortality.

The discard mortality rate used in 1995 was 16% in all areas and was based on the bycatch discard mortality observations in 1992 and 1993 in the BSAI sablefish hook and line fishery where the pace of fishing is similar to quota fisheries (IPHC 1996). The 1997 DMR for the GOA sablefish longline fishery is 27%. The amount of sublegal halibut caught in the commercial fishery was estimated from the catch ratio of sublegal to legal pounds from the survey data (IPHC 1996). The ratio of sublegal to legal for Area 4 was estimated from setline surveys between 1989 and 1994. Sublegal mortality was estimated to be 5% in Area 4 for 1995.

IPHC staff determined that yield-per-recruit from the sport fishery was slightly higher than that in the commercial fishery in Area 2B and was no different in Area 3A. Spawning biomass per recruit was also unaffected by removing the size limit. On this basis, IPHC staff reported that there was no reason to impose a minimum size on the sport fishery. Based on the assumed similarity between subsistence and sport harvests, there would also be no biological advantage to imposing a minimum size limit in the subsistence fishery.

5.1.2.5 Option 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.

Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount:
1. $200
2. $400
3. $600

This option would allow for the customary and traditional trade of subsistence halibut. There are two suboptions. Suboption A allows for the customary and traditional trade of subsistence caught halibut. Suboption B allows

for the trade ("barter") of subsistence-caught halibut, limited to an annual amount set by the Council, such as $200, $400, or $600. Using an average dockside value of $2.25/lb of halibut, these amounts translate into roughly 90, 180 and 270 lb per person of halibut that could be sold. Depending on the Council's choice for elegibility, a maximum of 11.3 million lb could be sold under Option 3A (N=41,874), 22.2 million lb, under Option 3B (N=82,171), or 23.9 million lb, under Option 3C (N=88,533).

Customary and traditional trade is one way that wild foods are distributed through non-commercial channels between households in rural Alaska, along with sharing and barter (Wolfe and Magdanz 1987; Burch 1988; Langdon and Worl 1981). The distribution of subsistence-caught wild foods between households is extremely common in rural Alaska communities (Wolfe and Magdanz 1993). It is typically the case in a rural village that about one-third of households are the main producers of wild foods consumed in the community, and about two-thirds of the households receive wild foods produced by others (Wolfe 1987). Households who receive wild foods include elderly households who no longer fish and hunt, households of single mothers with young dependent children who cannot fish and hunt themselves, households of young couples just getting started who are beginning to acquire the equipment for harvesting and processing wild foods, and households who do not fish because of health-related or other disabilities. Studies by the Division of Subsistence indicate that subsistence foods commonly flow to these receiving households from producing households through long-established non-commercial distribution systems. Wild foods are distributed through several non-commercial means, including the following – sharing, barter, and small-scale cash exchanges. The types of non-commerical distribution found in rural areas are listed in Table 3 of Wolfe and Magdanz (1993), and include the following:

sharing- generalized reciprocity. This is the sharing of harvested resources from one person to others without an expectation on the part of the giver or obligation on the part of the receiver of something returned in compensation. Sharing like this commonly occurs between relatives and between close friends.

sharing- delayed reciprocity. This is giving of harvested resources from one person to another without reciprocal compensation, but where the receiver gives back at later dates (sometimes over years) other goods, services, or money. Delayed reciprocity can be "balanced", where the goods or services exchanged over time are of approximate equal value. It can be "unbalanced", where the largest volume of resources flows in one direction.

sharing- redistribution. This occurs where wild resources are given by the harvester to a centralized person or location (like a food cache), from which the resources are then redistributed at some later date, typically by a person other than the harvester.

sharing- division among cooperative workgroup. This is the division of a harvest between members of a cooperative production workgroup (such as a hunting party or hunting crew), commonly in the field and following conventional rules (such as a shares system).

sharing - ceremonial giving. This is the giving or sharing of wild resources in a ceremonial context, such as potlatches, song fests, first fruit observances, Slavi, religious rituals, and so forth.

barter. This is the immediate exchange of one wild food product for another product, not involving money.

customary and traditional trade - non-commercial exchanges involving money. This is the immediate exchange of wild resources for money outside the context of a store, commercially-licensed buyer, or other mercantile facility. The exchanges are typically of relatively limited volume and between individuals with personal relations.

Three examples of customary and traditional trade of wild foods in rural Alaska are presented in Wolfe and Magdanz (1987) -- eulachon oil in southeast Alaska (Chapter 1), seal oil in western Alaska (Chapter 2), and herring roe on hemlock branches in southeast Alaska (Chapter 3). According to Wolfe and Magdanz, customary

and traditional trade is most commonly small-scale in terms of the volume of resources traded between rural families, although there are some exceptions to this when the harvest is a specialized activity (such as the trade of herring roe on hemlock branches in southeast Alaska, which may involve thousands of pounds). Customary and traditional trade appears to occur most commonly between Alaska Native families; however, some trade also occurs between non-native families in rural areas. The consumption of the food occurs within the state, and almost always within the region where the resource was harvested. In some instances, the money given to a producer is described as compensation for the person's expenses for taking the food item, such as the fuel and ammunition costs for taking a caribou or a seal. In some instances, there are long-standing trade relationships between families or between rural communities, such as the trade of seal oil between coastal and inland areas, or the trade of roe on hemlock between southeast Alaska communities. In some instances, subsistence food items (like eulachon oil) are sold in small amounts over-the-table as part of trade fairs or ceremonial gatherings. This small-volume trade is usually not monitored by state or federal agencies, and the trade usually does not present any biological problems for the wild resource taken for subsistence uses.

The regulatory management regimes differ for the three examples of customary and traditional trade provided in Wolfe and Magdanz (1993). (1) For seal oil, federal regulations allow for the non-wasteful harvest of marine mammals by Alaska Natives only, and regulations allow for the sale of marine mammal food products in Native villages and towns in Alaska. To date, there have been no regulations limiting the customary trade of marine mammal food items in Native villages and towns in Alaska, and the essentially self-regulating trade has not resulted in significant biological impacts on seal populations. (2) For herring roe, state regulations (5 AAC 01.717) allow for the customary trade of herring roe, and places restrictions on the amount (currently, 166 lbs per year) of herring roe on kelp through a state subsistence permit (there is no permit limit for herring roe on hemlock). The permit limit was established by the Alaska Board of Fisheries to prevent the significant flow of roe on kelp into commercial export markets for roe on kelp. As the trade of roe on hemlock occurs primarily within the region's Alaska Native tribes which comprise a limited consumption group, state regulations allow for that distribution pattern to be self-limiting. (3) For eulachon oil, there are no state regulations that allow for the trade of subsistence-caught eulachon or eulachon oil; consequently, the long-established trade of eulachon oil exists outside the legal regulations. Under the state subsistence law, the customary trade of subsistence foods is recognized and defined as "the limited noncommercial exchange, for minimal amounts of cash, as restricted by the appropriate board, of fish or game resources", so presumably the eulachon trade could be eventually recognized in regulation under this statutory definition by the Alaska Board of Fisheries. Consquently, the three examples of customary trade present three different management approaches – customary trade with no regulated limits (seal oil, roe on hemlock), customary trade with a regulated limit (herring roe on kelp), and customary trade with no regulatory recognition (eulachon oil).

There are no specific studies of the customary and traditional patterns of sharing, barter, or trade of halibut in rural areas. Without systematic information, it is difficult to assess if there are special distribution patterns for halibut which are distinct from wild resources like seal oil, eulachon oil, or herring roe on hemlock. It is known that halibut is commonly distributed between households, as shown by the number of surveyed households who reported receiving and giving halibut in Table 5.6. It is known from qualitative observation that the majority of halibut is distributed between households in rural Alaska through sharing, and these exchanges do not involve cash. However, there are no statistics on the extent to which small-scale exchanges for cash are involved in the non-commercial distribution of halibut in rural areas.

The leakage of subsistence-caught halibut into commercial markets is a potential problem. There are relatively large-volume commercial markets for halibut in Alaska's large towns (such as Sitka and Kodiak City) and cities (such as Juneau and Anchorage), and there are larger-volume commercial export markets for halibut. Currently, state regulations prohibit the commercial sale and purchase of halibut caught in state-authorized subsistence fisheries. If Suboption A of Option 5 were passed, regulations prohibiting the sale and purchase of subsistence-caught halibut on commercial markets likely would be needed to deter potential leakage of subsistence-caught

fish into commercial networks.

Suboption B places a limit on the amount of subsistence-caught halibut traded -- $200, $400, or $600. Presumably, this limit is in addition to a regulation prohibiting the sale of halibut to commercially-licensed buyers. Suboption B places a limit on non-commercial exchanges between households. The regulation is similar to the current state regulation limiting the customary trade of herring roe on kelp, described above. Such a regulation would place a limit on the amount of any single transaction in which halibut is exchanged. It is not known if the three levels ($200, $400, or $600) provide for, or restrict, established patterns of customary trade of halibut, as there is no information on patterns of exchange as described above. On their face, these limits appear to be consistent with a receiver compensating a person's expenses for harvesting a wild food, such as fuel costs (Wolfe and Magdanz 1993). However, as this type of compensation is a relatively informal arrangement between persons (and so may not technically constitute a "sale"), regulations providing for them may not be formally required.

There is a potential that establishing in regulation any trade limit ($200, $400, or $600) has the potential for creating a new incentive for some subsistence fishers to produce halibut for trade. In small rural villages, or among Alaska Native tribal groups, the volume of additional halibut harvested is likely to be small due to this added incentive, as the pool of consumers is demographically limited. In mid-sized towns (Sitka, Kodiak City, Unalaska) and urban places (Juneau, Ketchikan, Anchorage) with larger populations and seasonal visitors, the potential for the incentive creating new harvests are greater. Regulations defining the area or group might deal with this potential. A regulation restricting customary trade to rural villages might prevent incentives for new subsistence harvests for trade in mid-sized towns and urban places. A regulation restricting customary trade to Alaska Native tribal members might prevent the development of new subsistence harvest patterns for customary trade; this option would be linked to definitions of eligibility for subsistence halibut fishing.

The Council also requested clarifying definitions of 'barter,' 'non-commercial,' 'low monetary value,' and 'customary trade' to be included in the analysis. The following definitions are taken from 1996-97 Statewide Subsistence and Personal Use Fisheries Regulations Sec. 16.05.940 Definitions in AS 16.05 - AS 16.40.

personal use fishing means the taking, fishing for, possession of finfish, shellfish, or other fishery resources by Alaska residents for personal use, and not for sale or barter, with gill or dip net, seine, fish wheel, long line, or other means defined by the Board of Fisheries.

resident means any person who for the last 12 consecutive months has maintained a permanent place of abode in the state and has continually maintained his voting residence in the state; and in the case of a partnership, association, joint stock company, trust, or corporation, **resident** means one that has its main office or headquarters int he state; however, a member of the military service who has been stationed in the state for the preceding 12 consecutive months is a resident for the purpose of this paragraph, and the dependent of a resident member of the military service, who has been living in the state for the preceding year is a resident for the purposes of this paragraph; and a person who is an alien but who for one year has maintained a permanent place of abode in the state is a resident for the purpose of this paragraph.

sport fishing means the taking or attempting to take for personal use, and not for sale or barter, any fresh water, marine, or anadromous fish by hook and line held in the hand, or hook and line with the line attached to a pole or rod which is held in the hand or closely attended, or other means defined by the Board of Fisheries.

subsistence fishing means the taking of, fishing for, or possession of fish, shellfish, or other fisheries resources by a resident domiciled in a rural area of the state for subsistence uses with gill net, seine, fish wheel, long line, or other means defined by the Board of Fisheries.

subsistence uses means the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption.

The following definitions are taken from 1996-97 Subsistence Management Regulations for the Harvest of Fish and Wildlife on Federal Public Lands in Alaska (USFWS).

customary and traditional use means along-established, consistent pattern of use, incorporating beliefs and customs which have been transmitted from generation to generation. This use plays an important role in the economy of the community.

customary trade means cash sale of fish and wildlife resources regulated herein, not otherwise prohibited by State or Federal law or regulation, to support personal and family needs; and does not include trade which constitutes a significant commercial enterprise.

resident means any person who has his or her primary, permanent home within Alaska and whenever absent from this primary, permanent home, has the intention of returning to it. Factors demonstrating the location of a person's primary, permanent home may include, but are not limited to: the address listed on an Alaska license to drive, hunt, fish, or engage in an activity regulated by a government entity; affidavit of person or persons who know the individual; voter registration; location of residences owned, rented or leased; location of stored household goods; residence of spouse, minor children or dependents; tax documents; or whether the person claims residence in another location for any purpose.

rural means any community or area of Alaska determined by the Board to qualify as such under the process described in §_____.15 of this Part.

The following are defined from this analysis.

non-commercial means subsistence, personal use, and recreational harvests of halibut.

low monetary means either $200, $400, or $600..

The Council must resolve several policy issues related to customary trade and the amount of cash sales under Options 5 (and Option 6) that other federal agencies with responsibilities for managing subsistence also face. Allocational issues may arise if sufficient numbers of eligible subsistence participants either enter the subsistence fishery and/or initiate barter to take advantage of an allowance for cash sales of halibut (Federal Subsistence Board 1994). Resulting competition with local users would be controversial and could require increased management at the local level. At the same February 1997 meeting that the Council initiated this regulatory amendment, the Council also requested preparation of an analysis for developing a local use plan for halibut in Sitka Sound. Ultimately, an increase in the amount of subsistence halibut harvested will result in direct reductions in commercial catches, thus redistributing fishing income from commercial fishermen to subsistence fishermen.

5.1.2.6 Option 6. Sale of subsistence halibut.

Suboption A. Allow the commercial sale of subsistence-caught halibut.

Suboption B. Prohibit the commercial sale of subsistence-caught halibut.

Option 6 allows for the sale of subsistence-caught halibut to persons licensed to buy, process, and sell halibut on commercial markets. Regulations allowing for the commercial sale of subsistence-caught fish likely would create significant changes in established subsistence halibut fisheries. The regulation would change the end goal of the fishing activity from "production for household use values" to "production for household use values and for sale values on commercial markets." That is, the regulation would convert the current subsistence fishery into a subsistence-and-commercial fishery.

A regulation allowing for the sale of subsistence-caught halibut to commercial buyers would lead to profound changes in fishing practices in rural Alaska. Because halibut would have a significant monetary value on commercial markets, subsistence fishers likely would increase the production of halibut over established harvest levels. Part of the halibut harvested by fishers would be retained for household use (the subsistence component) and part of the halibut would be sold to commercial buyers for export (the commercial component). The production potential of the new subsistence-commercial fishery would be substantial, if regulations allowed for relatively efficient gear types and seasons. The significant monetary potential of the commercial halibut component likely would attract new fishers into the fishery. Potentially significant reallocative effects might occur over time between the existing IFQ and CDQ commercial fisheries and the new subsistence-commercial fishery, depending upon the number of new participants and the growth in harvests.

5.1.2.7 Option 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

Improved data collection would be a significant element of proposed management of the halibut subsistence fishery. Basic characteristics of the noncommercial halibut fishery in rural Alaska, including locations, gear types, seasonality, size, and trends, are needed to monitor the effectiveness and appropriateness of whatever halibut subsistence regulations are developed. The data is also needed to appropriately and accurately account for the removals to assure proper management of the halibut resource.

Subsistence fishing permits would provide a means of obtaining harvest information and identifying eligible individuals or entities. The ADFG Subsistence Division administers an extensive State subsistence fishing permit system; however, since under Title VIII, only rural residents of communities with customary and traditional use eligibility can receive permits, they may be able to fill this function only under Option 2, suboption B. NMFS therefore may have to provide licensing under Option 2, Suboptions A and C and certainly may wish to retain licensing responsibility even under suboption B.

Any expansion of subsistence rights can be expected to be controversial. Proposed restrictions on the halibut charter boat fleet is evidence of competition for the halibut resource (NPFMC 1997). General discussions before the Council have included reports of relatively low levels of subsistence removals. Alaskan halibut subsistence harvests amount to less than one percent of the 1997 Alaska halibut commercial quota, and is roughly the same percentage as subsistence to total salmon removals. However, expansion of those removals due to expansion of eligibility and/or gear requirements than what is currently allowed and (hopefully) accounted for under Alternative 2 may result in dramatically increased harvests, although at still relatively small levels compared with commercial and recreational removals.

In many regions, commercial fisheries have been incorporated into the traditional mixed, subsistence-cash economies (Wolfe 1984). The NMFS Enforcement Division has expressed concern that some of the proposed management options may allow leakage of commercial IFQ and CDQ, as well as subsistence, landings (sale, barter, no minimum size for CDQ landings in Area 4E) onto the market and that commercial removals are underestimated.

One mechanism to resolve halibut subsistence issues for certain coastal communities with other halibut

allocational issues would be to separate those actions into a separate regulatory amendment currently under staff development for local area halibut management plans. In February 1997, the Council requested this analysis to facilitate development and implementation of local area halibut management plans for those areas where local conflicts have been identified. Under this framework groups would be formed to develop initiatives for Council review to address localized depletion and decreased opportunity for non-guided sport and subsistence halibut fishing. On the same track, the Council initiated development of a local halibut plan for Sitka. The Council may prefer to address subsistence for certain communities such as Juneau, Sitka, Petersburg, and Ketchikan under this separate process.

To address these problems in the short term, some basic information about the noncommercial halibut fishery in rural areas needs to be collected and analyzed. The data collected should be directed toward assessing the validity of the assumptions underlying the current harvest assessment methods: (1) that rural rod and reel harvests are measured by the mailed survey of sport fish license holders; (2) that the proportion of catch by the three noncommercial gear types are correctly estimated for the fishery as it is occurring in the 1990s; and (3) that communities are correctly grouped into strata for data expansion. Longer term data needs can be assessed depending upon the extent to which the research data supports the assumptions underlying the current monitoring system (Wolfe 1994).

5.2 Administrative, Enforcement and Information Costs

Administrative and information costs may increase under Alternative 2. Expenses may increase for permitting, monitoring subsistence harvests, determining eligibility under Alternative 2, Option 2, Suboption C, and monitoring barter and sale of halibut under Alternative, Options 5 and 6. Permitting fees may (partially) compensate for expenses related to managing the program. Losses to the ADFG Recreational Fishing Division due to a decline in "personal use" permits by subsistence fishermen may be offset by revenues from permitting by the ADFG Subsistence Division, if ADFG assumes permitting responsibilities for halibut subsistence.

Enforcement costs are not expected to increase under Alternative 2.

6.0 ECONOMIC IMPACT ON SMALL ENTITIES

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

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

Since individual fishermen are not considered 'small entities' under the Regulatory Flexibility Act, the proposed action to legitimize an existing halibut subsistence fishery was determined to not result in a significant economic impact on a substantial number of entities under the RFA.

7.0 SUMMARY AND CONCLUSIONS

The proposed action in the Halibut Subsistence EA/RIR is to develop regulations to allow for the legal harvest of halibut for subsistence use in the Bering Sea/Aleutian Islands and Gulf of Alaska. First, subsistence halibut harvests are currently included within the personal use, or sportfish, regulations, largely because the subsistence fishery's pattern of use has not been adequately documented. Sportfish regulations do not reflect the customary and traditional use of halibut in rural communities. Regulations for Alaska limit all non-commercial halibut harvests to two fish per person per day, caught on a single line with a maximum of two hooks or a spear, from February 1 through December 31. Increased enforcement of commercial halibut IFQ and CDQ regulations has led to increased awareness of the conflict between halibut regulations and customary and traditional subsistence practices of Alaska Natives in coastal communities.

Second, subsistence harvests may not be adequately accounted for in the International Pacific Halibut Commission calculations of total halibut removals. Despite the lack of accurate landings information, all non-commercial halibut harvests are estimated to account for less than one percent of total halibut removals.

In September 1996, the Council received a NMFS report on enforcement issues related to halibut subsistence and designated a committee to advise the Council on management of subsistence halibut harvests. In October 1996, staff from the Council, NMFS Enforcement, NOAA General Counsel, and Alaska Department of Fish and Game Subsistence Division met with Alaska Native Tribal representatives to exchange information on the Council process for developing fishing regulations and Tribal subsistence customs. Agency staff met in November 1996 and provided a report to the Council at its December 1996 meeting on numerous management issues related to development of halibut subsistence regulations. At that meeting, the Council named seven representatives of Native Alaskan Tribes to the Halibut Subsistence Committee and named Council member Robin Samuelsen as Chairman. The committee met in January 1997 and provided recommendations for the development of halibut subsistence regulations in its report to the Council in February 1997. At its February meeting, the Council initiated preparation of an EA/RIR for a regulatory amendment to allow the legal harvest of halibut for

subsistence in rural communities to conform with state and federal statutes that provide for the opportunity for the continued existence of these traditional cultures and economies.

The following management alternatives were approved for analysis:

Alternative 1. Status quo.

Alternative 2. Allow the harvest of halibut for subsistence.

OPTION 1. Define subsistence.

Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.'

OPTION 2. Define eligibility for halibut subsistence:

Suboption A. Members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut. (Subsistence Committee definition)

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Native Groups with Subsistence Halibut Uses,' and will also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

Suboption C. Tribal members and non-Native permanent residents of Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

OPTION 3. Define legal gear.

Legal halibut subsistence gear is defined as (1) hook-and-line gear (including set and hand-held gear) with a range of 10 hooks, 30 hooks, and 60 hooks and (2) rod-and-reel gear. An individual would be limited to one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy.

Suboption. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:

A. 1 - 3 skates of gear, up to 60 hooks each

B. any gear type

OPTION 4. Define minimum size.

Suboption A. No minimum size be imposed for subsistence harvests of halibut.

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

OPTION 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.

Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount:

1. $200
2. $400
3. $600

Allow low monetary, non-commercial sale of halibut to legalize current practice of compensating subsistence fishermen for fuel or other fishing expenses in exchange for fish. The analysis would define 'barter,' 'non-commercial,' 'low monetary value,' and 'customary trade' and analyze the enforcement and monitoring costs of allowing barter.

OPTION 6. Sale of subsistence halibut.

Suboption A. Allow the commercial sale of subsistence-caught halibut.

Suboption B. Prohibit the commercial sale of subsistence-caught halibut.

OPTION 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

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APPENDIX I. Federally Reserved Submerged Lands and Waters*

Certain public lands that were withdrawn for Federal purposes before Alaska's statehood contain Federally reserved submerged lands and waters, including some that are deemed navigable. These areas include:

Area	Species	Determination
KOTZEBUE-NORTHERN AREA - Northern District	All fish	Residents of the Northern District, except for those domiciled in State of Alaska Unit 26-B.
KUSKOKWIM AREA	Halibut	Residents of Chevak, Newtok, Tuntunak, Toksook Bay, Nightmute, Chefornak, Kipnuk, and Mekoryuk.
ALEUTIAN ISLANDS AREA Aleutian Islands Area and the waters surrounding the Pribilof Islands.	Halibut	Residents of the Aleutian Islands Area and the Pribilof Islands.

