AGENDA C-3
OCTOBER 2003

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
16 HOURS

DATE: September 30, 2003

SUBJECT: Essential Fish Habitat (EFH)

ACTION REQUIRED:

(a) Review Preliminary Draft EIS for EFH, and identify preliminary preferred alternatives for describing EFH, identifying habitat areas of particular concern (HAPC), and minimizing the effects of fishing on EFH.
(b) Finalize HAPC Proposal and Review Process

BACKGROUND

Preliminary Environmental Impact Statement

A preliminary draft environmental impact statement (EIS) for EFH was distributed on September 8. The Executive Summary of the 2,468 page analysis is attached as Item C-3(a). The EIS evaluates three actions: (1) describing EFH for fisheries managed under an FMP; (2) adopting an approach for identifying HAPC within EFH; and (3) minimizing to the extent practicable the adverse effects of fishing on EFH. Alternatives considered for each were as listed below.

EFH Description

Alternative 1: No EFH Descriptions.
Alternative 2: Status quo.
Alternative 3: Revised general distribution.
Alternative 4: Presumed known concentration.
Alternative 5: Ecoregion strategy.
Alternative 6: EFH described only in EEZ.

HAPC Approach

Alternative 1: No HAPC Identification.
Alternative 2: Status quo.
Alternative 3: Site based concept.
Alternative 4: Type/site based concept.
Alternative 5: Species core area.

Minimization of Fishing Effects on EFH

Alternative 1: Status quo.
Alternative 2: GOA rockfish bottom trawl closures.
Alternative 3: GOA slope closure to rockfish bottom trawling.
Alternative 4: Bottom trawl closures in all areas.
Alternative 5A: Expanded bottom trawl closure areas.
Alternative 5B: Expanded bottom trawl closures areas with additional AI measures.
Alternative 6: Closure of 20% area to all bottom tending gear.

At this meeting, the Council will review the preliminary draft and identify a preliminary preferred alternative for each of the three actions. The Council's preliminary preferred alternative would then be identified in the official Draft EIS, which must be published by January 16, 2004. The NMFS recommendations on preferred alternatives are included in Appendix E, which is attached as Item C-3(b).

HAPC Proposal and Review Process

During the June 2003 meeting the Council reviewed the EFH Committee's process to identify and evaluate potential 'habitat areas of particular concern' (HAPC). The draft process was incorporated into the EIS as Appendix J (Item C-3(c)). At this meeting the Council will need to make a preliminary decision on the HAPC process, so that it can be included within the draft EIS and released for public comment. Decisions need to be made regarding (1) HAPC criteria, (2) priorities, and (3) a stakeholder process.

The Council had previously noticed that they plan to initiate the HAPC process by November 2003. The Council may wish to initiate a call for proposals at this meeting, as a first step to identifying, analyzing, and adopting HAPC designations. Note that the revised settlement agreement requires that "final regulations implementing HAPC designations, if any, and any associated management measures that result from this process will be promulgated no later than August 13, 2006, and will be supported by appropriate NEPA analysis."

EXECUTIVE SUMMARY

Introduction

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act included new provisions concerning the identification and conservation of Essential Fish Habitat (EFH). The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The National Marine Fisheries Service (NMFS) and regional Fishery Management Councils (Councils) must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. Councils also have the authority to comment on federal or state agency actions that would adversely affect the habitat, including EFH, of managed species.

This environmental impact statement (EIS) evaluates alternatives for three actions: (1) describing EFH for fisheries managed by the North Pacific Fishery Management Council; (2) adopting an approach for the Council to identify Habitat Areas of Particular Concern (HAPCs) within EFH; and (3) minimizing to the extent practicable the adverse effects of Council-managed fishing on EFH. Table ES-1 provides an overview of the environmental consequences of each alternative in terms of the issues and criteria that were used in the evaluation.