Wales area: all of the submerged land and water of the Seward Peninsula lying west of Longitude 168°00'00" West, including the peninsula dividing the waters of the Bering Sea and Lopp Lagoon, together with the adjacent waters of the Bering Sea extending 3,000 feet from the shore line;

Little Diomede Island: all of the submerged land and water of Little Diomede Island together with the adjacent waters of the Bering Sea extending 3,000 feet from the shore line;

Fish River (at White Mountain): all of the submerged land and water within the SW 1/4 SW1/4 of Section 23, SW1/4 SW1/4 of Section 25, and Section 26 of Township 9 South, Range 24 West, Kateel River Meridian;

Unalakleet River: the submerged land and water from the mouth easterly up the river for one mile;

Nunivak Island: all of the submerged land and water of Nunivak Island together with the adjacent waters of the Bering Sea extending 10 miles from the shore line;

Aleutian Islands: all of the submerged land and water located on the Aleutian Islands west of False Pass, excluding Akutan, central and northern Amaknak, Sanak, Sedanka, Tigalda, Umnak, and Unalaska Islands;

Kiska Island: all submerged lands and waters of the Pacific Ocean and Bering Sea lying within 3 miles of the shoreline;

Unalaska Island: all submerged lands and waters of the Pacific Ocean and Bering Sea lying within 3 miles of the shoreline;

Akun Island: all of the submerged land and water of Akun Island together with the adjacent waters of the Pacific Ocean and Bering Sea extending 3,000 feet from the shore line;

Simeonof Island: all of the submerged land and water of Simeonof Island together with the adjacent waters of the Pacific Ocean extending 1 mile from the shore line;

Semidi Islands: all of the submerged land and water of the Semidi Islands together with the adjacent waters of the Pacific Ocean lying between parallels 55°57'00" - 56°15'00" North Latitude and 156°30'00" - 157°00'00"

West Longitude;

Kodiak National Wildlife Refuge: all of the submerged land and water on Kodiak Island within the refuge boundary;

Karluk River area: all of the submerged land and water of the Pacific Ocean (Shelikof Strait) extending 3,000 feet from the shoreline between a point on the spit at the meander corner common to Sections 35 and 36 of Township 30 South, Range 33 West, and a point approximately 1 1/4 miles east of Rocky Point within Section 14 of Township 29 South, Range 31 West, Seward Meridian.

Womens Bay, Gibson Cove, portions of St.Paul Harbor and Chiniak Bay: all of the submerged land and water encompassed within U.S. Survey 2539;

Afognak Island: all submerged lands and waters of the Pacific Ocean lying within 3 miles of the shoreline;

Kenai National Wildlife Refuge: all of the submerged land and water within the former Kenai National Moose Range boundary;

Passage Canal: the waters of Passage Canal west of Decision Point;

Glacier Bay National Monument: the waters and submerged lands of Excursion Inlet, Icy Passage, North Passage, North Indian Pass and Cross Sound together with the adjacent waters of the Pacific Ocean extending three nautical miles from the shoreline as described in Presidential Proclamation No. 2330 dated 4/18/1929;

Makhnati Island: all of the submerged land and water of Makhnati Island together with the adjacent waters of Whale Bay and Small Arm extending 1 mile from the shore line;

Hydaburg area: all of the submerged land and water within the former Hydaburg Reservation including Sukkwann Island together with the adjacent waters surrounding these uplands extending 3,000 feet from the shoreline as described in Secretarial Order dated 11/30/1949;

Metlakatla area: all of the submerged land and water within the Annette Island Fishery Reserve including Annette, Ham, Walker, Lewis, Spire, and Hemlock Islands together with the adjacent waters surrounding these uplands extending 3,000 feet from the shoreline as described in Presidential Proclamation No. 1332 dated 4/28/1916. *[Note: this area probably not subject to Federal Subsistence Management Program regulations.]*

* This is a preliinary list of areas containing pre-Statehood withdrawals was compiled by the USFWS, Division of Realty in consultation with BLM, NPS, and USDA-FS.

Migratory Bird Treaty Amd

Aboriginal communities as provided for in the relevant treaties, land claims agreements, self-government agreements, or co-management agreements made with Aboriginal peoples of Canada; and

(ii) Migratory game and non-game birds and their eggs may be taken throughout the year for food by qualified non-aboriginal residents in areas of northern Canada where the relevant treaties, land claims agreements, self-government agreements, or co-management agreements made with Aboriginal peoples of Canada recognise that the Aboriginal peoples may so permit. The dates of the fall season for the taking of migratory game birds by qualified residents of Yukon and the Northwest Territories may be varied by law or regulation by the proper authorities. The birds or eggs taken pursuant to this sub-paragraph (ii) shall not be sold or offered for sale.

(b) In the case of the United States:

(i) Seasons and other regulations implementing the non-wasteful taking of migratory birds and the collection of their eggs by indigenous inhabitants of the State of Alaska shall be consistent with the customary and traditional uses by such indigenous inhabitants for their own nutritional and other essential needs; and

(ii) Indigenous inhabitants of the State of Alaska shall be afforded an effective and meaningful role in the conservation of migratory birds including the development and implementation of regulations affecting the non-wasteful taking of migratory birds and the collection of their eggs, by participating on relevant management bodies.

5. Murres may be taken by non-aboriginal residents of the province of Newfoundland and Labrador for food, subject to regulation, during the period from September 1 to March 10, but the murres so taken shall not be sold or offered for sale. The season for murre hunting shall be further restricted to such period not exceeding three and one-half months as the proper authorities may deem appropriate by law or regulation.

Article III

Article III of the Convention is deleted and replaced by the following:

The High Contracting Powers agree to meet regularly to review progress in implementing the Convention. The review shall address issues important to the conservation of migratory birds, including the status of migratory bird populations, the status of important migratory bird habitats, the effectiveness of management and

PROTOCOL INTERPRETATION OF U.S. DELEGATION

The following provides an interpretation by the United States delegation of the Protocol to the August 16, 1916, Convention Between the United Kingdom and the United States of America For The Protection of Migratory Birds In Canada and The United States. The Protocol was negotiated in Parksville, British Columbia and initialed on April 27, 1995. For the purposes of this Protocol the term "competent authority" means the national scientific or management agency authorized by each High Contracting Power to implement the provisions of this Convention.

The lead paragraph of Article II states that both countries are to manage migratory bird populations in accord with several stated conservation principles. This paragraph also lists illustrative means to pursue these principles. It is the understanding of both countries that all of the activities allowed under Article II, including the taking and use of migratory birds and their eggs by Aboriginal peoples in Canada and by indigenous inhabitants of Alaska, will be conducted in accord with these conservation principles. Thus, the existing treaties, land claims agreements, self-government agreements and co-management agreements which Canada has entered into with Aboriginal peoples include regulatory and conservation regimes that fully reflect these principles. Moreover, Canada would negotiate future treaties and agreements consistent with these same conservation principles.

Article II, paragraph 1.(a) refers to a period not exceeding 3 and 1/2 months. This is interpreted to be 107 days.

Article II, sub-paragraphs 4.(b)(i) and (ii) of the Protocol are meant to provide for customary and traditional subsistence hunting by indigenous inhabitants of Alaska who use migratory birds and their eggs for their own nutritional and other essential needs. It is the intent of the High Contracting Powers that the subsistence harvest of migratory birds and their eggs not be significantly increased. Harvest levels of migratory birds may vary for all users, commensurate with the size of the migratory bird populations. Any restrictions in harvest levels of migratory birds necessary for conservation shall be shared equitably between users in Alaska and users in other States taking into account nutritional needs. It is not the intent of the Protocol to create a preference in favor of any group of users or to modify any preference that may exist.

Previously allowed exceptions for Indians to take scoters at any time and for Eskimos and Indians to take auks, auklets, guillemots, murres and puffins, and their eggs at any season, are not specifically provided for in this Protocol. The intent is to include these species in the broader group of migratory birds subject to general subsistence hunting, as provided under sub-paragraphs 4.(b)(i) and (ii) of the Protocol.

Birds are to be taken only for food. Non-edible by-products of birds taken for nutritional purposes incorporated into authentic articles of handicraft by Alaska Natives may be sold in strictly limited situations which preclude mass production, and pursuant to a regulation by the competent authority in cooperation with management bodies. The term "handicraft" does not include taxidermy items. It is not the intent to authorize the taking of migratory birds for commercial purposes. In this fashion, the Protocol responds to the

legitimate nutritional and other essential needs of the indigenous inhabitants while strictly controlling the commercial use of the non-edible by-products of migratory birds.

The term "indigenous inhabitants" refers primarily to Alaska Natives who are permanent residents of villages within designated areas of Alaska where subsistence hunting of migratory birds is customary and traditional. The term also includes non-Native permanent residents of these villages who have legitimate subsistence hunting needs. Subsistence harvest areas encompass the customary and traditional hunting areas of villages with a customary and traditional pattern of migratory bird harvest. These areas are to be designated through a deliberative process, which would include the management bodies discussed below and employ the best available information on nutritional and cultural needs, customary and traditional use, and other pertinent factors.

Most village areas within the Alaska Peninsula, Kodiak Archipelago, the Aleutian Islands, and areas north and west of the Alaska Range would qualify as subsistence harvest areas. Areas that would generally not qualify for a spring or summer harvest include the Anchorage, Matanuska-Susitna and Fairbanks North Star Boroughs, the Kenai Peninsula roaded area, the Gulf of Alaska roaded area and Southeast Alaska. This list of exceptions does not mean that individual communities within areas that are generally excluded cannot meet the test for designation as subsistence harvest areas. For example, data indicate that there is customary and traditional use of gull eggs by indigenous inhabitants in some villages in Southeast Alaska; these villages could be included for this limited purpose even though indigenous inhabitants in Southeast Alaska generally would be excluded from the spring/summer harvest.

In recognition of their need to assist their immediate families in meeting their nutritional and other essential needs, or for the teaching of cultural knowledge to or by their relatives, Natives residing in excluded areas in Alaska may be invited to participate in the customary spring and summer migratory bird harvest within the designated subsistence harvest areas around the villages in which their immediate families have membership. Such participation would require permission of the village council and an appropriate permit issued through the management body implementing this Protocol. "Immediate family" includes children, parents, grandparents, and siblings.

Management bodies will be created to ensure an effective and meaningful role for indigenous inhabitants in the conservation of migratory birds. These management bodies will include Native, Federal, and State representatives as equals, and will, among other things, develop recommendations for seasons and bag limits; law enforcement policies; population and harvest monitoring, and education programs; research and use of traditional knowledge; and habitat protection. Village councils shall be involved to the maximum extent possible in all aspects of management. Relevant recommendations will be submitted to the competent authority and the Flyway Councils. Regulations established should be enforced to prevent conservation problems.

Creation of these management bodies is intended to provide more effective conservation of migratory birds in designated subsistence harvest areas without diminishing the ultimate authority and responsibility of the competent authority. It is the intention of management agencies that management information, including

traditional knowledge, the number of subsistence hunters and estimates of harvest, will be collected cooperatively for the benefit of management bodies.

Active participation by subsistence users and others in habitat protection programs, such as the North American Waterfowl Management Plan and the Ramsar Convention, is critical to the long-term conservation of migratory birds. These partnership programs are important to protect productivity of key wintering, breeding and migration areas.

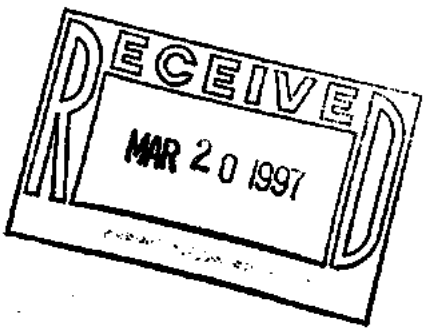
Article IV is a recognition of the important role habitat protection plays in the maintenance of migratory bird populations and is based on the U.S.-Japan Migratory Bird Convention. It does not establish any new Federal authority for management of habitat. The 1916 Convention has been the catalyst for extensive positive Federal, State, Provincial and private efforts to enhance wildlife habitat to benefit the people of both countries. Duck Stamp funds have restored wetlands and helped establish the National Wildlife Refuge System for the benefit of migratory birds. Private, voluntary donations have provided habitats on private as well as public lands through various wildlife conservation organizations. These systems of private and public habitats have sustained flocks of ducks, geese and other migratory birds that have benefitted hunters and other wildlife enthusiasts in both countries. Major new projects under the North American Waterfowl Plan, signed by Canada, Mexico and the U.S., are models of international cooperation and cost-sharing that provide broad benefits of social and economic importance. It is an enviable conservation record, stimulated by the existence of the Convention, and provides a positive framework for maintaining migratory birds in perpetuity.

Consistant with the intent of the Protocol not to cause significant increases in the take of species of migratory birds relative to their continental populations, principal species customarily and traditionally taken for subsistence in the U.S. and Canada are shown on the attached lists:

Table 5.3 (revised 4-11-97). Estimates of Population and Non-commercial Halibut Use under Alternative
Source: Alaska Department of Fish and Game, Alaska Department of Labor

	District 2C	District 3A	District 3B	Districts 4A-D	District 4E	Total
Suboption A. Alaska Federally-Recognized Tribes						
Number of Tribal Entities	19	18	12	6	63	118
Number of Alaska Natives	13,169	4,586	1,191	1,145	21,783	41,874
Average per Capita Halibut	19.7	25.6	36.9	106.8	4.3	15.2
Estimated Halibut Consumption	260,024	117,256	43,941	122,304	93,288	636,813
Suboption B. Alaska Rural Residents						
Number of Rural Places	29	14	10	6	55	114
Total Population	27,221	18,778	2,320	5,541	28,311	82,171
Number of Alaska Native	7,806	3,582	1,196	1,145	21,783	35,512
Percent Alaska Native	28.7%	19.1%	51.6%	20.7%	76.9%	43.2%
Average Per Capita Halibut	23.8	27.6	36.7	106.8	4.3	15.3
Estimated Halibut Consumption	185,949	99,013	43,941	122,304	93,288	544,495
Number of Alaska Non-Natives	19,415	15,196	1,124	4,396	6,528	46,659
Percent Alaska Non-Natives	71.3%	80.9%	48.4%	79.3%	23.1%	56.8%
Average Per Capita Halibut	30.4	11.2	7.4	28.3	0.0	19.1
Estimated Halibut Consumption	591,021	169,592	8,337	124,536	0	893,486
Total Estimated Halibut Consumpt	776,970	268,605	52,278	246,840	93,288	1,437,981
Suboption C. Alaska Native Groups and Other Rural Residents						
Number of Rural Places	29	14	10	6	55	114
Number of Tribal Entities	19	18	12	6	63	118
Total Population	32,708	19,782	2,320	5,541	28,311	82,171
Number of Alaska Native	13,293	4,586	1,196	1,145	21,783	35,512
Percent Alaska Native	40.6%	23.2%	51.6%	20.7%	76.9%	43.2%
Average Per Capita Halibut	19.6	25.6	36.7	106.8	4.3	17.9
Estimated Halibut Consumption	260,024	117,256	43,941	122,304	93,288	636,813
Number of Alaska Non-Natives	19,415	15,196	1,124	4,396	6,528	46,659
Percent Alaska Non-Natives	59.4%	76.8%	48.4%	79.3%	23.1%	56.8%
Average Per Capita Halibut	30.4	11.2	7.4	28.3	0.0	19.1
Estimated Halibut Consumption	591,021	169,592	8,337	124,536	0	893,486
Total Estimated Halibut Consumpt	851,045	286,848	52,278	246,840	93,288	1,530,299

March 20, 1997



Attention: Lori J. Gravel

Mr. Ronald J. Berg, Chief
Fisheries Management Division
Alaska Region, National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668
Fax: (907) 271-2817

Dear Mr. Berg:

Defenders of Wildlife submits these comments, on behalf of our 200,000 members and supporters nationwide, in response to the National Marine Fisheries Service (NMFS) proposed rule which appeared in the March 5, 1997 Federal Register (62 FR 10016). The proposed rule would amend 50 CFR 679 to require operators of hook-and-line groundfish fishing vessels in certain Alaskan waters to implement measures to reduce bycatch of albatrosses and other seabirds. Defenders commends NMFS and the North Pacific Longline Association for addressing this serious wildlife conservation issue, but we are concerned that the proposed rule is too weak to ensure that seabird bycatch is significantly reduced.

Defenders of Wildlife is a national organization dedicated to the conservation of wildlife, endangered species, and biological diversity. Defenders has been actively involved for years with wildlife conservation in the Alaskan region. We were instrumental in the development and approval of a resolution recently passed by IUCN - The World Conservation Union which called for additional measures to reduce incidental mortality of seabirds within longline fisheries.

Seabird bycatch in longline fisheries is a serious conservation problem. Biologists estimate that as many as 180,000 seabirds die every year after becoming entangled in or impaled on longline fishing gear. This accumulated mortality is believed to be resulting in population declines in several species. Bycatch of the endangered short-tailed albatross has been documented in the Alaskan longline fishery, further underscoring the need for longliners in this region to implement effective seabird bycatch reduction measures.

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Unfortunately, NMFS's proposed rule is not strong enough to ensure significant reduction in seabird bycatch. The proposed rule is much weaker than the conservation and management measures adopted by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), and is also significantly weaker than the draft regulations circulated by the North Pacific Longline Association during the IUCN World Conservation Congress in October 1996. The proposed rule should be modified so that it is at least as strong as the CCAMLR regulations, which extend to US longline vessels operating in antarctic waters.

The proposed amendment to §679.24(e)(2)(i) does not require that thawed baits be used or that weights be added to the lines. While it is important for the regulations to be flexible, they should require at least one of these measures, if not both. The CCAMLR regulations require that only thawed baits are to be used, and the NPLA draft regulations specified that "all vessels shall carry weights sufficient for all conditions."

The proposed §679.24(e)(2)(iv) would allow fishers to use ineffective or unproven seabird bycatch avoidance techniques. On 62 FR 10018, NMFS notes that a poorly constructed streamer line will not deter seabirds and outlines the key characteristics of an effective streamer line. Instead of requiring that these criteria be met, however, NMFS merely recommends that they be "taken into consideration" by fishers choosing this option. §679.24(e)(2)(iv)(A) should require the use of effective streamer lines and include or refer to criteria for such lines.

Similarly, the proposed §679.24(e)(2)(iv)(B) gives longline fishers the option of towing a "buoy, board, stick or other device" to deter birds from taking hooks. This technique is unproven to significantly reduce seabird bycatch and should be deleted as a free-standing option. While NMFS should encourage the testing and use of such devices, such use should be in combination with night setting, streamer lines, underwater setting, or other bycatch reduction measures.

The proposed rule should provide stronger encouragement for longline fishers to utilize a combination of proven bycatch reduction techniques. The publication "Catching Fish Not Birds," originally published by Australia but recently republished by NMFS and the Western Pacific Fishery Management Council for distribution to longline fishers operating in Hawaii, recommends that night setting be combined with the use of effective streamer lines. It makes little sense for NMFS to support a "combination" strategy in one fishery and a "pick one" strategy in another. The regulations for Alaska should be equally as strong as existing measures applying to longline fishers in other waters. Additionally, NMFS should explicitly require longline fishers to minimize seabird bycatch to the maximum extent practicable.

NMFS and the North Pacific Longline Association should be applauded for their efforts to reduce seabird bycatch. A weak rule, however, ultimately benefits neither the

seabirds nor the longliners. The proposed rule must be strengthened as outlined above if it is to effectively reduce takes of short-tailed albatrosses and other seabirds.

Sincerely,

John D. Perrine
Species Conservation Division

REVISED

DRAFT FOR COUNCIL REVIEW

REGULATORY IMPACT REVIEW

OF

A REVISION TO THE CATCH SHARING PLAN

FOR

HALIBUT REGULATORY AREA 4

prepared by

Staff
North Pacific Fishery Management Council

April 7, 1997

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The North Pacific Fishery Management Council is considering a revision to its Halibut Regulatory Area 4 catch sharing plan (CSP) for Pacific halibut (*Hippoglossus stenolepis*) in the Bering Sea and Aleutian Islands, which was implemented in 1996. The proposed action would remove Areas 4A and 4B from the CSP, whereupon the International Pacific Halibut Commission (IPHC) would replace the historical allocation approved by the Council with a conservation-based principle of setting catch limits (quotas) in proportion to biomass. The IPHC would continue to apply the historical suballocations approved by the Council in the CSP to set the catch limits for the individual subareas 4C, 4D, and 4E.

The current halibut catch sharing plan was approved by the Council as an interim measure while the IPHC staff refined their biomass-based methodology for determining catch limits for Area 4. At the January 1995 IPHC annual meeting, the IPHC staff recommended a redistribution of halibut quotas in Area 4 subareas according to the proportion of biomass in each area based on calculations made in 1994 on habitat area estimates (Sullivan and Parma 1994). During the February 1995 Council meeting, the IPHC notified the Council of a pending change in apportioning Area 4 subarea quotas for 1996 and beyond based on methodology developed by the staff in 1995. The Council requested that IPHC staff further refine their methodology.

As a result of the continuing development of enhanced methods for setting Area 4 catch limits, in December 1995 the Council approved a catch sharing plan for Area 4 subarea allocations while the IPHC staff further refined their methodology. NMFS implemented the CSP in January 1996 in time for the IPHC to apply the fixed allocations for the 1996 commercial fishery.

During 1996, IPHC staff revised its methodology for setting catch limits for Area 4 based on halibut density and habitat in Area 4A, 4B, and a combined 4C-E area. Staff reported its findings to the IPHC at the January 1997 IPHC annual meeting. The IPHC approved the method but deferred its implementation to allow the Council an opportunity to revise its CSP accordingly. The IPHC recommended that the Council remove Area 4A and 4B from its CSP and defer to the IPHC for the determination of catch limits for those areas using the new biomass-based methodology. The delay in implementation of the revised method was to allow the Council the opportunity to revise the halibut regulations to prevent regulatory conflicts.

To have the revised catch sharing plan in place for action by the IPHC at its annual meeting in January 1998, the Council is scheduled to review this analysis in April 1997 and make a final decision in June 1997. In January 1998, the IPHC would then apply its biomass-based methodology for Area 4A, 4B, and combined 4C-E and apply the CSP allocations to the combined 4C-E catch limit to set Area 4C, 4D, and 4E catch limits.

Alternatives included in this analysis are:

Alternative 1: Status quo.

Alternative 2: Remove Areas 4A and 4B from the Area 4 catch sharing plan.

Alternative 3: Withdraw the Area 4 catch sharing plan.

1. INTRODUCTION

This document is the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for a regulatory action to revise the catch sharing plan (CSP) for Pacific halibut (*Hippoglossus stenolepis*) in Regulatory Area 4 in the Bering Sea and Aleutian Islands (BSAI) (Figure 1). The North Pacific Fishery Management Council (Council) initiated this analysis to remove Areas 4A and 4B from the CSP, whereupon the International Pacific Halibut Commission (IPHC) would resume determination of catch limits for those areas based upon revised assessment methodology.

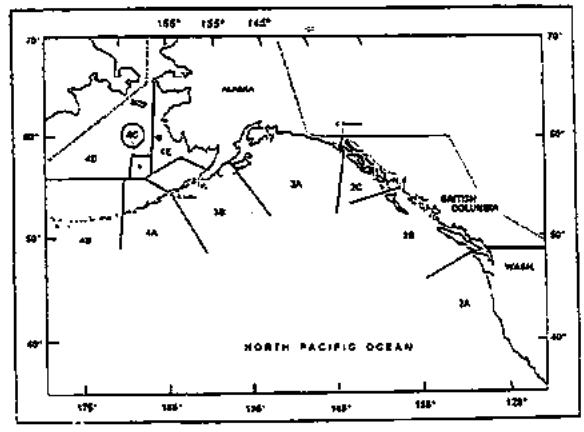

Figure 1. Regulatory areas for the Pacific halibut fishery.

The CSP constitutes a framework that is applied to the annual Area 4 catch limit set by the IPHC each year. Alternative 2 would remove Halibut Regulatory Areas 4A and 4B from the framework. Alternative 3 would withdraw the entire CSP, resulting in IPHC allocations for Areas 4A, 4B, and 4C-E.

The National Environmental Policy Act (NEPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA) require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. Section 2 references NAO 216-6 that provides for a categorical exclusion for this analysis. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered.

1.1. Management Background

The domestic fishery for halibut in and off Alaska is managed by the International Pacific Halibut Commission (IPHC) as provided by the "Convention Between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea" (Convention) signed at Washington March 29, 1979, and the Northern Pacific Halibut Act of 1982 (Halibut Act), P.L. 97-176, 16 U.S.C. 773 c (c). The Convention and the Halibut Act authorize the respective fishery management council established by the Magnuson-Stevens Act to develop regulations governing the Pacific halibut catch in U.S. waters which are in addition to but not in conflict with regulations of the International Pacific Halibut Commission.

While the IPHC has primary authority to manage the halibut resource for biological conservation purposes, the Council has authority to recommend policies affecting halibut resource allocation among U. S. fishermen in the maritime and coastal waters of Alaska and in the ocean waters over which the U.S. exercises fishery management jurisdiction. The Council does not have a fishery management plan (FMP) for halibut, however, the Council developed a limited access system involving individual fishing quotas (IFQs) and community development quotas (CDQs) for the halibut fishery. This system is implemented by federal regulations under 50 CFR part 679, Limited Access Management of Fisheries off Alaska under authority of the Halibut Act and Magnuson-Stevens Act.

The current catch sharing plan was approved by the Council as an interim measure while the IPHC staff refined their biomass-based methodology for determining catch limits for Area 4 subareas. At the January 1995 IPHC

annual meeting, the IPHC staff recommended a redistribution of halibut quotas in Area 4 subareas according to the proportion of biomass in each area based on calculations made in 1994 on habitat area estimates (Sullivan and Parma 1994). During the February 1995 Council meeting, the IPHC notified the Council of a pending change in apportioning Area 4 subarea quotas for 1996 and beyond based on methodology developed by the staff in 1995. The Council requested that IPHC staff further refine their methodology.

As a result of the continuing development of enhanced methods for setting Area 4 catch limits, in December 1995 the Council approved a catch sharing plan for Area 4 subarea allocations while the IPHC staff refined their methodology. NMFS implemented the CSP in January 1996 (*Federal Register* 11337) in time for the IPHC to apply the fixed allocations approved by the Council for the 1996 commercial fishery.

During 1996, IPHC staff revised its methodology for setting catch limits for Area 4 based on halibut density and habitat in Area 4A, 4B, and a combined 4C-E area. Staff reported its findings to the IPHC at the January 1997 IPHC annual meeting. The IPHC approved the method but deferred its implementation to allow the Council an opportunity to revise its CSP accordingly. The IPHC recommended that the Council remove Area 4A and 4B from its CSP and defer to the IPHC for the determination of catch limits for those areas using the new biomass-based methodology. The delay in implementation of the revised method was to allow the Council the opportunity to revise the halibut regulations to prevent regulatory conflicts.

To have the revised catch sharing plan in place for action by the IPHC at its annual meeting in January 1998, the Council is scheduled to review this analysis in April 1997 and make a final decision in June 1997. In January 1998, the IPHC would then apply its biomass-based methodology for Area 4A, 4B, and combined 4C-E and apply the CSP allocations for Areas 4C, 4D, and 4E to the combined 4C-E catch limit to set catch limits for 1998 and beyond.

1.2 Purpose and Need for Action

The IPHC is responsible for conducting biological assessments of the halibut resource and setting catch limits to protect the resource and maximize yield in IPHC Regulatory Area 4 which incorporates the Bering Sea and Aleutian Islands. The North Pacific Fishery Management Council has the responsibility of allocating fishing privileges among U.S. fisherman in Area 4. McCaughran and Hoag (1992) provide a discussion of management authority of the IPHC and the Council relating to halibut.

The IPHC retains management authority to develop conservation-based regulations to protect halibut. The Council cannot preempt the IPHC's authority and responsibility in this matter. The division of authority between the IPHC and the NPFMC has not always been clear in Area 4 because regulations defining Area 4 subareas and corresponding catch limits have had both biological and allocative management goals. Hoag et al. (1993) and Skud (1977) provide a review of IPHC regulations and rationale. Under the revised methodology, the IPHC is proposing to set catch limits in proportion to the biomass of adult-sized halibut in each regulatory area. The purpose of this management policy is to avoid localized depletion and reduce the risk of overexploitation of any stock components. Biomass estimates have been available only for all of Area 4, and not for the subareas until recently.

The IPHC staff and the Commissioners have indicated that the IPHC is prepared to move towards biomass-based allocations for Area 4 subarea catch limits. The biomass-based approach is consistent with the method currently used to set catch limits for other IPHC areas. Additionally, biomass-based catch limits better protect against adverse stock impacts caused by localized depletion. The IPHC supports a biomass- based

approach as a better conservation management approach for Areas 4A and 4B. The biomass-based approach has not been developed for Areas 4C, 4D ,and 4E and no recommendation has been made to remove those subareas from the CSP.

At a joint meeting of the Council and Commission in June 1996, IPHC staff presented a revised analysis that recommended Area 4 catch limits based on biomass distribution. Staff estimated the biomass of halibut in each of the subareas by using area of the commercial fishing grounds as a measure of habitat and catch-per-unit-effort in the commercial fishery as a measure of density (Hoag and Clark 1996; Hoag et al. 1996). Staff then applied the relative biomass in each subarea to the total biomass estimate for Area 4. The IPHC reports are attached as Appendix I and II.

The Council did not take action at that time, awaiting approval of the method by IPHC during its annual meeting in January 1997. The catch limit recommendations based on the IPHC revised method for Areas 4A, 4B, and combined Area 4C-E were approved at the 1997 IPHC Annual Meeting. However, the IPHC deferred action to allow the Council an opportunity to revise its regulations. The IPHC requested that the Council amend its CSP in a letter dated February 5, 1997 following its 1997 annual meeting. At its February 1997 meeting, the Council initiated a regulatory amendment to withdraw Area 4A and 4B from its current catch sharing plan.

The 1997 subarea allocations under the two alternatives are listed in Table 1. Note that for 1997, Area 4A percentages were nearly identical under the two alternatives. Area 4B lost 3.4% of the total Area 4 quota under the IPHC method, while the combined 4C-E area gained 3.1%. Resulting IFQ poundages would have changed for 1997 as demonstrated in the table. These are not necessarily the allocations that would occur in the future.

Table 1. Comparison of Council catch sharing plan allocations and IPHC biomass-based allocations (lb) for 1997 setting Area 4 catch limits.

	ALTERNATIVE 1				ALTERNATIVE 2 and 3			
Sub-area	NPFMC % allocation	NPFMC CSP	NPFMC Subarea catch limits		IPHC Staff Recommendation		NPFMC CSP	
4A	33	.33*8,920,000 =	2,943,600		3,000,000	33.3%		
4B	39	.39*8,920,000 =	3,478,800		3,200,000	35.6%		
4C	13	.13*8,920,000 =	1,159,600	2,577,200	2,800,000	31.1%	46.5%	1,302,000
4D	13	.13*8,920,000 =	1,159,600	for	for	for	46.5%	1,302,000
4E	2	80,000+.02*8,920,000	= 258,400	4C-E	4C-E	4C-E	7%	196,000
4A-E	100		9,000,000		9,000,000			

28% for 4C-E

1.3 Management Alternatives

Alternative 1: Status quo.

Under the status quo, the subarea allocations will remain as fixed percentages based on historical landings approved by the Council in 1995. Those percentages are listed in Table 1 under the NPFMC % allocation column header. Under Alternative 1, a conflict would occur between the area specifications determined by the

Council and the specifications determined by the IPHC. The IPHC deferred action in 1997 to allow the Council an opportunity to revise its regulations.

Alternative 2: Remove Area 4A and 4B from the halibut catch sharing plan.

Alternative 2 addresses new biological information approved by the IPHC to better manage halibut stocks in Area 4. The IPHC has recommended moving to a biomass-based method for setting catch limits for Areas 4A, 4B, and 4C-E. It delayed implementation of the methodology to allow the Council an opportunity to revise its CSP accordingly. Appendices I and II contains the IPHC reports which describe the biological rationale for revising the determination of Area 4 catch limits.

Removal of Areas 4A and 4B from the CSP under Alternative 2 would have a secondary effect of deducting the 80,000 lb allocated by the Council to Area 4E CDQ fishermen from only Area 4C and 4D.

Alternative 3: Withdraw the Area 4 catch sharing plan.

Alternative 3 would also conform to the IPHC recommendation for an Area 4A, 4B, and a combined 4C-E subarea apportionment by withdrawing not only Areas 4A and 4B from the CSP, but also withdrawing Areas 4C, 4D, and 4E. The IPHC has not identified distinct halibut resources in areas 4C, 4D, and 4E and has recommended combining those three areas for assessment purposes. The Council, however, has identified economic apportionments in setting IFQ and CDQ allocations in each of those three subareas. Under Alternative 3, the Council would need to redistribute all IFQ and CDQ apportionments to reflect the combined area. The administrative burden of this redistribution to all IFQ and CDQ holders and administrative agencies may not be warranted.

2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

This proposed action would withdraw Halibut Regulatory Areas 4A and 4B from the catch sharing plan implemented in January 1996, as a result of improved biological information developed in 1996 by IPHC staff. The EA for the original CSP adequately identifies and analyzes the environmental effects of the malternatives considered in this analysis. As such, the Assistant Administrator has determined that this analysis is categorically excluded from the requirement to prepare an environmental document, as provided in NAO 216-6.

3.0 REGULATORY IMPACT REVIEW

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, and quantification of the economic impacts where possible.

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

> In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but

nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

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

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

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

Alternative 2 would withdraw Halibut Regulatory Areas 4A and 4B from the Council's CSP. The IPHC would resume management authority for setting Area 4 subarea catch limits based on biomass for those areas. The IPHC would continue to apply the remaining CSP subarea allocations for Area 4C, 4D and 4E.

3.1 Alternatives Considered

3.1.1 Alternative 1: No Action

Alternative 1 would retain the subarea allocations as fixed percentages based on historical landings approved by the Council in 1995. Those percentages are listed in Table 1 under the NPFMC % allocation column header.

3.1.2 Alternative 2: Remove Area 4A and 4B from the Area 4 catch sharing plan.

Alternative 2 addresses new biological information approved by the IPHC to better manage halibut stocks in Area 4. The IPHC has recommended moving to a biomass-based method for setting catch limits for Areas 4A, 4B, and 4C-E. It delayed implementation of the methodology to allow the Council an opportunity to revise its CSP accordingly. Appendix I and II contains the IPHC reports which describe the biological rationale for revising the determination of Area 4 catch limits.

The risk to the halibut resource of not using a conservation-based method of determining Area 4 catch limits may accrue over time. While the 1997 catch limit recommendations based on conservation are not greatly different from the status quo historical allocations, future density and habitat distributions for halibut are unknown. Application of the IPHC method for annual determinations of catch limits based on habitat densities and habitat would protect the resource better than a fixed allocation based on historical landings.

The 1997 subarea allocations presented in Table 1 may change in the future based on revised CPUE and habitat information. They should not be reviewed as set allocations for all Area 4 subarea catch limits for the future.

3.1.3 Alternative 3: Withdraw the Area 4 catch sharing plan.

Alternative 3 would also conform to the IPHC recommendation for an Area 4A, 4B, and a combined 4C-E subarea apportionment by withdrawing not only Areas 4A and 4B from the CSP, but also withdrawing Areas 4C, 4D, and 4E. The IPHC has not identified distinct halibut resources in areas 4C, 4D, and 4E and has recommended combining those three areas for assessment purposes.

The Council, however, has identified economic apportionments in setting IFQ and CDQ allocations in each of those three subareas. The administrative burden of recalculating and reissuing QS to the 147 halibut IFQ issuees in Areas 4C and 4D and 207 halibut CDQ issuees under this alternative may not be warranted. Business operations may be jeopardized by reconsideration of a combined area allocation.

3.2 Expected Benefits and Costs of the Proposed Action

The proposed action would have no effects on the overall Area 4 quota, which has historically been set by the IPHC. The proposed action does however, alter the allocations among Area 4 subareas based on annual stock assessments. Revised CPUE or habitat data could result in a reallocation among the subareas. There is, therefore, no net economic benefit to the nation, but a potential redistribution of harvest and economic rent among fishermen in different subareas.

As part of the 1996 implementation of the CSP, the Council set aside the first 80,000 lb of the Area 4 total catch limit greater than 5,920,000 lb (the total 1995 Area 4 catch limit) to Area 4E. The proposed action shifts the impacts of the subarea allocations between those QS holders whose QS are held in subareas retained within the CSP and those whose QS are proposed to be removed. Under Alternative 1, those economic impacts are distributed equally among 720 IFQ and 159 CDQ fishermen in Areas 4A-D. Using current ex-vessel value ($2.25/lb), the loss of 80,000 lb distributed across all Area 4A-D IFQ and CDQ shareholders generated a loss of $180,000 with average losses ranging between $158 and 349 (Table 3).

Table 2. Area 4 halibut IFQ and CDQ fishermen as of March 1997.

Area	IFQ fishermen	CDQ fishermen	CDQ allocations
4A	431	0	0%
4B	143	40	20%
4C	79	79	50%
4D	67	40	30%
4E	0	88	100%
Total	720	247	

With the removal of 574 IFQ and 40 CDQ fishermen from Areas 4A and 4B from the CSP under Alternative 2, the 80,000 lb reallocation will be borne by the 146 IFQ and 119 CDQ shareholders in the remaining CSP subareas 4C and 4D. The losses for the remaining 265 shareholders are listed in Table 3. Under Alternative 2, Area 4A IFQ shareholders gained an average of $192 each; Area 4B IFQ shareholders gained an average of

$544 each and CDQ fishermen gained $351 each. Area 4C IFQ and CDQ fishermen lost an average of $570 each. Area 4D IFQ fishermen lost $940 each, and CDQ fishermen lost $675 each.

Alternative 3 may have the same projected impacts as Alternative 2, if the Council chose to grant the same 80,000 lb allocation to CDQ fishermen in Area 4E communities in its redistribution of IFQs and CDQs.

The 88 CDQ fishermen in Area 4E are unaffected by either proposed alternative since their gain was achieved under the original CSP and would likely receive the 80,000 lb allocation under either alternative. There is no net benefit or cost to the nation under any of the alternatives since these costs are shifted between subarea QS holders.

Table 3. Impacts of proposed alternatives

				Alternative 1						
Area	total lb	revenue	IFQ lb	value	fisher	revenue	CDQ lb	value	fisher	revenue
4A	- 26,400	- $59,400	- 26,400	- $ 59,400	431	$138	- 0	0	0	- $ 0
4B	- 31,200	- $70,200	- 24,960	- $ 70,200	143	$491	- 6,240	-$14,040	40	- $ 351
4C	- 11,200	- $25,200	- 5,600	- $ 25,200	79	$319	- 5,600	-$12,600	79	- $ 159
4D	- 11,200	- $25,200	- 7,840	- $ 25,200	67	$376	- 3,360	-$ 7,560	40	- $ 189
4E	+80,000	+180,000	0	0	0	$ 0	+80,000	+$180,000	88	+$2,045

				Alternative 2						
Area	total lb	revenue	IFQ lb	value	fisher	revenue	CDQ lb	value	fisher	revenue
4A	+36,800	+$82,800	+36,800	+$82,800	431	$192	0	0	0	0
4B	+43,200	+$97,200	+34,560	+$77,760	143	$544	- 6,240	+$14,040	40	+$ 351
4C	- 40,000	- $90,000	- 20,000	- $45,000	79	$570	- 20,000	- $45,000	79	- $ 570
4D	- 40,000	- $90,000	- 28,000	-$63,000	67	$940	- 20,000	- $27,000	40	- $ 675

3.3 Administrative, Enforcement, and Information Costs

No significant additional administrative, enforcement, or information costs are expected either under the status quo (Alternative 1) or from the proposed action (Alternative 2).

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APPENDIX I

SETTING CATCH LIMITS FOR PACIFIC HALIBUT IN AREA 4

by

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International Pacific Halibut Commission

April 2, 1996

INTRODUCTION

The International Pacific Halibut commission (IPHC) is responsible for conducting biological assessments of the halibut resource and for setting catch limits to protect the resource and maximize yield. The North Pacific Fishery Management Council (NPFMC) has the responsibility of allocating fishing privileges among U.S. fisherman in waters off Alaska. McCaughran and Hoag (1992) provide a discussion of management authority of the IPHC and the NPFMC relating to halibut; Hoag et. al. (1993) and Skud (1977) provide a review of IPHC regulations and their rationale. The IPHC attempts to set catch limits in proportion to the biomass of adult sized halibut in each regulatory area. The purpose of this management policy is to avoid local depletion and reduce the risk of overexploiting any stock components.

The division of authority between the IPHC and the NPFMC has in Area 4 is currently unclear because regulations defining subareas within Area 4 (Figure 1) and the catch limits for these subareas have had both biological and allocation management goals. The problem in Area 4 has been that biomass estimates have only been available for the total area, and not for the subareas until recently. IPHC attempted to spread fishing effort over Area 4 by creating subareas, but the division of the catch was based more on anecdotal information from fisherman than on scientific assessment. Further, the subareas have become important to different local communities and fishermen for allocation reasons. The significance of the allocation objectives of the subareas has greatly increased under the new management regime involving individual or community quotas.

The IPHC staff estimated the biomass of halibut in each of the subareas by using area of the fishing grounds as a measure of habitat and the CPUE in the commercial fishery as a measure of density, and then applying the relative biomass in each subarea to the total biomass estimate for Area 4 (Sullivan and Parma, unpublished). Catch limit recommendations from the staff were presented at the 1995 IPHC Annual Meeting based on applying a constant exploitation rate to all subareas.

The IPHC was reluctant to adopt the staff recommendations because the new biomass based catch limits differed significantly from the catch limits calculated by the traditional method and the staff could not demonstrate that the resource would be harmed by continuing to set catch limits based on the traditional method until the NPFMC had an opportunity to fully assess the allocation objectives of halibut management within Area 4. The IPHC staff also acknowledged that further work could be done in perfecting the biomass estimates. Further the staff suggested

that some of the subareas could be combined and that the biomass-based catch limits could be calculated for these combined subareas.

This report summarizes research on the biology and distribution of halibut in Area 4 and provides additional information on estimates of biomass and the resulting catch limits for subareas within Area 4. Recommendations for future management are also provided.

SUMMARY OF RESEARCH

Dunlop et. al. (1963) reviewed the early fishery and research in the southeastern Bering Sea. Their report concluded that halibut are present over most of the shelf area, but concentrations of commercial-sized halibut are restricted to a narrow band on the edge of the continental shelf between Unimak Pass and the Pribilof Islands and to a lesser extent along the Aleutian Islands. (This area includes parts of 4A, 4B, and 4C.) They also noted that the distribution of halibut is related to depth and water temperature and varies seasonally. On the flats (Area 4E), commercial sizes are sparsely distributed while young halibut are abundant. Interchange of halibut between sections of the region was indicated from tagging studies. They also showed considerable emigration out of the region and concluded that halibut in the eastern Bering Sea are not biologically separated from those in the eastern Pacific.

Best (1977) documented the abundance and distribution of juvenile halibut in the southeastern Bering Sea and concluded that juveniles concentrate in the winter at the edge of the continental shelf. With spring warming, they move onto the shallow flats and disperse. Maximum northward distribution occurred in August or early September. Oceanographic circulation of the Bering Sea indicates that eggs and larvae spawned in the eastern Bering Sea may be transported northwesterly to nursery areas on the east coast of the Kamchatka Peninsula. Larval halibut from spawning in the Gulf of Alaska are carried into the Bering Sea and contribute to the large populations of juvenile halibut in the southeastern Bering Sea.

Gilroy and Hoag (1993) reported the results from an IPHC survey of the Bristol Bay region (Area 4E). The purpose of the survey was to assess the commercial stock and the incidence of fish below the legal size limit that might occur in a commercial fishery. The survey indicated a low density of commercial sized halibut (average catch per skate was 6 pounds). There was also a low incidence of sublegal fish. The report also reviewed the IPHC decision to extend the Area 4E boundary to allow commercial fishing in Bristol Bay in 1990.

Sadorus and St-Pierre (1995) summarized the results of IPHC research surveys near the Pribilof Islands (Area 4C) and reviewed the history of the fishery and management. They provide information on CPUE, age, size, and sex composition, and the results of tagging studies. A total of 208 tags have been recovered from releases in the Pribilofs: 8% in Canada, 52% in the Gulf of Alaska, 24% in Area 4C, 6% in other parts of Area 4, and 10% from unknown locations. These results suggest a substantial movement of halibut out of Area 4C into many other areas.

Additional information on tag releases and recoveries from experiments in Area 4 is available, but has not been analyzed. Information on fishing locations is also available but is confidential because it comes from fisherman log books. A composite of this log book information was the basis for the estimates of total area of fishing grounds in each subarea which were used by the IPHC staff along with CPUE data to estimate the relative biomass in each subarea. A report on the area of the fishing grounds and the estimated habitat is in progress.

In summary, the distribution of adult halibut in Area 4 appears concentrated along the edge of the continental shelf. There is also evidence that the distribution varies seasonally and that halibut tend to move into shallower water on the shelf as water temperatures warm during the summer. Anecdotal information from fishermen support this conclusion. Adult halibut are probably not available in areas 4C and 4E except during the summer. Adult halibut also tend to be more prevalent in the southern areas and along the Aleutian chain. There is also considerable movement of halibut out of the Bering Sea into the Gulf of Alaska.

CATCH LIMITS AND BIOMASS ESTIMATES

A summary of catch limits (in thousands of pounds, *net weight*) for each subarea since 1983 follows:

	Area 4A		Area 4B		Area 4C		Area 4D		Area 4E		Total
Year	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.
1983	1,200	46.1	800	30.7	400	15.8	200	7.6	0	0	2,600
1984	1,200	39.3	1,000	32.7	400	13.1	400	13.1	50	1.6	3,050
1985	1,700	40.0	1,300	30.5	600	14.1	600	14.1	50	1.2	4,250
1986	2,000	39.6	1,700	33.6	600	11.8	700	13.8	50	1.0	5,050
1987	1,750	36.6	1,750	36.6	600	12.5	600	12.5	75	1.6	4,775
1988	1,900	35.1	2,000	37.0	700	12.9	700	12.9	100	1.9	5,400
1989	1,800	36.0	1,900	38.0	600	12.0	600	12.0	100	2.0	5,000
1990	1,500	36.5	1,500	36.5	500	12.1	500	12.1	100	2.4	4,100
1991	1,700	36.1	1,700	36.1	600	12.7	600	12.7	100	2.1	4,700
1992	2,300	36.3	2,300	36.3	800	12.6	800	12.6	130	2.1	6,330
1993	2,000	33.1	2,300	38.1	800	13.2	800	13.2	130	2.2	6,030
1994	1,800	33.1	2,100	38.8	700	12.9	700	12.9	100	1.9	5,400
1995	1,950	32.9	2,310	39.0	770	13.0	770	13.0	120	2.0	5,920
Total	22,800	36.4	22,600	36.1	8,070	12.9	7,970	12.7	1,105	1.8	62,605

Sullivan and Parma (unpublished) estimated the relative biomass and catch limit for each subarea using the same methodology that has been used in the Area 2A-2B assessment. The method uses historical fishing grounds as a measure of area and a 5 year average CPUE as a measure of density to partition total biomass for the area into separate biomass estimates for each subarea to which the exploitation rate is applied. Estimates of fishing grounds were provided by Hoag, St-

Pierre, and Forsberg (Unpublished) and were determined from fisherman's log books and IPHC research surveys. The average CPUE was from commercial fisherman's log books. The area of the fishing grounds, the 5-year average CPUE, and a comparison of resulting catch limits from this approach with the historical method is provided below. The percent biomass for each area is calculated from the sum of products of fishing grounds times CPUE.