Background

The Council amended its five FMPs (Bering Sea/Aleutian Islands [BSAI] Groundfish FMP, Gulf of Alaska [GOA] Groundfish FMP, BSAI Crab FMP, Scallop FMP, and Salmon FMP) in 1998 to address the new EFH requirements. The Secretary of Commerce, acting through NMFS, approved the Council's EFH FMP amendments in January 1999. In the spring of 1999, a coalition of seven environmental groups and two fishermen's associations filed suit in the United States District Court for the District of Columbia to challenge NMFS' approval of EFH FMP amendments prepared by the Gulf of Mexico, Caribbean, New England, North Pacific, and Pacific Fishery Management Councils (*American Oceans Campaign [AOC] et al. v. Daley et al.*, Civil Action No. 99-982-GK). The focus of the *AOC v. Daley* litigation was whether NMFS and the Council had adequately evaluated the effects of fishing on EFH and taken appropriate measures to mitigate adverse effects. In September 2000, the court upheld NMFS' approval of the EFH amendments under the Magnuson-Stevens Act, but ruled that the environmental assessments (EAs) prepared for the amendments violated the National Environmental Policy Act (NEPA). The court ordered NMFS to complete new and thorough NEPA analyses for each EFH amendment in question. This EIS is the curative NEPA analysis for the North Pacific Council's FMPs.

Most of the controversy surrounding the necessary level of protection needed for EFH concerns the effects of fishing activities on sea floor habitats. Substantial differences of opinion exist as to the extent and significance of habitat alteration caused by bottom trawling and other fishing activities. This EIS reexamines the effects of fishing on EFH, presents a wider range of alternatives, and provides a more thorough analysis of potential impacts than the EA approved in 1999. Because the court did not limit its criticism of the 1999 EA solely to the section that considered the effects of fishing on EFH, this EIS also reexamines options for identifying EFH and HAPCs.

The actions the Council and NMFS take in association with this EIS may result in new FMP amendments to modify the existing EFH and/or HAPC designations and/or to implement additional measures to

reduce the effects of fishing on EFH. Those amendments, if needed, would be Amendment 78 to the FMP for the Groundfish Fishery of the BSAI Area, Amendment 73 to the FMP for Groundfish of the GOA, Amendment 16 to the FMP for BSAI King and Tanner Crabs, Amendment 8 to the FMP for the Scallop Fishery off Alaska, and Amendment 7 to the FMP for the Salmon Fisheries in the Exclusive Economic Zone (EEZ) off the Coast of Alaska.

Relationship of the Three Actions Considered in this EIS

The three actions considered in this EIS are related, but are largely independent. Identification and description of EFH establish the boundaries within which the Council may identify HAPCs and within which the Council must minimize to the extent practicable the adverse effects of fishing. Thus, the Council only may adopt an approach for HAPC identification that would result in specific HAPCs falling within the boundaries of areas it identifies as EFH. Likewise, the Council is required to minimize adverse effects of fishing on habitats only within the boundaries of areas it identifies as EFH. The Council may act to minimize the adverse effects of fishing on other habitats, but is not required to do so.

All of the management areas in federal waters identified in the alternatives for minimizing the effects of fishing on EFH are located within the boundaries of the areas included in Alternatives 2 through 6 for describing and identifying EFH. Alternative 1 for describing and identifying EFH is the no action alternative, so EFH would not be described, and the requirement to minimize effects of fishing on EFH would not apply. Alternative 6 for describing and identifying EFH would result in no EFH designations in state waters (generally from the shore to 3 miles offshore), so the inshore management components of Alternatives 4, 5A, 5B, and 6 would not fall within the boundaries of EFH.

Action 1: Describe and Identify EFH

Alternatives

Alternative 1 (No EFH Descriptions): Under Alternative 1, EFH would not be described and identified for species managed by the Council. The existing EFH descriptions that were approved in 1999 would be rescinded.

Alternative 2 (Status Quo EFH Descriptions): Under Alternative 2, EFH descriptions would remain exactly as they were approved in the Council's EFH FMP Amendments in 1999. EFH would continue to be described as all habitats within a general distribution for a life stage of a species, for all information levels, and under all stock conditions. EFH would be a subset of the geographic range of each life stage, and it would encompass an area containing approximately 95 percent of the population.