	Biomass Based Method: Sullivan and Parma (unpublished)				Historical Method	
Area	Fishing Grounds (sq. nmi.)	5-year Average CPUE	% Biomass	1995 Catch Limit (lbs.)	Historical %	1995 Catch Limit (lbs.)
4A	8,183	386.85	41.3	2,440,000	33	1,950,000
4B	6,118	246.24	19.6	1,160,000	39	2,310,000
4C	561	225.25	1.6	90,000	13	770,000
4D	5,605	422.31	30.9	1,830,000	13	770,000
4E	4,910	100.5	6.4	338,000	2	120,000
Total	25,377	-	100.0	5,920,000	100	5,920,000

The results from the biomass-based method showed significantly more halibut in Area 4D and less halibut in 4C than indicated by the historical method of setting catch limits. Other differences included more halibut in 4A and 4E and less halibut in 4B.

Several technical concerns regarding the biomass-based estimates were raised by fishermen during the review process at the 1995 IPHC Annual Meeting: (1) the CPUE in Area 4D exaggerates the density of halibut in the area because nearly all of the fishing occurs on a small very productive ground, (2) Areas 4C, 4D, and Area 4E should be combined because halibut move seasonally among these areas and these areas were created to achieve allocation objectives, not biological objectives, and (3) fishing grounds and habitat in Area 4B are underestimated because strong tidal flows make the area difficult to fish.

We consider these criticisms valid and recalculated the biomass-based estimates. The modified biomass-based estimates assume that the density of halibut on the fishing grounds is the same in Areas 4A, 4B, 4C, and 4D, but lower in Area 4E. For calculation, we assumed an intermediate CPUE value of 300 pounds per skate for Areas 4A, 4B, 4C, and 4D, and 100 pounds per skate for Area 4E. A second modification involved assuming that the fishing grounds in Area 4B represent the same proportion of total bottom area as in Area 4A. This assumption is based on the two areas being adjacent, and that fishing grounds in Area 4B may have been underestimated. Hoag, St-Pierre, and Forsberg (unpublished) estimated that fishing grounds represented 37.9% of total bottom area inside 500 fathoms in Area 4A, but only 26.3% of the total bottom area in Area 4B based on log book data. If Area 4B is more difficult to fish, available log book data may under represent available fishing grounds. Applying 37.9% to the 23,234 square miles of total bottom area in Area 4B increases the estimated fishing grounds in Area 4B to 8,806 square miles.

These modifications result in the following:

Area	Modified Biomass-Based Method				Historical Method	
	Fishing Grounds (sq. nmi.)	Assumed CPUE	% Biomass	1995 Catch Limit (lbs.)	Historical %	1995 Catch Limit (lbs.)
4A	8,183	300	33.0	1,953,600	33	1,950,000
4B	8,806	300	35.5	2,101,600	39	2,310,000
4C	561	300	2.3	136,160	13	770,000
4D	5,605	300	22.6	1,337,920	13	770,000
4E	4,910	100	6.6	390,720	2	120,000
Total	28,065	-	100	5,920,000	100	5,920,000
4C, 4D, 4E	11,076	-	31.5	1,864,800	28	1,660,000

The modified biomass estimates are closer to the historical estimates for Areas 4A, 4B, and the total of Areas 4C through 4E. Areas 4D and 4E continue to show a higher biomass and Area 4C a lower biomass than indicated by the historical method.

We contend that the modified method is probably an improvement over the initial biomass-based method presented at the 1995 IPHC Annual Meeting, and that both methods more accurately reflect the biomass in each area than the traditional method of setting catch limits. Ideally, annual estimates of biomass should be made using catch, age, size, and CPUE data from each area, similar to the procedure used by the IPHC staff in other areas. However, we doubt that sufficient data will be available in the near term to provide this type of assessment.

The IPHC staff will continue to work towards improving biomass estimates for each subarea. Survey data may offer addition information on the distribution of biomass within Area 4, and the IPHC staff is considering a setline survey of the area in 1997. Data from NMFS trawl surveys are available for part of the area, but may not accurately reflect the abundance of adult halibut which can avoid trawl capture. Also much of Area 4B is difficult to trawl because of uneven bottom.

RECOMMENDATIONS

The IPHC staff strongly supports the conservation-based principle of setting catch limits in proportion to biomass. The staff recognizes that estimates of biomass for subareas within Area 4 are less precise than estimates for other regulatory areas and the amount of halibut in some of the subareas is small relative to other regulatory areas. Further, the seasonal movement of halibut within Area 4 may lessen the opportunity for local depletion even if the catch limits are not set in proportion to the biomass in each subarea. The possibility that individual stock components may be negatively affected by uneven exploitation rates cannot be ruled out although quantifying the effect of unequal exploitation is problematic. The NPFMC and IPHC should work closely together in setting catch limits that achieve allocation objectives while at the same time protect the resource.

The IPHC staff intends to continue to work towards improved estimates of biomass and will provide recommendations for catch limits prior to the 1997 IPHC Annual Meeting. We anticipate that staff recommendations for catch limits will probably be limited to Area 4A, 4B, and a combined Area 4C, 4D, and 4E.

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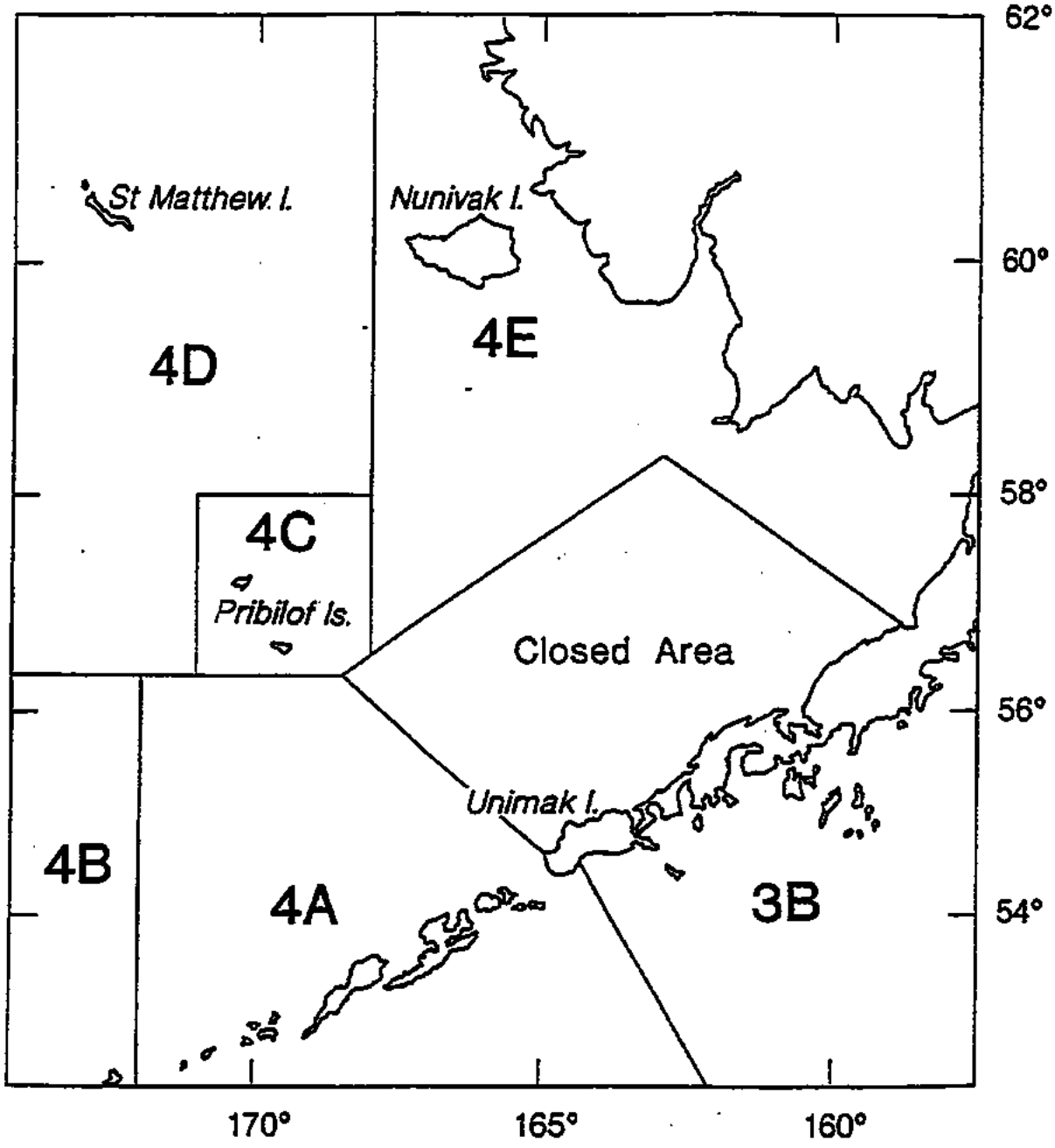

FIGURE 1. International Pacific Halibut Commission regulatory areas of the western Gulf of Alaska (Area 3B) and Bering Sea (Areas 4A through 4E) in 1996.

APPENDIX II

BOTTOM AREA ESTMATES OF HABITAT FOR PACIFIC HALIBUT

by

Stephen H. Hoag, Gilbert St-Pierre, and Joan E. Forsberg

INTRODUCTION

The staff of the International Pacific Halibut Commission (IPHC) estimates the biomass of halibut for major regulatory areas (Figure 1) from annual stock assessments that are based on a combination of catch at age and CPUE data from the commercial fishery (Quinn II et. al. 1985). Biomass estimates, however, are not available from annual assessments for smaller regulatory areas such Areas 4A, 4B, 4C, 4D and 4E in the Bering Sea or from regions within regulatory areas because CPUE or catch at age data are inadequate to reliably estimate biomass for these smaller areas. Estimates of habitat (area) in conjunction with CPUE (density) can be used to at least approximate the relative biomass in these smaller areas. Habitat estimates may also be used to improve future stock assessments for major regulatory areas.

Bottom area estimates of habitat have been previously calculated for specific studies in some areas (e.g. Hoag et. al. 1983; Trumble et. al. 1991) but measures of habitat have varied among areas and studies. In some cases, all bottom area within a depth stratum has been used as a measure of habitat. In other cases, only the bottom area of fishing grounds has been used. During 1994-1995, two measures of habitat were calculated for all IPHC regulatory areas. Further, habitat was calculated by depth strata and statistical area in the Pacific Ocean and by depth strata and regulatory area in the Bering Sea. The purpose of this report is to document the methods and results of this work. Comments regarding the suitability of each measure are also provided.

METHOD

Two measures of habitat were considered: total bottom area inside 500 fathoms and bottom area of fishing grounds based on commercial fishing logs and IPHC research surveys. Both measures were calculated in square nautical miles using a compensating polar planimeter. A discussion of each measure follows:

Total Bottom Area: This measure encompasses all bottom area inside 500 fathoms. Halibut may occasionally frequent all of this area, but the distribution of halibut varies with season and temperature. This measure exaggerates the amount of habitat that is important to halibut, particularly in Areas 2A and 4 which are at the extreme ends of the range where the distribution of halibut is extremely variable and there are large expanses of bottom where halibut are seldom found or are only found in small numbers during part of the year.

Fishing Grounds: This measure consists of the bottom area covered by plotting the daily fishing locations recorded in logs from the commercial fleet, occasionally supplemented by information from other sources. In Area 4, logs for the years 1958-1994 were used. The fishery in Area 4 was insignificant until the late 1950's and until recently was sporadic and tended to be concentrated in the southeastern Bering Sea and in the eastern Aleutian Islands which are closer to major landing ports. We suspect that the log data probably underestimates the habitat, particularly in the more northern and western regions. To augment the log data, data from IPHC and NMFS research charters were also used. Further there was a scarcity of commercial log and charter data in Area 4E and the northern portion of 4D, and some anecdotal information on fishing grounds was included.

In Areas 2B, 2C, 3A, and 3B, commercial fishing logs for the years 1930-1975 and 1994 were used along with IPHC research charter data. In Area 2A, commercial fishing logs for the years 1932-1975, 1965, 1970, 1975 and 1984-1994 were used along with IPHC research charter data. In addition, sport fishing locations obtained from the states of Oregon and Washington were included. The different sets of years used among

areas reflect when the data from commercial logbooks were originally plotted, supplemented by years when significant fishing activity occurred. The intent was to provide a composite of known fishing grounds for each area as efficiently as possible.

Although the density of halibut varies considerably both within and among fishing grounds, this measure provides a more consistent measure of habitat than total bottom area. Habitat may be underrepresented in areas that are lightly fished because of distance from major ports or hazardous fishing conditions. We suspect this underestimate might occur in Area 4B where tidal flows make fishing in some areas difficult, and in the western part of 4B and the northern part of 4D where there is a long distance to major ports. Also, the density of halibut varies seasonally, both among depth strata within a fishing ground and among fishing grounds. Halibut tend to be deeper during spring-fall and shallower during the summer. In some areas such as Areas 4D and 4E, halibut may only occur in shallower depths (less than 50 fm) for a few months or less.

RESULTS

The estimated habitat is provided in Appendix Table 1-8 by regulatory area, statistical area, and depth strata. Statistical areas are defined by Myhre et. al. (1977) and apply only to those regulatory areas in the Pacific Ocean, not the Bering Sea. Areas 4A and 4B which encompass both the Pacific Ocean and the Bering Sea, include statistical areas for the Pacific Ocean portion of the area. Appendix Figures 1through 9 depict the fishing grounds in each regulatory area.

The following table summarizes the results by Regulatory Area:

Regulatory Area	Total Bottom Area		Fishing Grounds	
	Square n.mi.	Percent	Square n.mi.	Percent
2A	16,368	4.3%	2,638	2.2%
2B	29,668	7.9%	14,622	12.4%
2C	16,129	4.3%	10,199	8.7%
3A	51,208	13.6%	40,463	34.4%
3B	31,817	8.4%	24,326	20.7%
4A	21,572	5.7%	8,183	6.9%
4B	23,234	6.1%	6,118	5.2%
4C	9,612	2.5%	561	0.5%
4D	108,388	28.7%	5,605	4.8%
4E	69,914	18.5%	4,910	4.2%
Total	377,910	100.0%	117,625	100.0%

Total bottom area indicates over 3 times the amount of habitat as does fishing grounds. This was expected as fishermen selectively fish where fish tend to concentrate. More interesting are the area differences in relative habitat as measured by total bottom area and the area of fishing grounds. In Area 2A, the fishing grounds comprise 16 percent of the total bottom area and indicate relatively less habitat (2.2 percent) compared to total bottom area (4.3 percent). Fishing grounds progressively comprise a higher proportion of the total bottom area when moving north and west toward the geographic center of the halibut distribution. Area 3A is approximately in the center of the range, and fishing grounds comprise 79 percent of the total bottom area. As a result, habitat in Area 3A represents 34.4 percent of the total for all areas when measured by fishing grounds compared to only 13.6 percent when measured by total bottom area. Continuing toward the north-west end of the range, fishing grounds again decline as a proportion of total bottom area with lowest estimates occurring in Areas 4C, 4D, and 4E. As expected, the relative habitat for these areas is much higher when measured by total bottom area compared to fishing grounds.

We conclude that fishing grounds provide the best measure of relative habitat among areas. On the other hand, fishing grounds undoubtedly underestimate total habitat because fishermen only fish in the most productive areas and not all productive areas are fished. We suspect the problem of underestimation to be greatest in Area 4 because some productive areas are a long distance from major ports and may not be fished by the commercial fishery. This source of underestimation may be at least partially offset by greater seasonal movements of halibut in Area 4. These seasonal movements resulting from changes in bottom temperature mean that some of the estimated habitat is not being used at any given time. Generally, Area 4 fish are more concentrated in the winter along the edge of the continental shelf and dispersed over the shelf during the summer. By including fishing grounds that are fished in the winter as well as those fished during the summer, we may have overestimated the relative habitat.

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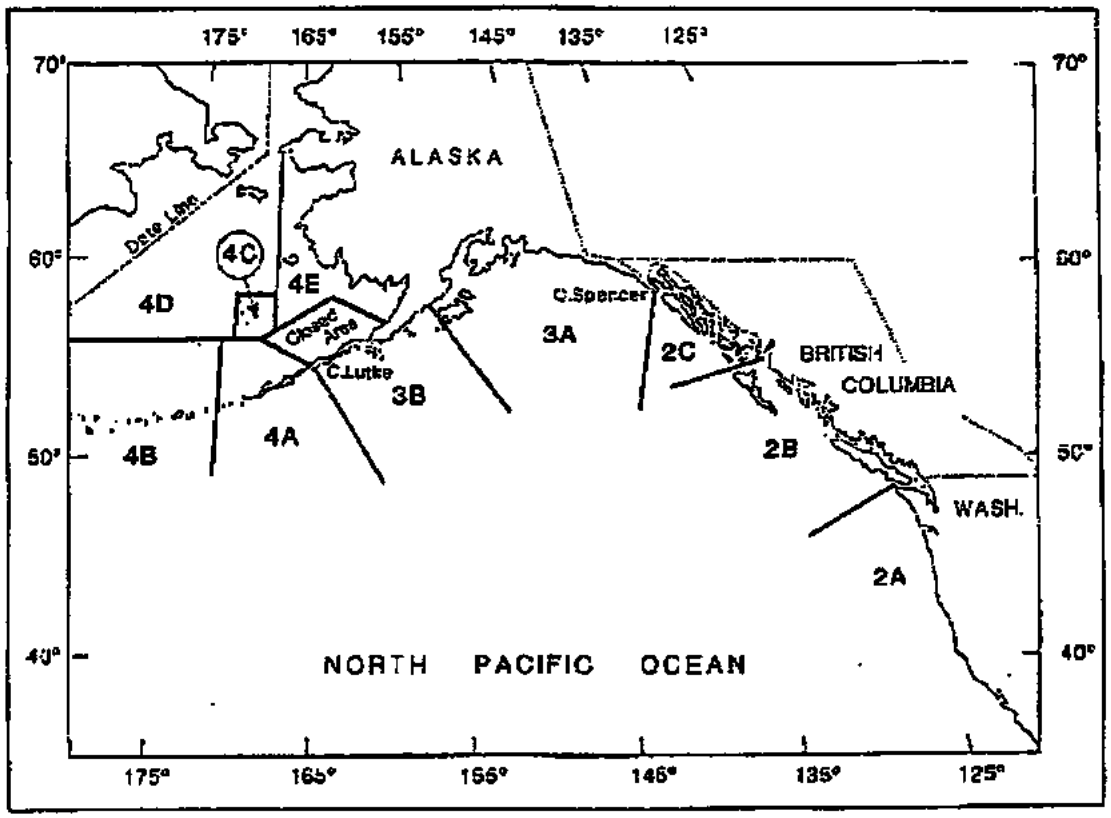


Figure 1. IPHC Regulatory Areas.

APPENDIX

Appendix Table 1. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area and depth strata in Regulatory Area 2A.

Fishing Grounds (square nautical miles) in 2A

	Depth Strata (fathoms)					
Stat. Area	0-20	20-50	50-100	100-200	200-500	Total
7	-	-	16	8	-	24
8	-	-	36	16	2	54
9	-	-	95	32	-	127
10	-	170	225	66	9	470
20	1	121	203	273	61	659
30	-	25	179	115	26	345
40	-	28	91	56	26	201
50	1	39	328	120	32	520
U.S. 060	-	2	80	58	4	144
U.S. Strait	23	52	11	8	-	94
Total	25	437	1,264	752	160	2,638
Summary						
California	-	-	27	14	1	42
Oregon	1	294	645	481	90	1,511
Washington	24	143	592	257	69	1,085

Total Bottom Area (square nautical miles) in 2A

7	193	325	231	118	440	1,317
8	162	277	309	104	694	1,546
9	131	256	399	231	438	1,455
10	81	489	908	225	423	2,126
20	107	413	478	436	843	2,277
30	187	387	817	297	484	2,172
40	316	614	560	111	382	1,983
50	334	400	590	252	470	2,046
U.S. 060	-	4	256	114	71	445
U.S. Strait	220	286	371	104	-	981
Total	1,731	3,461	4,919	1,992	4,245	16,348
Summary						
California	305	520	363	166	878	2,232
Oregon	496	1,576	2,695	1,228	2,372	8,367
Washington	930	1,365	1,861	598	995	5,749

Appendix Table 2. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area and depth strata in Regulatory Area 2B.

Fishing Grounds (square nautical miles) in 2B

	Depth Strata (fathoms)					
Stat. Area	**0-20**	**20-50**	**50-100**	**100-200**	**200-500**	**Total**
Can. Strait	8	23	16	-	-	47
Can. 060	2	359	504	74	-	939
70	11	50	226	34	-	321
80	3	185	138	53	-	379
90	86	580	943	306	-	1,915
100	57	494	1,671	845	70	3,137
110-I	122	468	1,292	925	93	2,900
110-O	6	22	47	47	15	137
120-I	646	458	515	49	-	1,668
120-O	4	13	48	21	6	92
130-I	261	500	639	324	53	1,777
130-O	35	201	205	231	47	719
Can. 140	2	40	202	281	66	591
Total	1,243	3,393	6,446	3,190	350	14,622

Total Bottom Area (square nautical miles) in 2B

Can. Strait	112	117	226	71	-	526
Can. 060	209	724	982	159	274	2,348
70	269	420	817	341	463	2,310
80	214	349	197	187	232	1,179
90	482	939	1,947	981	238	4,587
100	293	816	1,634	1,791	535	5,069
110-I	392	493	1,461	1,724	188	4,258
110-O	45	26	73	69	133	346
120-I	1,491	615	584	51	-	2,741
120-O	63	34	59	46	157	359
130-I	1,307	588	663	584	91	3,233
130-O	124	233	218	286	480	1,341
Can. 140	19	52	258	849	193	1,371
Total	5,020	5,406	9,119	7,139	2,984	29,668

Some of the 60 square mile statistical areas within this Regulatory Area were further subdivided in recent years. The subdivided statistical areas are shown in Appendix Figure 2 and correspond to the 60 mile divisions as follows:

60-square mile statistical areas	**includes subdivided statistical areas:**
60	60, 61
70	70, 71
80	80, 81
90	90, 91
100	100, 102
110-I	112
110-O	110
120-I	121
120-O	120
130-I	132, 133, 134
130-O	130, 131
Can. 140	142

Appendix Table 3. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area and depth strata in Regulatory Area 2C.

Fishing Grounds (square nautical miles) in 2C

	Depth Strata (fathoms)					
Stat. Area	**0-20**	**20-50**	**50-100**	**100-200**	**200-500**	**Total**
US 140-I	38	220	311	324	54	947
US 140-O	4	101	739	576	18	1,438
150-I	98	221	175	221	10	725
150-O	38	402	758	1,087	60	2,345
160-I	95	235	337	405	92	1,164
160-O	26	147	568	463	38	1,242
170-I	11	190	190	358	44	793
170-O	46	202	380	127	3	758
180-I	15	176	219	148	29	587
180-O	7	26	115	47	5	200
Total I	257	1,042	1,232	1,456	229	4,216
Total O	121	878	2,560	2,300	124	5,983
Total I&O	378	1,920	3,792	3,756	353	10,199

Total Bottom Area (square nautical miles) in 2C

US 140-I	506	456	460	510	389	2,321
US 140-O	57	121	751	825	107	1,861
150-I	603	319	284	308	150	1,664
150-O	310	469	763	1,087	336	2,965
160-I	359	238	361	411	425	1,794
160-O	104	148	575	511	289	1,627
170-I	326	264	218	394	289	1,491
170-O	226	205	392	128	159	1,110
180-I	153	234	303	290	45	1,025
180-O	31	28	115	47	50	271
Total I	1,947	1,511	1,626	1,913	1,298	8,295
Total O	728	971	2,596	2,598	941	7,834
Total I&O	2,675	2,482	4,222	4,511	2,239	16,129

Some of the 60 square mile statistical areas within this Regulatory Area were further subdivided in recent years. The subdivided statistical areas are shown in Appendix Figure 3 and correspond to the 60 mile divisions as follows:

60-square mile statistical areas	**includes subdivided statistical areas:**
140-I	141, 142, 143, 144
140-O	140
150-I	151, 152, 153
150-I	150
160-I	161, 162, 163
160-O	160
170-I	171, 173
170-O	170
180-I	182, 183, 184
180-O	181

Appendix Table 4. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area and depth strata in Regulatory Area 3A.

Fishing Grounds (square nautical miles) in 3A

	Depth Strata (fathoms)					
Stat. Area	**0-20**	**20-50**	**50-100**	**100-200**	**200-500**	**Total**
185	20	61	1,173	334	157	1,745
190	13	513	1,512	460	53	2,551
200	46	175	1,786	884	79	2,970
210	23	347	778	771	103	2,022
220	39	213	706	487	45	1,490
230	30	1,091	1,643	329	102	3,195
240	44	491	1,913	1,237	227	3,912
250	1	215	3,056	1,975	132	5,379
260	629	2,232	3,523	956	84	7,424
270	259	2,180	2,087	538	30	5,094
280	160	1,744	1,342	1,409	26	4,681
Total	1,264	9,262	19,519	9,380	1,038	40,463

Total Bottom Area (square nautical miles) in 3A

185	68	61	1,173	334	205	1,841
190	139	615	1,512	460	79	2,805
200	224	255	1,790	887	141	3,297
210	305	415	779	771	251	2,521
220	387	297	729	487	206	2,106
230	757	1,271	1,728	417	353	4,526
240	494	624	2,019	1,394	537	5,068
250	81	245	3,077	1,991	353	5,747
260	3,198	2,675	3,645	961	244	10,723
270	1,380	2,375	2,315	554	388	7,012
280	680	1,827	1,439	1,408	208	5,562
Total	7,713	10,660	20,206	9,664	2,965	51,208

Some of the 60 square mile statistical areas within this Regulatory Area were further subdivided in recent years. The subdivided statistical areas are shown in Appendix Figure 4 and correspond to the 60 mile divisions as follows:

60-square mile statistical areas	**includes subdivided statistical areas:**
230	230, 232
240	240, 242
260	260, 261
270	270, 271
280	280, 281

Appendix Table 5. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area and depth strata in regulatory area 3B.

Fishing grounds (square nautical miles) in 3B

	Depth Strata (fathoms)					
Stat. Area	**0-20**	**20-50**	**50-100**	**100-200**	**200-500**	**Total**
290	817	1,714	1,184	2,174	188	6,077
300	85	1,831	2,047	1,661	77	5,701
310	16	1,481	2,716	516	16	4,745
320	25	1,734	1,366	164	16	3,305
330	142	1,325	1,433	62	25	2,987
340	102	1,036	331	25	17	1,511
Total	1,187	9,121	9,077	4,602	339	24,326

Total Bottom Area (square nautical miles) in 3B

290	1,453	1,983	1,238	2,174	861	7,709
300	409	1,846	2,086	1,661	417	6,419
310	221	1,514	2,741	556	294	5,326
320	499	2,430	1,366	205	237	4,737
330	1,183	1,350	1,442	125	325	4,425
340	493	1,868	560	76	204	3,201
Total	4,258	10,991	9,433	4,797	2,338	31,817

Appendix Table 6. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area (for Pacific Ocean portion) and depth strata in Regulatory Area 4A

Fishing Grounds (square nautical miles) in 4A

	Depth Strata (fathoms)					
Stat. Area	0-20	20-50	50-100	100-200	200-500	Total
Pacific Ocean						
340	-	10	1	-	-	11
350	21	605	258	18	-	902
360	16	177	417	265	-	875
370	25	258	279	2	-	564
380	24	182	221	167	7	601
390	7	18	47	-	-	72
400	-	-	7	-	-	7
Total	93	1,250	1,230	452	7	3,032
Bering Sea	87	654	842	1,561	2,007	5,151
Total	180	1,904	2,072	2,013	2,014	8,183

Total Bottom Area (square nautical miles) in 4A

Pacific Ocean						
340	-	25	2	1	8	36
350	88	1,268	937	186	277	2,756
360	60	428	639	240	256	1,623
370	134	375	534	98	123	1,264
380	53	199	291	441	176	1,160
390	31	52	106	474	840	1,503
400	-	-	31	120	77	228
Total	366	2,347	2,540	1,560	1,757	8,570
Bering Sea	271	877	5,516	2,271	4,067	13,002
Total	637	3,224	8,056	3,831	5,824	21,572

Appendix Table 7. Estimated area of fishing grounds and total bottom area inside 500 fm by 60-mile statistical area (for Pacific Ocean portion) and depth strata in Regulatory Area 4B.

Fishing Grounds (square nautical miles) in 4B

	Depth Strata (fathoms)					
Stat. Area	0-20	20-50	50-100	100-200	200-500	Total
Pacific Ocean						
400	5	60	91	41	9	206
410	10	212	269	75	17	583
420	18	114	270	240	40	682
430	17	106	163	104	27	417
440	17	105	131	115	22	390
450	36	132	65	22	8	263
460	3	29	86	22	16	156
470	-	13	45	4	7	69
480	-	7	84	37	3	131
490	8	212	236	-	-	456
500	-	-	18	-	-	18
510	n/a	n/a	n/a	n/a	n/a	n/a
Total	114	990	1,458	660	149	3,371
Bering Sea	87	782	1,255	514	109	2,747
Total	201	1,772	2,713	1,174	258	6,118

Total Bottom Area (square nautical miles) in 4B

Pacific Ocean						
400	32	232	326	268	143	1,001
410	72	307	343	91	120	933
420	74	115	351	254	296	1,090
430	93	136	166	111	269	775
440	48	78	130	174	562	992
450	93	132	127	127	436	915
460	13	57	188	124	331	713
470	18	116	241	136	739	1,250
480	-	8	289	363	634	1,294
490	96	283	672	73	208	1,332
500	2	32	137	111	397	679
510	-	-	45	71	89	205
Total	541	1,496	3,015	1,903	4,224	11,179
Bering Sea	611	1,334	2,337	1,579	6,194	12,055
Total	1,152	2,830	5,352	3,482	10,418	23,234

Appendix Table 8. Estimated area of fishing grounds and total bottom area inside 500 fm by depth strata in Regulatory Areas 4C, 4D, 4E and the closed area.

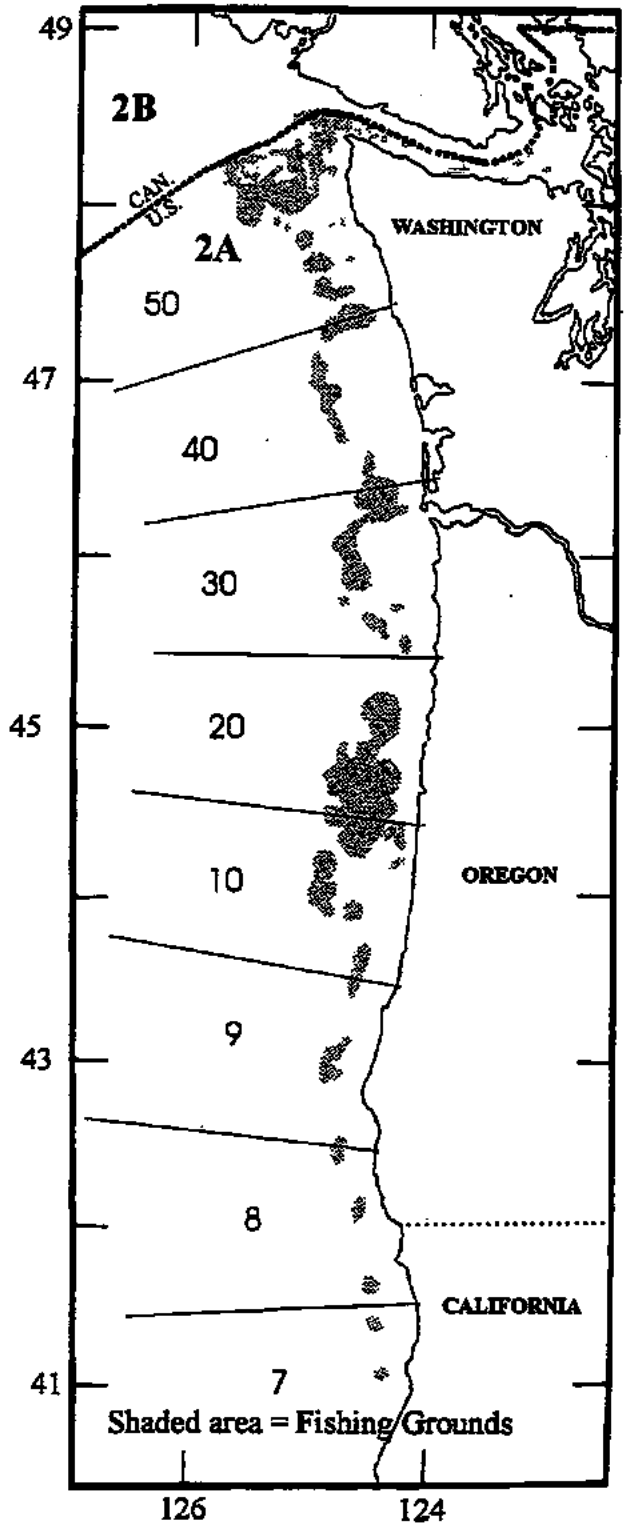
Fishing Grounds (square nautical miles)

	Depth Strata (fathoms)					
	0-20	**20-50**	**50-100**	**100-200**	**200-500**	**Total**
Area 4C	110	390	61	-	-	561
Area 4D	556	819	690	2,310	1,230	5,605
Area 4E-SE	1,037	293	-	-	-	1,330
Area 4E-NW	3,395	185	-	-	-	3,580
Closed Area	71	215	417	-	-	703

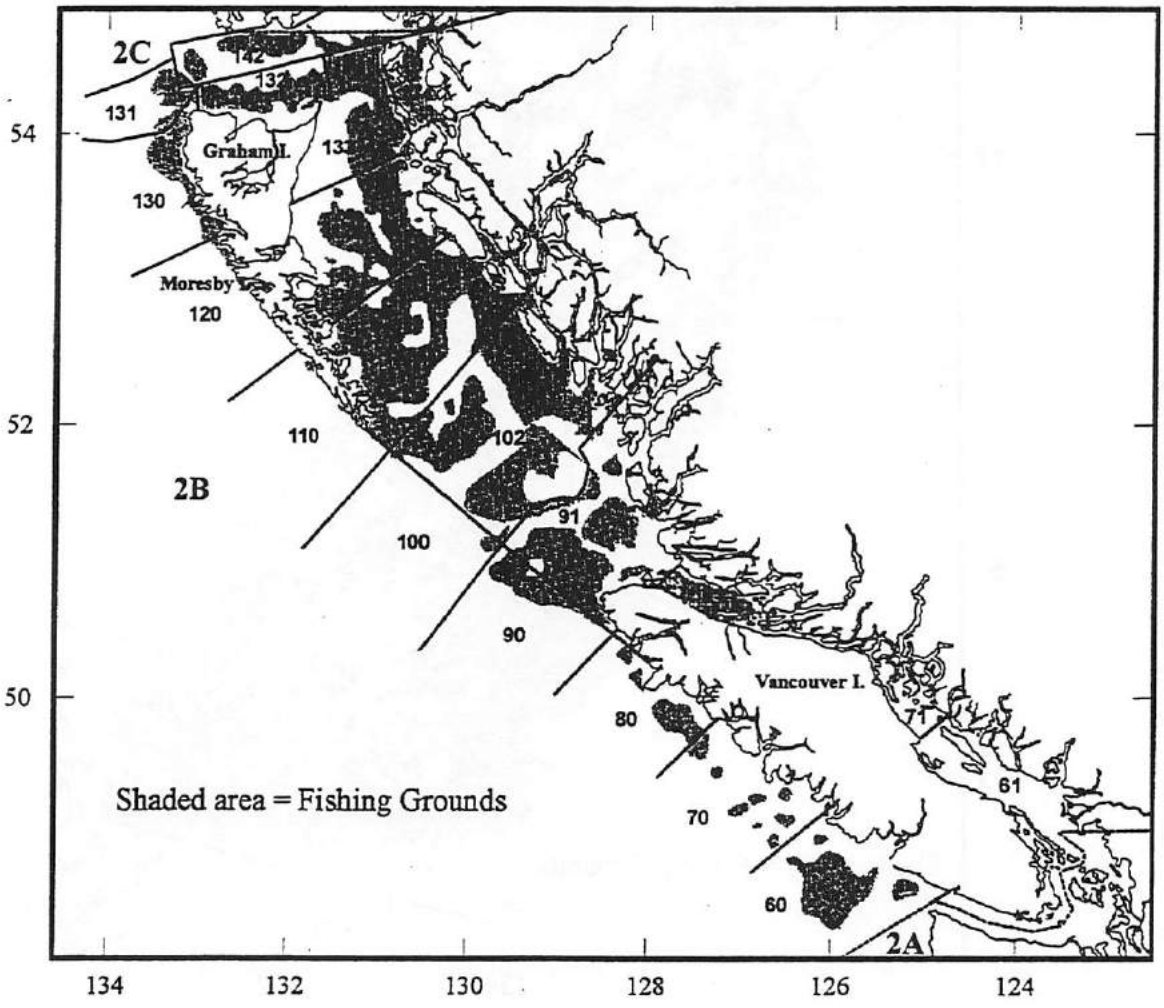
Total Bottom Area (square nautical miles)

Area 4C	150	7,114	2,348	-	-	9,612
Area 4D	12,177	58,805	32,980	2,451	1,975	108,388
Area 4E-SE	7,505	4,780	-	-	-	12,285
Area 4E-NW	45,016	12,397	216	-	-	57,629
Closed Area	2,798	24,213	8,588	-	-	35,599

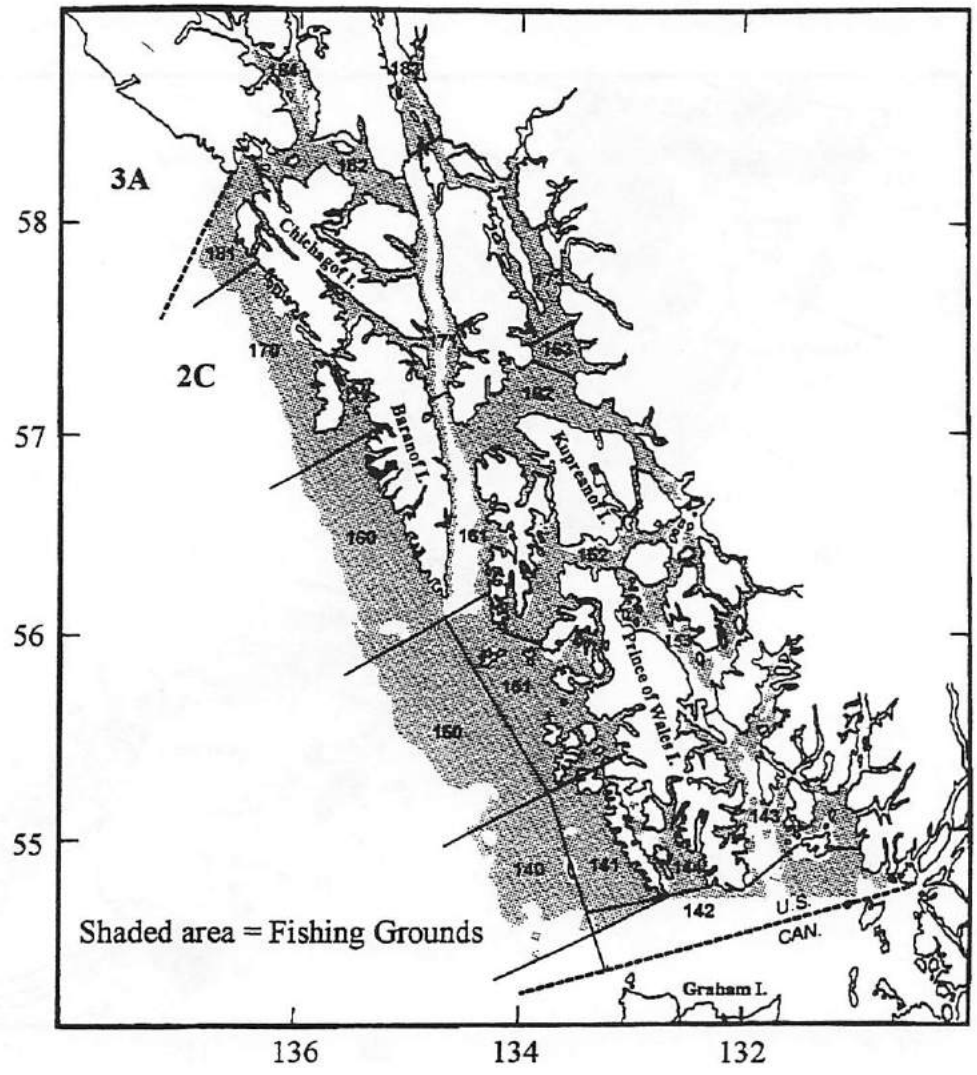
Appendix Figure 1. Fishing grounds by statistical area in Regulatory Area 2A (from commercial, survey, tribal and sport data)

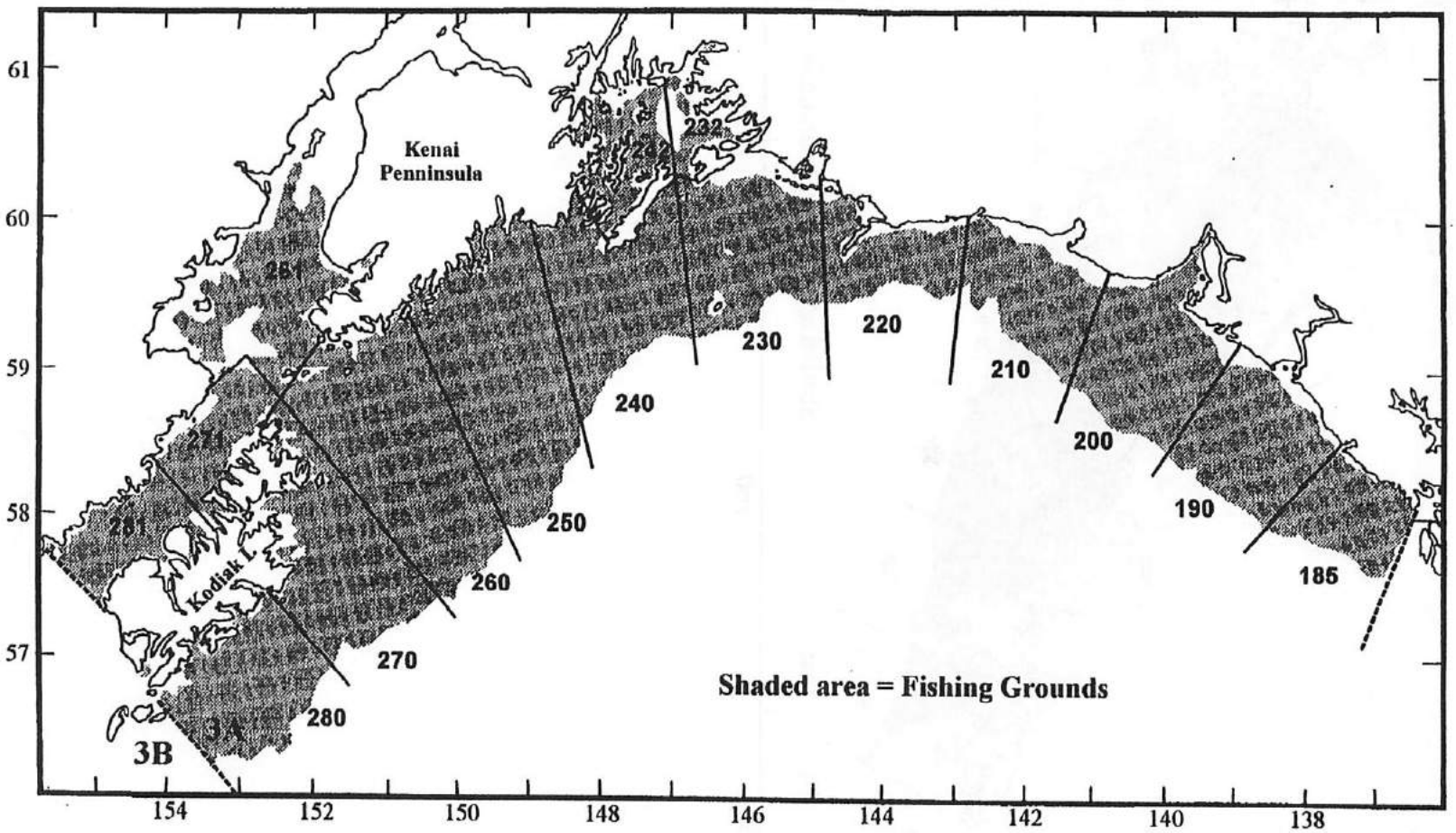


Appendix Figure 2. Fishing grounds by statistical area in Regulatory Area 2B.