Alternative 3 (Revised General Distribution): Under Alternative 3, EFH descriptions would be revised using the same basic methodology as Alternative 2, but applying the modified regulatory guidance from the EFH final rule (67 FR 2343, January 17, 2002; codified at 50 CFR 600 Subpart J) and incorporating recent and additional scientific information and improved mapping. In some cases, the geographic extent of individual EFH descriptions would be narrower than under the status quo Alternative 2.

Alternative 4 (Presumed Known Concentration): Under Alternative 4, EFH descriptions would be revised using a narrower interpretation of the best available scientific information for those species and life stages for which sufficient information exists to identify possible areas of higher habitat function. In many cases, the geographic extent of individual EFH descriptions would be reduced compared to Alternatives 2 and 3.

Alternative 5 (Ecoregion Strategy): Under Alternative 5, EFH would be described in eight ecoregions (freshwater, nearshore and estuarine, inner and middle shelf, outer shelf, upper slope, middle slope, lower slope, and basin) by characterizing the species that use each area and the habitat types present. The overall approach would be to identify distinct ecological areas, along with the species that rely upon those habitats.

Alternative 6 (EEZ Only): Under Alternative 6, EFH descriptions would be revised using the updated general distribution information from Alternative 3, but EFH would be limited to waters and substrate within the EEZ. No EFH would be described in freshwater areas, estuaries, or nearshore marine waters under the jurisdiction of the State of Alaska. In other words, Alternative 6 is the same as the EEZ portion of Alternative 3.

Environmental Consequences

Each of the alternatives for describing EFH uses different methodologies and results in different areas being identified as EFH for managed species. Describing and identifying EFH would not, in and of itself, have any direct environmental or economic impacts, but could lead to indirect impacts because EFH designation would trigger Magnuson-Stevens Act requirements to minimize adverse effects of fishing on EFH and to consider the effects of non-fishing actions on EFH. This EIS discusses the effects of each alternative on habitat, target species, the economic and socioeconomic aspects of federally managed fisheries, other fisheries and fishery resources, protected species, ecosystems and biodiversity, and non-fishing activities. Using a qualitative analysis, the EIS characterizes effects on each issue as negative, neutral, positive, or unknown (Table ES-2) and provides a narrative explanation of the anticipated effects. Differences in the environmental consequences of the alternatives are directly related to the areas and habitats encompassed by the resulting EFH descriptions. Different size designations could increase or decrease the efficacy of EFH conservation measures and the effects on other components of the environment.

In summary, Alternative 1 would eliminate EFH descriptions in Alaska, resulting in the loss of potential benefits of EFH protective measures for habitat, target species, and federally managed fisheries, as well as potential ancillary benefits for other fisheries and fishery resources, protected species, and ecosystems. Alternative 1 may have benefits for non-fishing activities because EFH consultations would no longer be required, eliminating an existing procedural step in the review of many proposed actions. Similarly, Alternative 1 could benefit the fishing industry in the short term because it would remove the need to consider new regulations to reduce the effects of fishing on habitat, although potential benefits (from conserving habitats that produce fish the industry harvests) would be lost. Alternative 2 would retain the status quo EFH descriptions and associated effects. The status quo effects would include the costs and benefits of having important fish habitats identified to encourage efforts to minimize adverse effects from fishing and non-fishing activities. Alternative 3 would refine the existing EFH description and identification, but would not lead to substantial changes in environmental effects because the areas identified would not be substantially reduced in size. To the extent that EFH descriptions for some species would be reduced in geographic scope to reflect essential habitats more precisely, potential benefits for target species might increase slightly because conservation efforts could focus on those more discrete areas to avoid habitat loss or degradation. Alternative 4 would incorporate a narrower interpretation of the best available science, resulting in reduced EFH areas described for many species. As with Alternative 3, to the extent that EFH descriptions for some species would be reduced in geographic scope under Alternative 4, potential benefits for target species might increase because smaller EFH designations would enable managers to focus conservation efforts more effectively. Alternative 5 would use an ecoregion approach, resulting in larger EFH areas and perhaps a greater potential for indirect benefits for resources such as protected species. However, this approach may be less beneficial