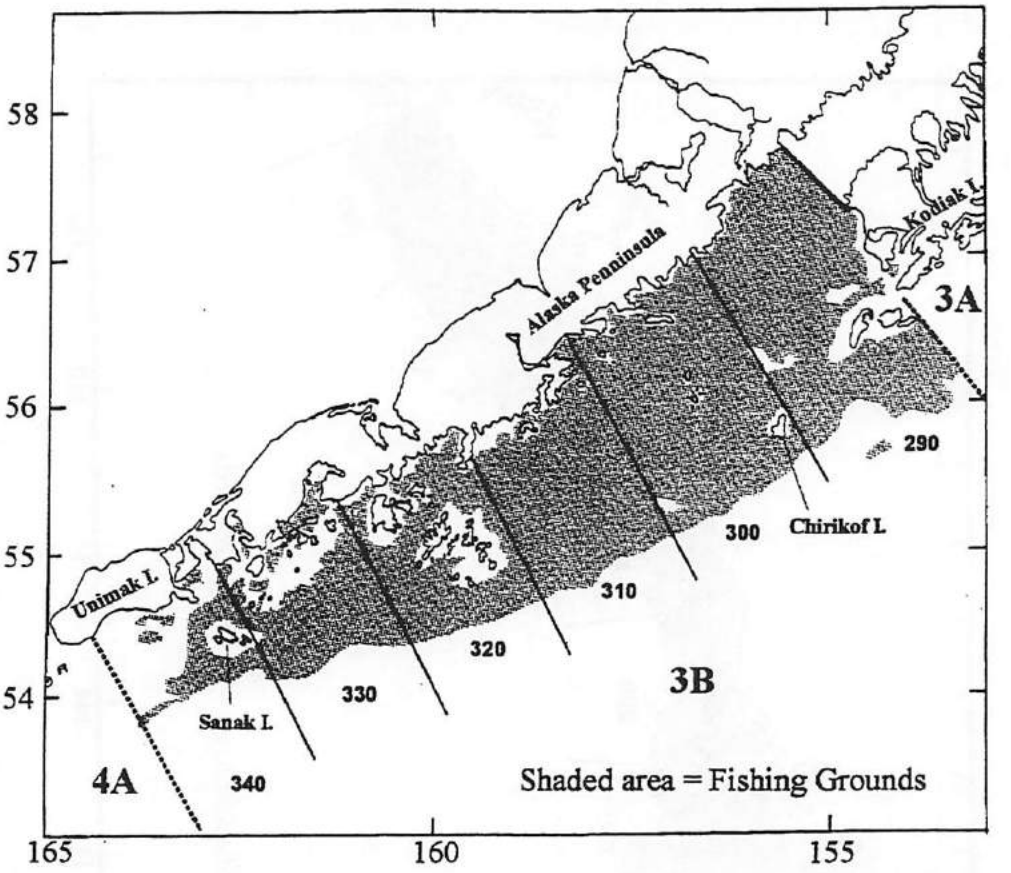
Appendix Figure 3. Fishing grounds by statistical area in Regulatory Area 2C.



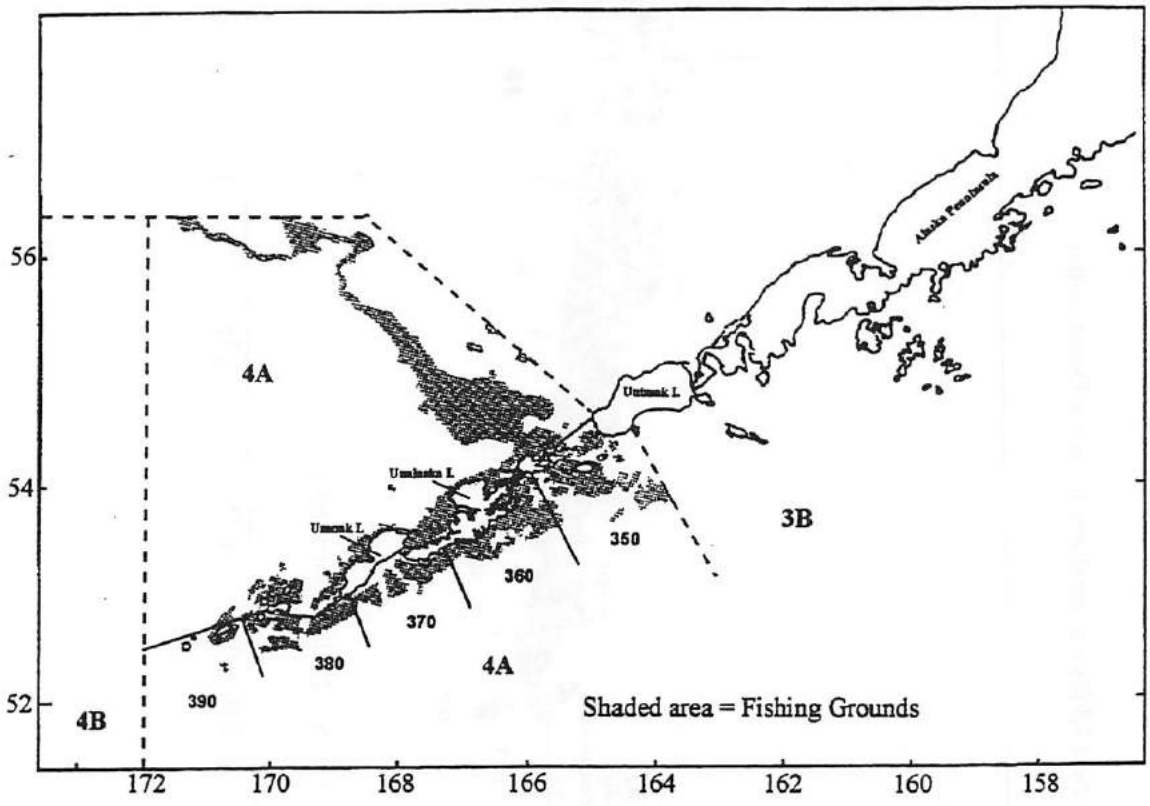


Appendix Figure 4. Fishing grounds by statistical area in Regulatory Area 3A.

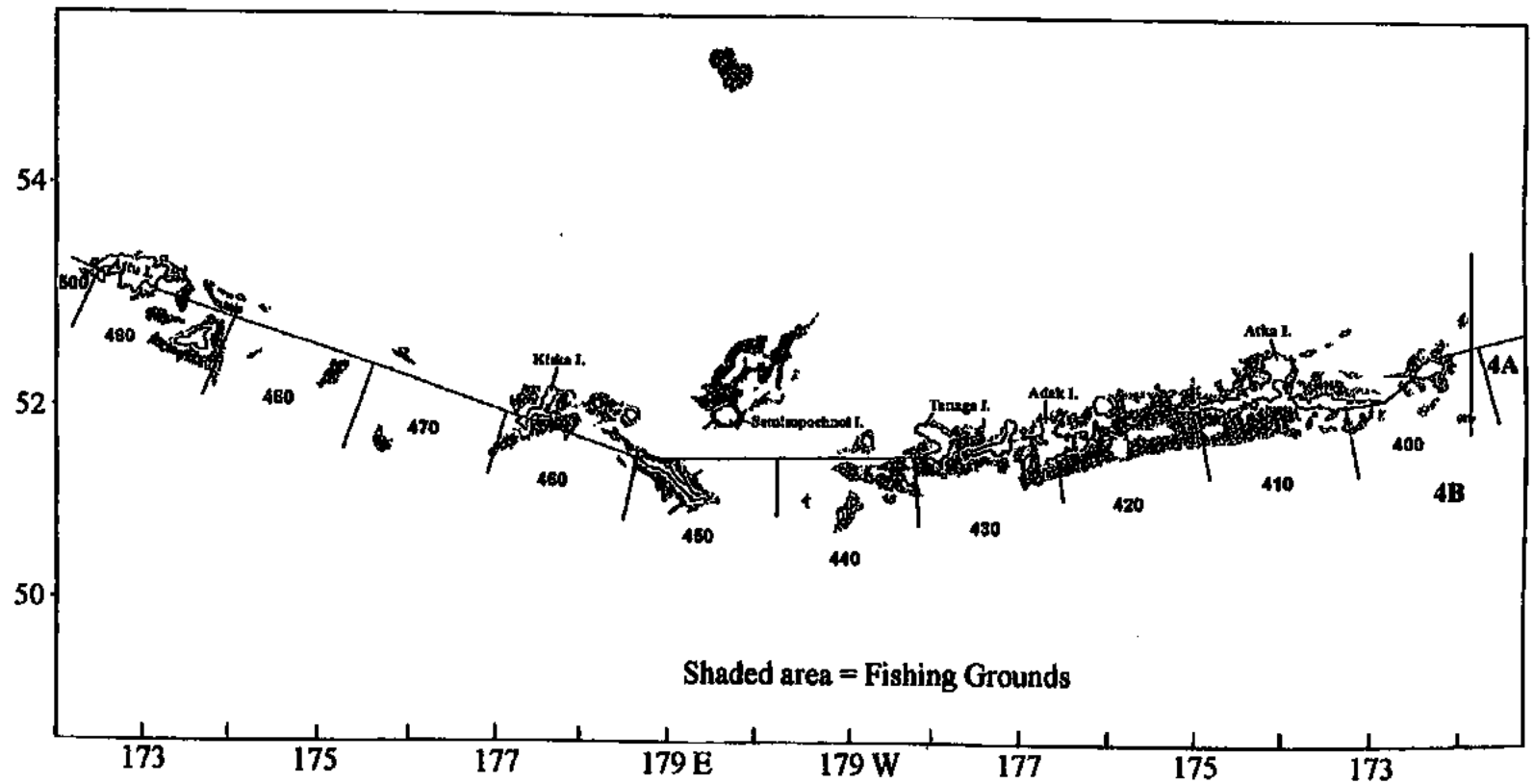
Appendix Figure 5. Fishing grounds by statistical area in Regulatory Area 3B.



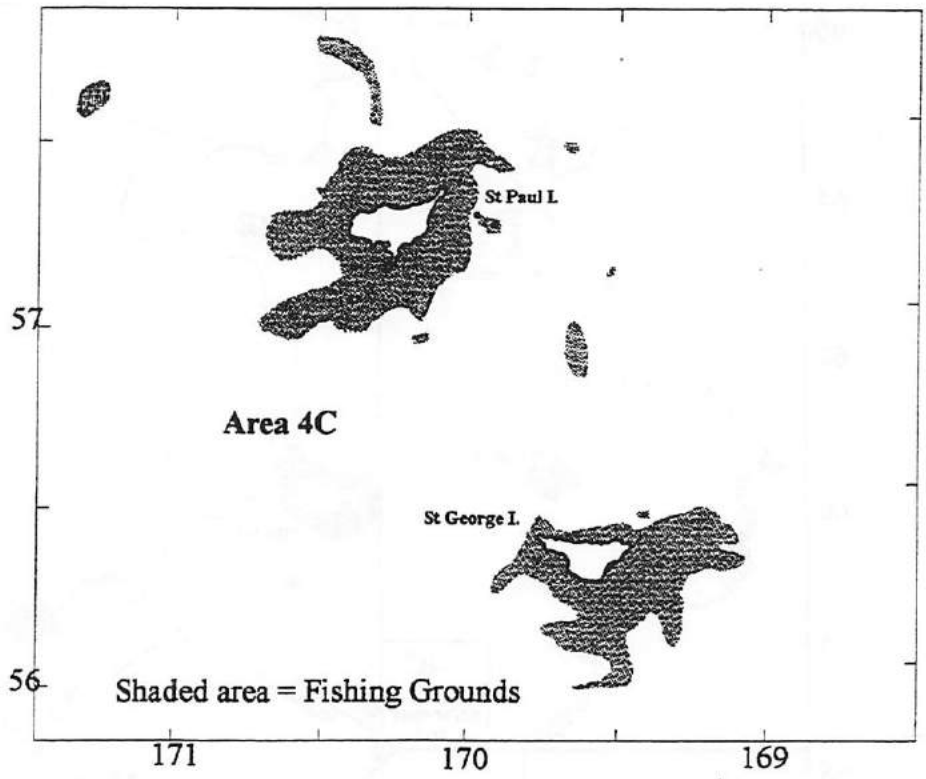
Appendix Figure 6. Fishing grounds in Regulatory Area 4A (by statistical area in Pacific Ocean portion).



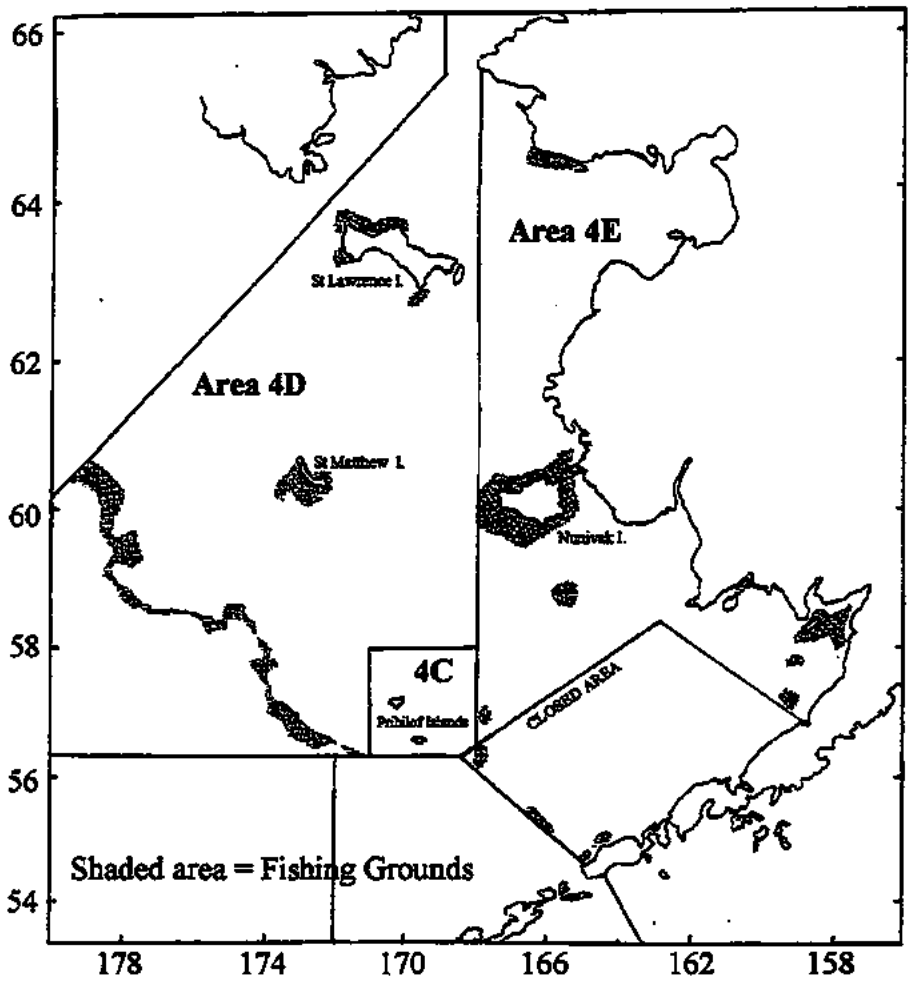
Appendix Figure 7. Fishing grounds in Regulatory Area 4B (by statistical area in Pacific Ocean portion).



Appendix Figure 8. Fishing grounds in Regulatory Area 4C.



Appendix Figure 9. Fishing grounds in Regulatory Areas 4D and 4E.



AGENDA C-2(c)
APRIL 1997
SUPPLEMENTAL

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March 26, 1997

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Dear Mr. Lauber:

The Alaska State Senate and House leadership have been recently appraised of the proposed North Pacific Fishery Management Council (NPFMC) halibut regulations which will be considered at your upcoming April meeting. The leadership of both the Alaska State Senate and House are extremely concerned about the regulatory options being presented for possible adoption.

From the perspective of the legislature, these proposed regulations are going to further polarize an already divided citizenry regarding special subsistence allocations or provisions. As you are undoubtedly aware, the Lt. Governor, the legislature and Alaska's Congressional delegation have been searching for ways to resolve the growing crisis situation evolving over the implementation of the federal subsistence priority on federal public lands. Alaska is now faced with potential federal preemption regulations over much of our state lands and waters, including state navigable waters. These regulations have sufficed to escalate the apprehensions of Alaskans and to increase tensions amongst Alaskans throughout the state.

It is clear that many aspects of the proposed halibut regulatory options were patterned after provisions in ANILCA, many of which have been identified as unacceptable and in need of change by both the legislature and the Lt. Governor. Alaskans have been united in their stand against racially described qualifying criteria for any allocation of Alaska's resources. There has also been strong public support for prohibiting any commercial sale of subsistence caught resources. Both of these controversial issues are at the heart of the proposed halibut subsistence regulatory options being presented by the Council.

We have a request for additional information and for permission to address the Council on this subject at its upcoming April meeting. It would be helpful if you or your legal counsel could provide us with answers to the following questions:

1. Under what authority can the NPFMC, which is not identified in the Halibut Treaty, adopt the proposed regulatory options which are in conflict with our State's Constitution?

2. Under what authority can the Council adopt allocation criteria based on race which are in conflict with the State's Constitution?

3. Under what authority can the Council adopt allocation criteria based on residency?

4. If the Council has the authority to adopt these regulations for a halibut subsistence fishery, is it logical to presume that the Council could do the same thing for king crab, tanner crab, groundfish and some salmon species which are harvested primarily in the EEZ?

5. How and why would the Council consider adopting regulations in total conflict with Alaska's Constitution?

6. Is the Council aware that the adoption of these regulations will result in the inability of the State to assist in any enforcement of regulations which are in violation of the State Constitution?

7. Why didn't the Council consider additional option to include doing nothing?

8. Why didn't the Council consider an additional option under Option 2 to include eligibility for taking halibut under personal consumptive use regulations making it applicable to any Alaskan?

9. Why didn't the Council consider accommodating these type of uses through existing seasons, bag limit and methods and means adjustments rather than creating an entirely new fishery?

10. How will this new fisheries quota affect existing area allocations?

The leadership of the Senate and House would like to testify at the upcoming hearing in Anchorage. One of us will present testimony on behalf of the Senate and House majorities. It would be beneficial for us if we could schedule a specific time for that presentation so that we are not away from the legislature for a protracted period of time. Your assistance in scheduling an appropriate time for the Council would be appreciated.

We all encourage the Council to progress slowly and deliberately on this issue and not take any actions that would result in further social or resource use conflicts. Quite

frankly, we would strongly urge the Council to delay the creation of any special subsistence regulations until Congress and the State have crafted a long term and permanent solution to the existing crisis. We are convinced that the adoption of any of the proposed options is only going to contribute to a further erosion of the state's fisheries management jurisdictions.

Sincerely,

Mike Miller
President of the Senate

Gail Phillips
Speaker of the House

MM/GP:rjs

cc: The Honorable Senator Ted Stevens
The Honorable Senator Frank Murkowski
The Honorable Representative Don Young
The Honorable Governor Tony Knowles

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To [illegible]	From [illegible]	
Co./Dept.	Co. JENIC	
Phone #	Phone # 1-360-394-1452	
Fax # 271-2817	Fax #	

0-LS0841\A

HOUSE JOINT RESOLUTION NO. 34

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTIETH LEGISLATURE - FIRST SESSION

BY THE HOUSE SPECIAL COMMITTEE ON FISHERIES

Introduced: 3/27/97
Referred: Resources

A RESOLUTION

Relating to proposed regulations of the North Pacific Fishery Management Council creating a new discriminatory halibut fishery in Alaska.

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

WHEREAS the North Pacific Fishery Management Council (NPFMC) has recently been urged to initiate a regulatory amendment outlining options for addressing certain unlawful practices in the conduct of personal consumption halibut fisheries in Alaska; and

WHEREAS the NPFMC Halibut Subsistence Committee has developed proposed regulatory options that include the creation of discriminatory qualifications based on race and residency; and

WHEREAS there is questionable legal authority for the NPFMC to adopt discriminatory regulations, especially those that are racially constructed; and

WHEREAS the proposed regulatory options provide the potential for an expanding new fishery on a resource that is currently fully allocated; and

WHEREAS the proposed regulatory options include possible commercial sale of subsistence caught halibut in violation of existing state law; and

WHEREAS the passage of the proposed special interest regulations will create major

enforcement problems for federal and state enforcement officials throughout the coastal areas of Alaska; and

WHEREAS the Twentieth Alaska State Legislature is supportive of providing adequate legal means for Alaska residents to harvest fish and wildlife to meet their personal consumption needs; and

WHEREAS the Twentieth Alaska State Legislature is equally concerned about its constitutional responsibilities to provide for the "sustained yield" of Alaska's renewable resources by assuring that the first basic concern is the protection of the resource base; and

WHEREAS the proposed regulations discriminate against many major coastal communities and will create serious racial, social, and economic conflicts within the coastal communities of Alaska; and

WHEREAS all Alaskans have a personal use catch limit of two halibut a day, and the creation of this type of new fishery is not needed to meet the personal consumption needs of Alaskans; and

WHEREAS alternative regulatory options for personal consumption should be considered, such as special seasons, special methods and means, and special areas for harvesting halibut for personal consumption; and

WHEREAS the Alaska delegation in Congress, the Governor's office, and the Alaska State Legislature are already working hard to find common ground and permanent solutions to the already serious conflicts existing between state and federal laws over fish and wildlife management in Alaska; and

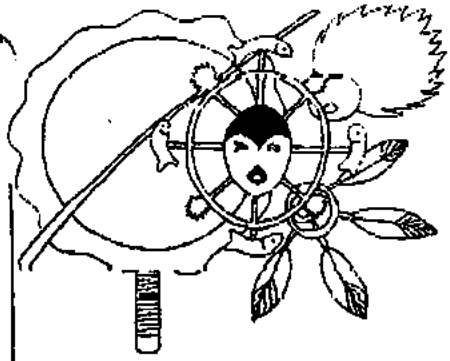
WHEREAS the passage of this type of new fishery as proposed under all identified options will result in the further polarization of positions regarding state and federal jurisdictional conflicts;

BE IT RESOLVED that the Alaska State Legislature respectfully requests the North Pacific Fishery Management Council and the Secretary, United States Department of Commerce, to provide for personal use fisheries for halibut by all Alaskans through modification of existing regulations, such as special seasons and special methods and means, to provide a reasonable opportunity to meet personal consumption needs; and be it

FURTHER RESOLVED that the Alaska State Legislature respectfully requests that the North Pacific Fishery Management Council reject regulations designed to divide Alaskans

along ethnic or other discriminatory lines.

COPIES of this resolution shall be sent to the Honorable William M. Daley, Secretary, United States Department of Commerce; Rick Lauber, Chair, 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.



Toksook Bay Traditional Council

RESOLUTION NO. 97-04-011

TITLE: A resolution opposing the Alaska State House Joint Resolution No. 34 relating to proposed regulations of the North Pacific Fishery Management Council creating a new discriminatory halibut fishery in Alaska.

WHEREAS, The Toksook Bay Traditional Council is a Tribal governing body for the federally recognized Native Community of Toksook Bay; and

WHEREAS, The proposed halibut subsistence regulations originated from this Tribe was not meant to be discriminatory but a request for harvest fish and wildlife to meet traditional consumption needs of the residents of Chefornak, Mekoryuk, Newtok, Nightmute, Toksook Bay and Tununak respectively so that other areas can recommend their special needs according to their own customary use; and

WHEREAS, This Tribal Council cannot fully agree with State's involvement to the needs of Native people because of its unbalanced status with ANILCA and with subsistence related issues affecting the Alaska Native People in particular; and

WHEREAS, The halibut subsistence regulations currently do not exist other than the halibut sportsfishing regulations which are the federal marine fisheries enforcement official are currently using against the Native people in our particular area; and

WHEREAS, In the absence of halibut subsistence regulations, any enforcement officials, whether it be state or federal, cannot enforce any subsistence activities using sportfishing regulations; and

WHEREAS, The federal marine fisheries enforcement official, in an angry mood, have said that he will use maximum extend of the law to enforce regulations against the Native people in our area; and

WHEREAS, The Governor and the State Legislatures, including Alaska Delegations in Congress, are using any means to avert the authority of the tribes in Alaska as a result of the 9th Circuit Court of Appeals decision in favor of the Native Village of Venetie; and

SO, THEREFORE, BE IT RESOLVED that the Toksook Bay Traditional Council is still holding on to its proposed halibut subsistence regulations not to regulate number of hooks, daily catch and not to count halibuts caught under minimum 32 inches commercial halibut regulations as part of the quota allocations but save them for subsistence use and consumption; and

PAGE TWO: Resolution No. 97-04-011

BE IT FURTHERLY RESOLVED that Toksook Bay Tradiitonal Council, on behalf of the local subsistence and commercial halibut fishermen, requests that the North Pacific Fishery Management Council rejects the Alaska State House Joint Resolution No 34 and settle subsistence halibut regulations according to each particular areas traditional and ouctomary uses/needs.

BE IT FURTHERLY RESOLVED that the copies of this resolution shall be sent to Honorable William M. Daley, Secretary, Department of Commerce; Mr. Rick Lauber, Chairman, North Pacific Fishery Management Council; and to Senators Ted Steven and Frank Murkowski; Congressman Don Young; and Governor Tony Knowles, Senator Drue Pearce, State Senate President and Representative Gail Phillips, House Speaker; and to Native Villages in Nelson/Nunivak Island area.

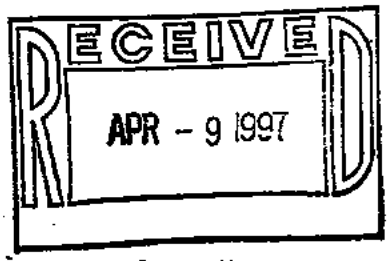
ADOPTED AND EXECUTED this 9 th day of April, 1997 at the duly called meeting of the Tribal Council where quorum was present with 5 voting in favor and 0 voting against the measure.

Joseph Asuluk, Sr.
Chairman

ATTESTED BY:

James R. Charlie, Sr.
Executive Director & CEO

•Ken B. Eichner•5166 Shoreline Drive•Ketchikan•Alaska•99901•



North Pacific Management Council
Written Comments - April 15 - 19 Meetings

Comments on **C-2 (c) Halibut Issues Subsistence**: Initial Review

As an IFQ fisherman in the Gulf of Alaska, I am very concerned that a new user group that will share the halibut quota share pool is being conceived. You may be thinking, "subsistence - this wouldn't increase the take of halibut by much." If you are thinking this, you are wrong. If subsistence is allowed under many of the options being proposed it would greatly increase the take.

If you choose to use ANILCA definitions, every person in a town with less than 7,000 people (including a person that moved from California yesterday) would have full subsistence rights. The person could sell possibly $15,000 worth of halibut (as a herring court case has ruled against the State of Alaska). This may seem far-fetched, but could really happen.

I am also concerned that a problem in 4E with undersize halibut has seemed to grow into an issue for all halibut areas. It should be fixed if needed in 4E. Other areas don't need regulations just to address a concern in 4E.

*I earned some halibut IFQ from the initial IFQ allotment. I was told at that time that I had to share some IFQ with the CDQ system. I never wrote comments about CDQs, but commented negatively on the phone to staff of the North Pacific Management Council. The general attitude of the person I talked with was, "don't be so greedy; it is just a little." My attitude was not a greedy one, it simply was if the Federal government wants CDQs, why doesn't it **buy** just a little! I've now purchased more IFQs to get back to a level of what I was catching just before IFQs came into effect. There presently exists an industry that is commercial and profits from halibut and is eating up the halibut quota: the charter industry. The charter industry has no quota, no cap, therefore they eat up quota with no restrictions for free. I hope this will be resolved in other portions of this meeting. They need to ante up and buy some quota like everyone else. I could say, "Okay, just a little to the CDQs, just a little to charter boats, and just a little to subsistence." NO WAY! There exists systems that can take care of subsistence without diluting the quota share pool without new regulations and without spending more on management. Theses systems are:*

1. CDQs. Some poundage can be saved and used by the communities for personal consumption and sales. Very simple!

2. IFQs. a) As for Native corporations, the members of the corporations could loan money to other members to buy IFQs. The members could use dividends to buy IFQs.
b) Non-corporations members can purchase IFQs. CFAB, State of Alaska and other loans are available.

3. ADFG. Sport and personal use fisheries exist for every resident of Alaska. If more than is allowed under personal use is needed we have a Board of fisheries in the State of Alaska that a proposal can be sent asking for such.

*Rules and regulations enforcement exists for all these systems - why not use them? I've offered solutions (not just gripes) above and in my following comments. Please read them and take them seriously. Please don't allow more halibut to be caught out of the existing IFQ, CDQ fisheries. People have made considerable investments and sacrifices under a system that you invented. Right or wrong, the system is there...**PLEASE WORK WITHIN IT.***

OPTION 1. Define subsistence.
Halibut subsistence regulations are needed to allow the continued practice of long-term customary and traditional practices of fishing halibut for food for families in a non-commercial manner for non-economic consumption. Subsistence is defined as 'non-commercial fishing for food.'

COMMENTS: CDQs already in place above the Aleutian chain are for the communities. If these communities want halibut in their freezers, they should save some of their CDQ pounds for their consumption. Communities below the Aleutian chain at the conception of the IFQ system were not awarded CDQs. It was clear they were developed and had no need for CDQs. The State of Alaska sport and personal use regulations allow a person two fish per day. A three member family could catch six fish per day - plenty for consumption.

OPTION 2. Define eligibility for halibut subsistence:

Suboption A. Members of Alaska Native Federally-recognized Tribes with customary and traditional use of halibut. (Subsistence Committee definition)

COMMENTS: As stated in comments for Option 1, CDQs could be saved and passed out to persons of the communities. Furthermore, there are loans available through State of Alaska Native Corporations that could be used to purchase IFQs for personal consumption.

Suboption B. Alaska rural residents as defined in ANILCA and identified in the table entitled 'Alaska Rural Places and Native Groups with Subsistence Halibut Uses,' and will also include other communities for which customary and traditional findings are developed in the future. (ANILCA definition)

COMMENTS: Awarding halibut subsistence on ANILCA definitions would be ludicrous. The interpretations of ANILCA at this time are ridiculous. There is no way that everyone in Petersburg needs subsistence. A town reported with the most millionaires per capita than any town in the United States. I am not picking on Petersburg, but in all towns with the rural designation a vast majority of the people in no way, shape or form need subsistence! ANILCA's definition of rural resident has no waiting period. A person can move from the lower 48 to Craig and have full subsistence privileges the day he moves there.

Suboption C. Tribal members and non-Native permanent residents of Native villages who have legitimate subsistence needs. (Migratory Bird Treaty Act definition)

COMMENTS: This suboption has a reasonable theme - if a person really needs subsistence use of halibut to survive, then let them have it. (They should be required to give lengthy explanations on their need of halibut to survive, however.)

OPTION 3. Define legal gear.

Legal halibut subsistence gear is defined as (1) hook-and-line gear (including set and hand-held gear) with a range of 10 hooks, 30 hooks, and 60 hooks and (2) rod-and-reel gear. An individual would be limited to one skate of gear up to 1,800 ft long (not including the buoy line), with hooks set 18-20 ft apart, with a legibly marked buoy.

COMMENTS: As stated before, CDQs and IFQs exists with gear restrictions. Alaska personal use sport gear restrictions already exist.

Suboption. Allow Tribal governments to contract with NMFS to register designated fishermen to fish for the community using:
A. 1 -3 skates of gear, up to 60 hooks each
B. any gear type

COMMENTS: Use CDQs for community with as many skates and hooks as necessary. Have tribal corporations loan money to acquire IFQs for communities or persons in need. Use any gear legal for IFQ fishing.

OPTION 4. Define minimum size.

Suboption A. No minimum size be imposed for subsistence harvests of halibut.

COMMENTS: **NO minimum size!?** *This options would be counter-productive to stock health! I've heard that this may be the cause of the halibut subsistence issue being brought up by the North Pacific Management Council and that the problem exists in 4E. If deemed necessary for religious reasons to take undersize fish, take them from CDQ poundage and not allow sale. I sincerely hope that this undersize issue is not being put on us due to a person being cited for undersize fish trying to get out of a fine!*

Suboption B. Revise the commercial halibut minimum size regulations to allow the retention of halibut under 32 inches caught with authorized commercial halibut gear in Area 4E for subsistence use.

COMMENTS: This is very reasonable as long as it is needed. This is how things of this nature should be handled. If 4E has a problem, why fix it by changing regulations, inventing subsistence needs that don't exist, etc.? Solve the problem in 4E - don't drag the whole Gulf and the rest of the Bering Sea into a localized problem.

OPTION 5. Allow the customary and traditional trade of subsistence halibut.

Suboption A. Allow the customary and traditional trade of subsistence caught halibut.

COMMENTS: CDQ sales take care of monetary needs. If a person was subsisting on money from halibut sales and filling out fish tickets he would have received IFQs.

Suboption B. Allow the barter of subsistence caught halibut, limited to an annual amount: (1) $200 (2) $400; or (3) $600

COMMENTS: If money is desired, use CDQ or IFQ system that already exists for that reason.

Allow low monetary, non-commercial sale of halibut to legalize current practice of compensating subsistence fishermen for fuel or other fishing expenses in exchange for fish. The analysis would define 'barter', 'non-commercial,' 'low monetary value,' and 'customary trade' and analyze the enforcement and monitoring costs of allowing barter.

COMMENTS: Use CDQ, IFQ poundage. Report poundage, get necessary permits and sell, barter or trade.

OPTION 6. Sale of subsistence halibut.

Suboption A. Allow the commercial sale of subsistence-caught halibut.

COMMENTS: "NO" unless it is CDQ or IFQ poundage.

Suboption B. Prohibit the commercial sale of subsistence-caught halibut.

COMMENTS: "YES"

OPTION 7. Collect subsistence harvest estimates through cooperative agreements with Tribal, State, and Federal governments.

COMMENTS: Harvest recording systems already exist for the IFQ and CDQ systems. The sport and charter industry harvests are very hard to account for; subsistence outside of CDQ and IFQ would aggravate this problem.

AGENDA C-2
APRIL 1997
SUPPLEMENTAL

NIGHTMUTE TRADITIONAL COUNCIL
P.O. BOX 90021 NIGHTMUTE, AK 99690
(907) 647-6216 FAX (907) 647-6217

RESOLUTION NO. 97-14

TITLE: A resolution opposing the Alaska State House Joint Resolution No. 34 relating to proposed regulations of the North Pacific Fishery Management Council creating a new discriminatory halibut fishery in Alaska.

WHEREAS, The Nightmute Traditional Council is a Tribal governing body for the federally recognized Native Community of Nightmute Traditional; and

WHEREAS, The proposed halibut subsistence regulations originated from this Tribe was not meant to be discriminatory but a request for harvest fish and wildlife to meet traditional consumption needs of the residents of Chefornak, Mekoryuk, Newtok, Nightmute, Toksook Bay, and Tununak, respectively so that other areas can recommend their special needs according to their own customary use; and

WHEREAS, This Tribal Council cannot fully agrees with State's involvement to the needs of Native people because of its unbalanced status with ANILCA and with subsistence related issues affecting the Alaska Native People in particular; and

WHEREAS, The halibut subsistence regulations currently do not excist other than the halibut sportsfishing regulations which are the federal marine fisheries enforcement official are currently using against the Native people in our particular area; and

WHEREAS, In the absence of halibut subsistence regulations, any enforcement officials, whether it be state or federal, cannot enforce any subsitence activities using sportfishing regulations; and

WHEREAS, The federal marine fisheries enforcement official, in an angry mood, have said that he will use maximum extend o f the law to enfore regulations against the Native people in our area; and

WHEREAS, The Governor and the State Legislatures, including Alaska Delegations in Congress, are using any means to over the authority of the tribes in Alaska as a result of the 9th Circuit Court of Appeals decision in favor of the Native Village of Venetie; and

SO, THEREFORE, BE IT RESOLVED; that the Nightmute Traditional Council is still holding on to its proposed halibut subsistence regulations not to regulate number of hooks, daily catch and not to count halibuts caught under minimum 32 inches commercial halibut regulations as part of the quota allocations but save them for subsistence use and consumption; and

BE IT FURTHERLY RESOLVED that Nightmute Traditional Council, on behalf of the local subsistence and commercial halibut fishermen, requests that the North Pacific Fishery Management Council rejects the Alaska State House Joint Resolution No. 34 and settle subsistence halibut regulations according to each particular areas traditional and customary uses/needs.

BE IT FURTHERLY RESOLVED that the copies of this resolution shall be sent to Honorable William M. Daley, Secretary, Department of Commerce; Mr. Rick Lauber, Chairman, North Pacific Fishery Management Council; and to Senators Ted Steven and Frank Murkowski; Congressman Don Young; and Governor Tony Knowles, Senator Drue Pearce, State Senate President and Representative Gail Phillips, House Speaker; and to Native Villages in Nelson/Nunivak Island Island area.

ADOPTED AND EXECUTED this 10 th day of April, 1997 at the duly called meeting of the Tribal Council where quorum was present with 5 voting in favor and 0 voting against the measure.

Camillus Tulik
Camillus Tulik
Chairman

ATTESTED BY:

Lucy M. George
Lucy George
Nightmute Traditional Clerk

Approved + preamble in FR.

Agenda Item C-2(a)

PROPOSED SEABIRD AVOIDANCE MEASURES FOR THE PACIFIC HALIBUT FISHERY IN U.S. CONVENTION WATERS OFF ALASKA ADDENDUM

(minor revision to Alternative 2, 1.b. from what is in Council notebook)

Alternative 1: Status quo, no action. Any gear modifications, seabird avoidance devices, or changes in fishing methods intended to reduce the incidental mortality of seabirds would continue to be voluntary.

Alternative 2: Gear modifications, seabird avoidance devices, or changes in fishing methods designed to reduce the incidental mortality of seabirds would be required in regulation. The measures would apply to vessels fishing for Pacific halibut with hook-and-line gear in U.S. Convention waters off Alaska.

1. All applicable hook-and-line fishing operations would be conducted in the following manner:

   a. Use hooks that when baited, sink as soon as they are put in the water. This could be accomplished by the use of weighted groundlines and/or thawed bait.

   b. Any discharge of offal from a vessel must occur in a manner that distracts seabirds, to the extent practicable, from baited hooks while gear is being set or hauled. The discharge site onboard a vessel must either be aft of the hauling station or on the opposite side of the vessel from the hauling station.

   c. Make every reasonable effort to ensure that birds brought aboard alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

2. All applicable hook-and-line fishing operations would be required to employ one or more of the following seabird avoidance measures:

   a. Set gear between hours of nautical twilight (as specified in regulation) using only the minimum vessel's lights necessary for safety;

   b. Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;

   c. Tow a buoy, board, stick or other device during deployment of gear at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed; or

   d. Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear.

The required measures to reduce the incidental mortality of seabirds would not be applicable to vessels using hook-and-line gear on:

Option 1: vessels less than 26 ft length overall (LOA) in the Pacific halibut fishery.

Option 2: vessels less than 26 ft LOA in the Pacific halibut fishery and the GOA and BSAI groundfish fisheries. Rulemaking to allow for a small vessel exemption in the groundfish fisheries would be initiated separately.

Option 3: No exemption for small vessels.

Alaska State Legislature

Senator Mike Miller
President of the Senate

during interim
PO Box 55004
North Pole, AK 99705
voice: (907) 488-0862
fax: (907) 488-4271

during session
State Capitol
Juneau, AK 99801-1182
voice: (907) 465-4976
fax: (907) 465-3883

Representative Gail Phillips
Speaker of the House

during session
State Capitol
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during interim
PO Box 1364
Homer, AK 99603
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fax: (907) 235-4008

TESTIMONY

ALASKA STATE SENATE PRESIDENT MIKE MILLER

AND

ALASKA STATE HOUSE SPEAKER GAIL PHILLIPS

BEFORE THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

REGARDING

PROPOSED REGULATIONS CREATING A NEW SUBSISTENCE FISHERY

APRIL 16, 1997

Mr. Chairman and members of the North Pacific Fishery Management Council, I want to thank you for the opportunity to testify today on proposed halibut regulations -- particularly those directed at creating a new subsistence fishery. For the record, my name is Gail Phillips, Speaker of the Alaska State House. I am presenting joint testimony on behalf of the Alaska State House and for Senate President Mike Miller and the Alaska State Senate.

We fully understand that it is somewhat unusual for the leadership of the Legislature to appear before the Council to present joint testimony on proposed regulations. The importance of the issue, however, and the interrelationships with other state jurisdictional issues requires that the Council, the state Administration and the Legislature assign the highest priority to these proposed actions. We are convinced that the adoption of these proposed regulations are going to further complicate the present jurisdictional crisis brewing between the federal and state governments and establish a mechanism which will eventually disrupt our well established halibut fisheries.

The purpose of our testimony is to stress the importance of the Council's proposed actions, provide some insights into the peripheral and long range impacts of these proposals and to offer some alternatives which would provide for improved

conservation practices and better serve the users of this resource and Alaskans as a whole.

SUPPORT FOR PERSONAL CONSUMPTIVE USES

We want to make it clear that the legislative leadership is fully cognizant and supportive of the needs of Alaskan residents to harvest halibut for personal consumption. We are all equally aware of the fact that Alaska's marine resources, including halibut, are major contributors to the varied economies of our state. Our major concerns are how to: (1) provide for adequate personal consumptive use opportunities in line with the equal protection, common use and sustained yield provisions of our Constitution; (2) apply effective management strategies consistent with sound conservation principles; and (3) maximize the benefits to all the users of these marine resources.

RECOGNITION OF COOPERATIVE EFFORTS

We fully recognize that the halibut resources in the North Pacific are managed under the provisions of an international treaty and subsequent organic legislation passed and amended by Congress. Alaska has no direct authority over the management of these resources. Certainly, we would all agree, however, that the management and conservation of halibut and all of the other resources within the Exclusive Economic Zone (EEZ) under the supervision and jurisdiction of the North Pacific Fishery Council and the Department of Commerce are almost totally interdependent on effective partnerships with the northwestern states and particularly the State of Alaska.

The Council has adopted management plans delegating management authority to the State of Alaska which effectively establishes cooperative management agreements for many of the fishery resources occupying both the state's territorial waters and the EEZ. The State of Alaska also participates as a partner in the adoption and enforcement of regulations specifically developed by the North Pacific Fishery Council. I would venture to say that without support by the State of Alaska, fishery enforcement in the EEZ of the North Pacific would be significantly reduced.

Specifically related to the proposed halibut regulations, we are concerned that the adoption of regulations inconsistent with the state's Constitution will preclude any state enforcement of those regulations. Alaska's Supreme Court has made it clear that our Constitution precludes the allocation of resources based on race or residency. Unless there are other motivating factors, it seems highly illogical to adopt regulations in direct conflict with the Constitution of the state assisting in the administration of most of the fishery management programs.

QUESTIONABLE COUNCIL AUTHORITY

As we stated in our letter to Chairman, Mr. Rick Lauber, the Alaska State Legislature has concerns about the legality and feasibility of some of the proposed halibut regulations. Specifically, we question the authority of the Council to adopt racially defined regulations or regulations that are exclusively based on residency. Our review of the Halibut Treaty, the North Pacific Halibut Act, as amended, and the Magnuson-Stevens Fishery Conservation and Management Act, has failed to provide us with the legal authority for discriminatory regulations. The subsistence committee report seemed to recognize this legal barrier as their report recommended that the Halibut Treaty be amended to provide a specific subsistence fishery. We would propose that these questions are adequately researched before any proposed regulations are adopted.

POTENTIAL IMPACTS OF PROPOSED REGULATIONS

We are advised that some arguments have been made that the adoption of these types of regulations will serve to restrict the size of the proposed fishery and minimize the impacts on the established fisheries of the North Pacific.

Although that may well be the intent of some members of the Council and those advocating this fishery, we submit to you that the exact opposite is true. The establishment of a new subsistence fishery patterned after or similar to the program institutionalized in Title VIII of ANILCA will only lead to increasing conflicts with established fisheries as the advocates and the federal courts have so apply accomplished elsewhere in Alaska.

Without revisiting the entire subsistence debate, it is important to put this issue in perspective. In 1978, Representative Nels Anderson assured Representative Parr from Fairbanks that he need not worry about the state's new subsistence law because none of his constituents would be disenfranchised. Alaska was assured when ANILCA passed that there would be no threat to the state's sovereignty, as the federal law only applied to federal public lands. It was also claimed that the new law was not onerous as it only applied in times of shortage and a priority was needed to supply food for the table.

Here in 1997, Alaska faces the possibility of total preemption of its fish and wildlife management authorities – especially for those areas and uses that in any way conflict with subsistence taking. Most of us know that despite the fact that federally defined subsistence may only comprise a reasonably small percentage of the total annual harvest, the potential impacts are significant if all competing uses have to eliminated. The federal subsistence law has been interpreted by the federal courts to apply at all times and not just at times of shortages, to mean that all competing uses must be

eliminated before subsistence uses are restricted, to mean that the customary trade provision allows $15,000 of commercial sale of subsistence harvested resources and the federal agencies can extend their jurisdiction to state navigable waters to satisfy the federal subsistence priority.

Our point is that the progressive and incremental implementation of the federal subsistence law has created grave concerns by all Alaskans and should cause equally grave concerns in the minds of all Council members. This law has rapidly progressed from one that was perceived as necessary to protect the ability of rural Alaskans to harvest resources for food to one that includes commercialization and major attacks on Alaska's natural resource equal protection provisions of its Constitution.

If the North Pacific Fishery Council chooses to implement this new type of new fishery patterned after the basic principles in Title VIII of ANILCA, we are confident that despite your best efforts and intentions, it will eventually expand to compete with already existing fisheries, especially when stocks experience inevitable downturns. It will also eventually include all of the provisions, including the sale of subsistence harvested halibut, which are embodied in the Alaska National Interest Lands Conservation Act. We are also confident that it will expand to include all of the fisheries beyond the territorial sea that those who crafted ANILCA so carefully excluded.

SUBSISTENCE CONFLICTS ARE PRESENTLY TOO VOLATILE

There are major political and social conflicts developing over the eventual resolution of the subsistence issue. While every member of the legislature wants to assure that consumptive use opportunities are always available to rural Alaskans as well as urban Alaskans, the legislature is not willing to simply extend the existing federal law with all its demonstrated problems to state and private lands and waters. We would encourage the Council to weigh the extension of the basic principles to the EEZ with the same amount of apprehension and scrutiny.

We are confident that eventually some resolution of this issue will be attained but we are also confident that significant changes to the federal law will have to be constructed in order to rectify major problems with the law and accommodate the needs of all Alaskans. As this debate escalates it seems prudent for the Council to wait before it takes that giant leap into the fire.

If we were convinced that personal consumptive uses could not be accommodated by other means, we would not recommend the Council take this more conservative course of action.

We can only assure you that the adoption of these proposed regulations will not help produce a more rapid solution to this growing economic and social crisis in our state. The adoption of these regulations will definitely not aid in the development of any long

term solution and may well, in fact, contribute to even greater polarization. Certainly, if these regulations go into effect, there is virtually no incentive for the advocates of these types of discriminatory regulations to ever negotiate in good faith.