for target species and federally managed fisheries because it would be harder to distinguish EFH from all potential habitats. Alternative 6 would refine the existing EFH descriptions in the EEZ as in Alternative 3, but would eliminate the EFH descriptions in state waters, as in Alternative 1. Table ES-2 summarizes the effects of the EFH description alternatives for each issue evaluated in the EIS. However, the effects ratings alone do not provide a basis for distinguishing among some of the alternatives.

Table ES-3 compares the alternatives in terms of three summary factors: (1) the relative size of EFH areas, (2) consistency with the Magnuson-Stevens Act and the EFH regulations, and (3) overall efficacy and relative merits. Alternatives 1 and 6 are not consistent with the Magnuson-Stevens Act or the EFH regulations because they would not describe and identify those habitats necessary to managed species for spawning, breeding, feeding, and growth to maturity. Alternative 2 is not consistent with the Magnuson-Stevens Act or the EFH regulations because it does not reflect the best (most recent) scientific information available. Alternatives 3 through 5 are consistent with the Magnuson-Stevens Act and the EFH regulations. Those alternatives contain different approaches that influence their overall efficacy. Alternative 3 is very similar to Alternative 2, but applies more recent information, new analytical tools, and better mapping, resulting in geographically smaller EFH areas for some species. Any actions to conserve EFH could focus on these smaller areas. Alternative 4 is similar to Alternatives 2 and 3, but it uses a narrower interpretation of the available scientific information, resulting in smaller EFH areas for many species. Alternative 4 may offer advantages for the conservation of EFH because it focuses EFH descriptions for most species on smaller areas than Alternative 3, allowing the Council, NMFS, other agencies, and the public to concentrate research and management efforts accordingly. Alternative 5 has effects that are similar to Alternatives 2, 3, and 4, but uses a very different approach that results in broader EFH descriptions, making it harder to distinguish EFH from all available habitats.

Action 2: Adopt an Approach for Identifying HAPCs

Alternatives

Alternative 1 (No HAPC Identification): Under Alternative 1, HAPCs would not be identified for species managed by the Council. The existing HAPC identifications that were approved in 1999 would be rescinded.

Alternative 2 (Status Quo HAPC Identification): Under Alternative 2, the existing HAPCs would remain in effect with no changes. Those HAPCs include living substrates in deep water, living substrates in shallow water, and freshwater areas used by anadromous salmon.

Alternative 3 (Site Based Concept): Under Alternative 3, the existing HAPC identifications would be rescinded, and the Council would adopt an approach that would allow specific sites within EFH, selected to address a particular problem, to be identified as HAPCs in the future.

Alternative 4 (Type/Site Based Concept): Under Alternative 4, the existing HAPC identifications would be rescinded, and the Council would adopt an approach that would allow specific sites selected within identified habitat types within EFH to be identified as HAPCs in the future.

Alternative 5 (Species Core Area): Under Alternative 5, the existing HAPC identifications would be rescinded, and the Council would adopt an approach that would allow areas within EFH to be identified as HAPCs in the future, based on productivity of the habitat for individual species.

Environmental Consequences

The EFH regulations encourage Councils to identify HAPCs within EFH based on four considerations: ecological importance, sensitivity to environmental degradation, susceptibility to stress from development, and/or rarity. HAPC designation provides a means for the Council and NMFS to highlight areas within EFH as priorities for conservation and management. The HAPC alternatives in the EIS are a range of different methodological approaches, rather than different specific types or areas of habitat to be identified as HAPCs, so the effects of identifying HAPCs cannot be evaluated with specificity in this EIS. The Council decided to establish an approach to HAPC identification first (via this EIS), and then, subsequently, to identify specific HAPCs. Differences in the environmental consequences of the alternatives are, therefore, related to the type of approach that would be used to identify HAPCs and the anticipated effects of HAPCs subsequently identified under each approach.