To illustrate the polarization on this issue, we have attached three papers which illustrate the inflexible position taken by AFN and Rural Cap toward resolving this issue and to illustrate precisely what direction you can expect this program to go in the future if it is even vaguely related to Title VIII of ANILCA.

ALTERNATIVES

Does that mean that the taking of limited amounts of halibut for personal consumption cannot be accommodated without creating a new legal nightmare. Certainly not. The taking of halibut for personal consumption has been satisfactorily accomplished through the existing recreational fishery regulations and the retention of halibut taken during commercial fishing. There have been a few, and we stress few, instances where problems have occurred due to the retention of undersized halibut and use of illegal gear. None of these problems warrant the dismantling of the existing halibut allocation and management regime, however. Exceptions can be made to methods and means (e.g. additional hooks per line), open seasons and bag limits (e.g. retention of some undersized halibut) for specific areas to allow for expanded personal consumption harvest opportunities.

We have to ask why hasn't the Council listed some of these regulatory opportunities as options? Why has the Council considered extending many of the provisions of Title VIII of ANILCA beyond the territorial sea when it was clearly the intent of Congress that it not extend to the Exclusive Economic Zone?

RECOMMENDATIONS

The leadership of the Alaska State Senate and House strongly urge the Council to delay the adoption of any of the proposed options now being considered for creating a new subsistence fishery. We urge you to examine other options such as bag limits, methods and means, seasons and specific area adjustments to accommodate specific problem areas where demonstrated difficulties have been documented in acquiring adequate halibut for personal consumptive needs.

Alaska's present subsistence law prohibits any commercial sale of subsistence caught resources. We encourage the Council to adopt the same approach.

The Senate and House leadership encourages the North Pacific Fishery Council to avoid the resource use and management conflicts presently resulting from the subsistence provisions in ANILCA.

Most importantly, we respectfully request your cooperation in establishing management regimes that do not conflict with Alaska's Constitution. Whatever options are eventually adopted should not pit one Alaskan against another or one village or community against another.

Our last recommendation is to avoid the creation of resource use conflicts which rely on the federal court system to fill in the blanks. For those of us who have and are struggling with the federal court system over resource allocation and management problems associated with Columbia and Snake River fish stocks, we are all fully aware of the whimsical and unpredictable nature of the courts. We have watched the federal courts dismantle our fish and wildlife management programs and recently declare the possible existence of 226 separate tribal governments with unpredictable fish and wildlife management authorities. Needless to say, we are deeply concerned about the creation of a new potential litigation pit.

CONCLUSION

Mr. Chairman and members of the Council, on behalf of the leadership of the Alaska State Senate and Alaska State House, I thank you for the opportunity to testify before you today. We are obviously concerned about this issue and we have included a copy of a Joint Resolution which is working its way through the legislative process. We are confident it will pass and we will provide the Council with a copy of the Final Joint Resolution immediately after its passage.

We have offered strong support for regulatory reforms within the framework of the existing halibut regulations which provide ample opportunities for residents to harvest halibut for personal consumption.

We sincerely hope you understand how serious this issue is and the need for us all to work together toward a permanent solution to the growing conflicts between the federal government and the state and amongst the various user groups. We obviously feel that now is not the time for the North Pacific Fishery Council to inject a new ingredient into the boiling pot.

AFN/ RURAL CAP SUBSISTENCE SUMMIT
GUIDING PRINCIPLES
March 23 & 24, 1992

Principle 1:

The statewide Native community desires a permanent solution to the subsistence conflict as soon as possible. The continuing conflict and polarization of Alaskans must stop.

Principle 2:

The statewide Native community would accept state re-assumption of fish and game management if and only if Native subsistence interests are made a priority and protected. As long as the State refuses to comply with ANILCA, Natives support full Federal implementation, which includes traditional and cultural uses on all federal lands and co-management.

Principle 3:

The statewide Native community recognizes that any settlement of the current subsistence impasse must include a state constitutional amendment that contains:

a) a substantive provision designating subsistence as the priority use of fish and game over other consumptive uses and

b) legislative authority to enact a preference for subsistence users that allows for at least a "rural plus" priority similar to the Hoffman/Lincoln proposed amendment.

Principle 4:

The statewide Native community does not support the Governor's bill now before the Legislature. AFN is directed to make every effort to amend the Governor's bill in order to obtain the best legislation possible in keeping with AFN's "no net loss" position.

Principle 5:

The statewide Native community opposes any amendments to ANILCA which weaken or diminish its protections for customary and traditional subsistence uses ("no net loss," as outlined on the attached list of existing federal protections.) The statewide Native community will continue to pursue all judicial and legislative remedies in order to maintain and enhance Native subsistence rights.

Principle 6:

The statewide Native community will, with all available resources, defend the constitutionality of Title VIII of ANILCA in the courts, advocate the proper implementation of the federal law in the courts and before the Federal Subsistence Board, and request the federal government to assume fisheries management in navigable waters.

COPY FOR YOUR INFORMATION

AFN Policy On Resolving the Subsistence Issues

As of its March 4, 1996 meeting, the AFN Board of Directors adopted the following **Policy Principles** according to which the Native community will conduct any discussions with the State of Alaska on resolving the subsistence impasse:

1. The overall management principle contemplated by ANILCA is that regulation of subsistence uses by state or federal authorities must be carried out in a manner that causes the "least adverse impact" on customary and traditional taking and use patterns of Alaskan communities. Restrictions, such as individual bag limits and seasons, may not be imposed if they are inconsistent with customary and traditional use patterns. This includes both the quantity of game, the traditional seasons and places for hunting or fishing, and restrictions on methods and means of harvest. It is a significantly higher standard than the "reasonable opportunity" language in existing state law.

2. The Native community will insist that the following conditions be part of any resolution of the current federal-state impasse:

   a) There must be no net loss from the current level of federal subsistence protections, including, but not limited to, the following points:

      1) The availability of one species of fish or game cannot be used as a basis for restricting opportunities to take another species in a customary and traditional manner;

      2) Regulations must provide opportunities to harvest each particular "stock" of fish and "population" of game that has been customarily and traditionally used;

      3) The Boards of Fish and Game cannot have unfettered discretion to place restrictions on harvests without a reasoned explanation of what "sustained yield" means and a reasoned determination of the number of fish or animals necessary to produce sustained yield;

      4) ANILCA's definition of "customary trade" includes sales for cash and does not require that fish or game used for customary trade be harvested only for personal or family consumption;

5) The word "rural" has a plain meaning, which includes at least part of the Kenai Peninsula and any attempt to limit the subsistence law's application through the use of a restrictive definition of "rural" is inconsistent with the plain meaning of the Act;

6) ANILCA recognizes that subsistence is a group activity and a group way of life, as opposed to being an individual lifestyle; and

7) The subsistence priority applies to all times, not just when there is a resource shortage. The Boards are required to provide fully for customary and traditional uses before any non-subsistence uses may be allowed.

b) There must be basic reforms of state regulatory and management systems:

1) Changes in board structure and processes to ensure fair treatment of subsistence uses;

2) Use of regional advisory councils, composed of subsistence users, whose proposals generate subsistence regulations; as in Federal Subsistence Board deliberations; and

3) Use of co-management contracting to delegate functions and powers to Native communities and organizations;

c) There must be no non-subsistence use areas in state law.

3. Resolution of the impasse should also include a strengthening of the federal preference (e.g. by changing to a Native or "Native-Plus" preference, or by defining "rural" so as to guarantee that Native communities that are historically surrounded by non-Native majorities will not be dropped from the preference).

4. A subsistence amendment to the Alaska Constitution must be worded and placed so as to ensure that a state statute that complies with Title VIII cannot, on any grounds, be struck down by the Alaska Supreme Court. In addition, such an amendment should:

a) State that the subsistence preference may not violate the constitutional mandate for sustained yield;

b) Require, rather than permit, the Legislature to enact a statute complying with federal law (e.g., "...the Legislature shall..." rather than "...the Legislature may...");

c) State that subsistence is the priority use of fish and game in Alaska;

d) Include "culture" as a basis for differentiating among residents for application of the subsistence preference;

e) Be worded broadly enough to permit state law to comply with an improved federal preference in the future.

"NO NET LOSS": DEFINING THE EXISTING PROTECTIONS OF SUBSISTENCE

Since ANILCA was passed in 1980, several court decisions interpreting federal and state subsistence laws have fleshed out the meaning of the subsistence priority in ways that are favorable to the customs and traditions of Alaska Natives. There is agreement in the Native community that any changes in federal or state subsistence laws should result in no "net loss" of these protections in ANILCA, as interpreted by the courts. In order to guide our deliberations, what are these protections we now have?

1. The overall management principle is that regulation of subsistence uses by state or federal authorities must be carried out in a manner which has the "least adverse impact" on customary and traditional use patterns of Alaskan communities. Restrictions, such as individual bag limits and seasons, may not be imposed if they are inconsistent with customary and traditional use patterns. This includes both the quantity of game and the traditional seasons and places for hunting or fishing. It is a significantly higher standard than the "reasonable opportunity" language in existing state law and in the Governor's bill.

2. The availability of one species of fish or game can not be used as justification for restriction of opportunities to take another species in a customary and traditional manner.

3. State regulations must provide opportunities to harvest each particular "stock" of fish and "population" of game that has been customarily and traditionally used.

4. The Board of Game does not have unfettered discretion to place restrictions on game harvests without a reasoned explanation of what "sustained yield" means and a reasoned determination of the number of animals necessary to produce sustained yield.

5. ANILCA's definition of "customary trade" includes sales for cash and does not require that fish or game used for customary trade be harvested for personal or family consumption.

6. The word "rural" has a plain meaning, which includes at least part of the Kenai Peninsula, and is significantly broader than the definition in the Governor's bill, which would eliminate the entire Kenai Peninsula, Sitka, Kodiak and other places in the future.

7. ANILCA recognizes that subsistence is group activity and a group way of life, as opposed to being just an individual's lifestyle.

8. The subsistence priority applies at *all* times, not just when there is a resource shortage. The Boards are required to provide fully for customary and traditional uses before any non-subsistence uses may be allowed.

HOUSE JOINT RESOLUTION NO. 34

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTIETH LEGISLATURE - FIRST SESSION

BY THE HOUSE SPECIAL COMMITTEE ON FISHERIES

Introduced: 3/27/97
Referred: Resources

A RESOLUTION

Relating to proposed regulations of the North Pacific Fishery Management Council creating a new discriminatory halibut fishery in Alaska.

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

WHEREAS the North Pacific Fishery Management Council (NPFMC) has recently been urged to initiate a regulatory amendment outlining options for addressing certain unlawful practices in the conduct of personal consumption halibut fisheries in Alaska; and

WHEREAS the NPFMC Halibut Subsistence Committee has developed proposed regulatory options that include the creation of discriminatory qualifications based on race and residency; and

WHEREAS there is questionable legal authority for the NPFMC to adopt discriminatory regulations, especially those that are racially constructed; and

WHEREAS the proposed regulatory options provide the potential for an expanding new fishery on a resource that is currently fully allocated; and

WHEREAS the proposed regulatory options include possible commercial sale of subsistence caught halibut in violation of existing state law; and

WHEREAS the passage of the proposed special interest regulations will create major

enforcement problems for federal and state enforcement officials throughout the coastal areas of Alaska; and

WHEREAS the Twentieth Alaska State Legislature is supportive of providing adequate legal means for Alaska residents to harvest fish and wildlife to meet their personal consumption needs; and

WHEREAS the Twentieth Alaska State Legislature is equally concerned about its constitutional responsibilities to provide for the "sustained yield" of Alaska's renewable resources by assuring that the first basic concern is the protection of the resource base; and

WHEREAS the proposed regulations discriminate against many major coastal communities and will create serious racial, social, and economic conflicts within the coastal communities of Alaska; and

WHEREAS all Alaskans have a personal use catch limit of two halibut a day, and the creation of this type of new fishery is not needed to meet the personal consumption needs of Alaskans; and

WHEREAS alternative regulatory options for personal consumption should be considered, such as special seasons, special methods and means, and special areas for harvesting halibut for personal consumption; and

WHEREAS the Alaska delegation in Congress, the Governor's office, and the Alaska State Legislature are already working hard to find common ground and permanent solutions to the already serious conflicts existing between state and federal laws over fish and wildlife management in Alaska; and

WHEREAS the passage of this type of new fishery as proposed under all identified options will result in the further polarization of positions regarding state and federal jurisdictional conflicts;

BE IT RESOLVED that the Alaska State Legislature respectfully requests the North Pacific Fishery Management Council and the Secretary, United States Department of Commerce, to provide for personal use fisheries for halibut by all Alaskans through modification of existing regulations, such as special seasons and special methods and means, to provide a reasonable opportunity to meet personal consumption needs; and be it

FURTHER RESOLVED that the Alaska State Legislature respectfully requests that the North Pacific Fishery Management Council reject regulations designed to divide Alaskans

along ethnic or other discriminatory lines.

COPIES of this resolution shall be sent to the Honorable William M. Daley, Secretary, United States Department of Commerce; Rick Lauber, Chair, 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.

TESTIMONY OF VERNITA HERDMAN
Before the North Pacific Fishery & Management Council

Anchorage Hilton Hotel
April 16, 1997

Mr. **Chairman** and members of the Council:

I appreciate very much the opportunity to provide testimony on the subsistence halibut issue before you. I am testifying as an individual but would like members of the Council to know that I have worked for many years on subsistence issues and various Alaska Native issues. I am Inupiaq and was born and raised in Unalakleet.

I listened carefully to the testimony offered by Speaker Phillips this morning. I believe that she and other members of the current legislative majority are sincere in their concerns about subsistence but I think there are several areas of her testimony that call for some clarification.

The most important of these concerns the Alaska National Interest Lands Conservation Act, Title VIII of which was adopted by Congress as a direct result of commitments made to the Alaska Native community when the Alaska Native Claims Settlement Act was passed in 1971. And, Mr. Chairman, this will indeed go to the issue of the proposed regulations providing for a subsistence halibut harvest, if you will indulge me while I make a record.

Subsistence hunting and fishing, including that involving halibut, were paramount concerns at the time ANCSA was being negotiated in the late 1960's and early 1970's. In fact, Congress was very concerned about protecting subsistence in Native villages. But at the request of the State of Alaska no specific reference was made to subsistence protections in ANCSA's text and the negotiators for the Native people agreed only based on a commitment by the State and Congress, a commitment which is recorded in the conference committee report which accompanied ANCSA, which states in part:

> ***"The Senate amendment to the House bill provided for protection of the Native people's interest in and use of subsistence resources on the public lands. The conference committee, after careful consideration, believes that all Native interests in subsistence resource lands can and will be protected by the Secretary through exercise of his existing withdrawal authority.... The conference committee expects both the Secretary and the State to take any action necessary to protect the subsistence needs of the Natives."***

Mr. Chairman, it concerns Alaska Natives greatly when persons of the political stature of Speaker Phillips appear to be burdened with the opinion that there is no obligation to protect subsistence. We compromised in good faith by allowing subsistence to be taken out of ANCSA,

and even by allowing the use of the word "rural" to supplant "Alaska Native" in ANILCA, because we believed Congress and the State when they promised to protect subsistence.

Speaker Phillips also took care to refer to the "creation" of a subsistence halibut fishery the promulgation of regulations by the Council, and made several references to this fishery as a "new" use of halibut. Nothing could be farther from the truth. Halibut has been used for subsistence purposes for centuries and is one of the resources whose use is part of the very structure of Alaska Native cultures and economies. It is by no means a "new" harvest.

Finally, Mr. Chairman, I want to thank Jane DeCosimo and Bob Wolfe for the work they have done to chart the use of resources because their work so clearly demonstrates subsistence use patterns in a way that is understandable to non-Natives who may be otherwise unfamiliar with how far the resource goes in each community. I believe their charting method would apply just as usefully to all subsistence uses, not just for halibut and other fish.

For these reasons, I support the Alaska Natives who wish to have their subsistence uses of halibut embodied in the Council's regulatory scheme.

VH:me

T Smith

BIRD REGS

SEABIRD AVOIDANCE REGULATIONS HAVE BEEN REQUESTED BY THE LONGLINE INDUSTRY. A VERSION OF THESE REGULATIONS LIKELY WILL GO INTO EFFECT SOON. HOWEVER, THERE IS NO REASON TO WAIT FOR THE REGULATIONS - WE CAN BEGIN SAVING SEABIRDS RIGHT NOW.

THE BROCHURE IN THIS PACKAGE EXPLAINS THE SIMPLE METHODS WE MUST ALL USE TO AVOID SEABIRD BYCATCH - IT'S EASY. BASICALLY, WEIGHT YOUR LINES ADEQUATELY AND DRAG SOMETHING BEHIND THE BOAT TO SCARE THE BIRDS AWAY FROM YOUR BAITED HOOKS.

IF YOU FAIL TO FOLLOW SEABIRD AVOIDANCE REGS, YOU COULD GET BUSTED - SEE THE COAST GUARD LETTER ON THE FLIPSIDE OF THIS PAGE. EVEN WORSE, IF WE CATCH A HANDFUL OF SHORT-TAILED ALBATROSSES, WE'RE HISTORY. NO FOOLING. AND REMEMBER - WE'RE TRYING TO AVOID ALL SPECIES OF SEABIRDS.

PLEASE GET THOSE BIRD AVOIDANCE DEVICES (BAD'S) ABOARD NOW, AND START DEPLOYING THEM NOW. THE ALBATROSSES SHOW UP IN APRIL.

BETTER GREEN THAN GONE!

Linda Behnken

ALFA - LINDA BEHNKEN

John Bruce

DSFU - JOHN BRUCE

Robert Alverson

FVOA - BOB ALVERSON

Shari Gross

HANA - SHARI GROSS

KVOA - ROB WURM

Thorn Smith

NPLA - THORN SMITH

Liz Cabrera

PVOA - LIZ CABRERA

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 25517
Juneau, AK 99802-5517
Staff Symbol: mpo
Phone: (907) 463-2226

16750
February 18, 1997

Mr. Steven Pennoyer
Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Dear Mr. Pennoyer:

Mr. Thorn Smith from the North Pacific Longline Association has forwarded us a copy of their framework for the proposed regulations regarding seabird avoidance measures. Mr. Smith has requested the Coast Guard comment on the proposed framework relative to enforcement by our boarding officers at sea.

We believe Coast Guard boarding officers would be able to discern whether a longline vessel is complying with the restrictions as described by Mr. Smith.

We would be pleased to work further with NOAA attorney's, as necessary, to get regulations drafted that meet the expectations of the North Pacific Fisheries Management Council.

Sincerely,

J. V. O'Shea
Captain, U. S. Coast Guard
Chief, Maritime Operations Plans and Policy Branch
By direction of the Commander

Copy: Lisa Lindeman
Jay Johnson
Michele Kuruc
Thorn Smith

proposed measures were initially requested by hook-and-line industry representatives as emergency measures because of concerns about the potential economic impacts if the annual take limit for the short-tailed albatross is exceeded and fishing ceases pending reinitiation and conclusion of consultation pursuant to section 7 of the ESA.

Classification

This proposed rule has been determined to be not significant for purposes of E.O. 12866.

NMFS prepared an IRFA as part of the RIR, which describes the impact this proposed rule would have on small entities, if adopted. Based on the analysis, it was determined that this proposed rule could have a significant economic impact on a substantial number of small entities. In 1995, 1,217 and 100 hook-and-line catcher vessels harvested groundfish from the GOA and BSAI, respectively. Catcher/processor vessels numbered 35 and 46 in those respective areas. Very significant impacts on small entities could occur if the groundfish fisheries are altered or perhaps closed due to the annual take of the endangered short-tailed albatross being exceeded. The likelihood of this happening is great under the status quo alternative because of recent takes (e.g., 3 in 1995). The economic impacts of such alterations or closures would depend on the development and implementation of the reasonable and prudent measures established to minimize take of the short-tailed albatross.

Several measures available under the preferred alternative would minimize the economic impacts on small entities. The economic impact on small entities would depend upon the particular measures chosen. Procedural or operational changes may be necessary in fishing operations. A vessel operator would have a choice of several other measures. The cost of buoys and bird streamer lines as seabird bycatch avoidance devices range from $50–$250 per vessel. A lining tube is a technology used in fisheries of other nations to deploy baited hooks underwater to avoid birds and is offered as a possible option. NMFS anticipates that the operators of smaller vessels (less than 60 ft (18.3 m)) would choose an avoidance measure other than a lining tube, which could cost as much as $35,000 per vessel. There are 154 and 53 hook-and-line catcher vessels and 31 and 45 catcher/processor vessels equal to or greater than 60 ft (18.3 m) in the GOA and BSAI, respectively.

If the annual take of short-tailed albatross in the hook-and-line fisheries operating under these proposed measures would exceed the take limit established under the ESA section 7 consultation, the actual economic impacts resulting from the modification of the reasonable and prudent measures established to minimize take of the short-tailed albatross would depend upon the development and implementation of revised measures. The revised measures could range from those proposed by this rule, additional or modified measures, to closures. The economic impact on fishing operations would depend upon the length of time of the closed period and the additional cost of revised measures. Significant impacts on small entities could occur if the fisheries closed due to the annual take of the endangered short-tailed albatross being exceeded. The likelihood of this happening is less under the proposed rule than under the status quo alternative. The economic impacts of this proposed rule on small entities could result in a reduction in annual gross revenues by more than 5 percent and could, therefore, potentially have a significant economic impact on a substantial number of small entities. A copy of this analysis is available from the Council (see ADDRESSES).

List of Subjects in 50 CFR Part 679

Fisheries, Reporting and recordkeeping requirements.

Dated: February 28, 1997.

Nancy Foster,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 679 is proposed to be amended as follows:

PART 679—FISHERIES OF THE EXCLUSIVE ECONOMIC ZONE OFF ALASKA

1. The authority citation for 50 CFR part 679 continues to read as follows:

Authority: 16 U.S.C. 773 *et seq.* and 1801 *et seq.*

2. In §679.24, paragraph (e) is added to read as follows:

§679.24 Gear limitations.

* * * * *

(e) *Seabird avoidance gear and methods for hook-and-line vessels fishing for groundfish*—(1) *Applicability.* (i) Except as provided in paragraph (e)(1)(ii) of this section, the operator of a vessel that is required to obtain a Federal fisheries permit under §679.4(b)(1) must comply with the seabird avoidance measures in paragraph (e)(2) of this section while fishing for groundfish with hook-and-line gear in the BSAI, in the GOA, or in waters of the State of Alaska that are shoreward of the BSAI and the GOA.

(ii) The operator of a vessel is not required to comply with the seabird avoidance measures in paragraph (e)(2) of this section whenever the round-weight equivalent of halibut retained on board exceeds the round-weight equivalent of groundfish retained on board.

(2) The operator of a vessel described in paragraph (e)(1) of this section must conduct fishing operations in the following manner:

(i) Use hooks that when baited, sink as soon as they are put in the water.

(ii) Avoid dumping of offal to the extent practicable while gear is being set or hauled. If discharge of offal is unavoidable, the discharge must take place aft of the hauling station or on the opposite side of the vessel to that where gear is set or hauled.

(iii) Make every reasonable effort to ensure that birds brought on board alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

(iv) Employ one or more of the following seabird avoidance measures:

(A) Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;

(B) Tow a buoy, board, stick or other device during deployment of gear, at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed; or

(C) Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear; or

(D) Deploy gear only during the hours specified below, using only the minimum vessel's lights necessary for safety.