Identifying HAPCs, like identifying EFH, would not, in and of itself, have any direct environmental or socioeconomic impacts, but could have indirect impacts. The choice of an approach for identifying HAPCs would provide a means for the Council and NMFS to highlight priority areas within EFH for conservation and management. This EIS discusses the anticipated effects of each alternative on habitat, target species, the economic and socioeconomic aspects of federally managed fisheries, other fisheries and fishery resources, protected species, ecosystems and biodiversity, and non-fishing activities. Using a qualitative analysis, the EIS characterizes effects on each issue as negative, neutral, positive, or unknown (Table ES-4) and provides a narrative explanation of the anticipated effects.

In summary, HAPC identification could have benefits for habitat, target species, and federally managed fisheries, as well as ancillary benefits for other fisheries and fishery resources, protected species, and ecosystems. Alternative 1 would rescind the existing HAPCs and provide for no new HAPCs, leading to a loss of potential benefits from identifying HAPCs and implementing any resulting protective measures. Alternative 1 may have benefits for non-fishing activities potentially affecting EFH, insofar as no particular areas within EFH would be highlighted for review during interagency EFH consultations for various development activities. Likewise, Alternative 1 may have short-term benefits for fisheries, insofar as no particular areas within EFH would be highlighted for potential fishing restrictions to protect habitat, although fisheries could lose potential long-term benefits of conservation of especially valuable habitats. Alternative 2 would retain the status quo HAPCs and associated effects. However, the broad and general nature of the existing HAPC designations may limit their efficacy. Alternatives 3 through 5 would rescind the existing HAPCs in favor of other approaches that would allow the Council to identify HAPCs in the future. The resulting indirect effects would depend upon the specific HAPCs implemented in future Council and NMFS actions. Alternatives 3 through 5 would have comparable potential effects on habitat, federally managed fisheries, other fisheries and fishery resources, protected species, ecosystems, and non-fishing activities. Alternative 3 would limit HAPCs to specific sites, rather than permitting HAPCs to be identified for general types of habitat wherever they may be found. Alternative 3 could, thus, be more effective than Alternative 2 by virtue of being more focused. Alternative 4 may offer more potential benefits for target species than the other alternatives because the stepwise process of selecting habitat types and then specific sites could yield a more rational and structured effort to ensure that HAPCs would focus on the habitats within EFH that are most valuable and/or vulnerable. Alternative 5 would limit the identification of HAPCs to specific sites supporting habitat functions for individual target species. It, therefore, has the potential to benefit target species more directly than the other alternatives, although scarce scientific information about habitat requirements of individual species could limit the effectiveness of this approach. Table ES-4 summarizes the effects of the HAPC identification alternatives for each topic evaluated in the EIS. Table ES-5 compares the alternatives in terms of three summary factors: (1) the relative size of HAPCs identified, (2) consistency with the EFH regulations, and (3) overall efficacy and relative merits of the approach.

Action 3: Minimize Adverse Effects of Fishing on EFH

Alternatives

Alternative 1 (Status Quo / No Action): Under Alternative 1, no additional measures would be taken at this time to minimize the effects of fishing on EFH. No new actions were taken to minimize the effects of fishing as part of the original EFH FMP amendments in 1998, although both before and since that date the Council has adopted a number of measures that protect habitat from potential negative effects of fishing, and those measures would remain in effect. For reference, existing year-round trawl closures are depicted in Figure ES-1.

Alternative 2 (Gulf Slope Bottom Trawl Closures): Alternative 2 would prohibit the use of bottom trawls for rockfish in designated areas of the GOA upper to intermediate slope (200 to 1,000 m), but would allow vessels endorsed for trawl gear to use fixed gear or pelagic trawl gear to fish for rockfish in these areas. See Figure ES-2.

Alternative 3 (Upper Slope Bottom Trawl Prohibition for GOA Slope Rockfish): Alternative 3 would prohibit the use of bottom trawls for targeting GOA slope rockfish species on the entire upper to intermediate slope area (200 to 1,000 m), but would allow vessels endorsed for trawl gear to use fixed gear or pelagic trawl gear to fish for slope rockfish. See Figure ES-3.

Alternative 4 (Bottom Trawl Closures in All Management Areas): Alternative 4 would prohibit the use of bottom trawls in designated areas of the BS, AI, and GOA, as well as requiring trawl gear modifications in the BS area. The following regulations would be implemented:

Bering Sea: Prohibit the use of bottom trawls for all groundfish fisheries except within a designated "open" area, based on historic bottom trawl effort. Within the open area, there would be rotating closures to bottom trawl gear in five areas to the west, north, and northwest of the Pribilof Islands (Figure ES-4). Each of the five areas would be divided into four blocks, and one block in each area would be closed for 10 years. After 10 years, the closed block would reopen, and a different block would close for 10 years, and so forth. In addition, bottom trawls used in the remaining open areas would be required to have sweeps and footropes equipped with disks/bobbins to reduce contact area and proximity to the seafloor.

Aleutian Islands: Prohibit the use of bottom trawls for all groundfish fisheries in designated areas of the AI: Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Semisopochnoi Island (Figure ES-5).

Gulf of Alaska: Prohibit the use of bottom trawls for rockfish fisheries in designated sites of the upper to intermediate slope (200 to 1,000 m; see Figure ES-6). Vessels endorsed for trawl gear would be allowed to fish for rockfish with fixed gear or pelagic trawl gear in these areas.

Alternative 5A (Expanded Bottom Trawl Closures in All Management Areas): Alternative 5A would prohibit the use of bottom trawls in larger designated areas of the BS, AI, and GOA, as well as requiring trawl gear modifications for trawling in the BS area.

Bering Sea: Prohibit the use of bottom trawls for all groundfish fisheries except within a designated "open" area, based on historic bottom trawl effort. Within the open area, there would be rotating closures to bottom trawls in five areas to the west, north, and northwest of the Pribilof Islands (Figure ES-7). Each of the five areas would be divided into three blocks, and one block

in each area would be closed for 5 years. After 5 years, the closed block would reopen, and a different block would close for 5 years, and so forth. In addition, bottom trawls used in the remaining open areas would be required to have sweeps and footropes equipped with disks/bobbins to reduce contact area and proximity to the seafloor.

Aleutian Islands: Prohibit the use of bottom trawls for all groundfish fisheries in designated areas of the AI: Stalemate Bank, Bowers Ridge, Seguam Foraging Area, Yunaska Island, and Semisopochnoi Island. These closure areas would extend to the northern and southern boundaries of the AI management unit (Figure ES-8).

Gulf of Alaska: Prohibit the use of bottom trawls for all groundfish fisheries in designated sites of the upper to intermediate slope (200 to 1,000 m). Additionally, prohibit the use of bottom trawls for targeting GOA slope rockfish on the GOA upper to intermediate slope (200 to 1,000 m), but would allow vessels endorsed for trawl gear to use fixed gear or pelagic trawl gear to fish for rockfish in these areas. See Figure ES-9.

Alternative 5B (Expanded Bottom Trawl Closures in All Management Areas with Sponge and Coral Area Closures in the AI): Alternative 5B would prohibit the use of bottom trawls in designated areas of the BS, AI, and GOA and would require trawl gear modifications in the BS area. In addition, Alternative 5B would reduce the total allowable catch (TAC) for Pacific cod, Atka mackerel, and rockfish in the AI area, and would establish bycatch limits for bryozoans/coral and sponges in this management area.

Bering Sea: Prohibit the use of bottom trawls for all groundfish fisheries except within a designated "open" area, based on historic bottom trawl effort. Within the open area, there would be rotating closures to bottom trawls in five areas to the west, north, and northwest of the Pribilof Islands (Figure ES-7). Each of the five areas would be divided into three blocks, and one block in each area would be closed for 5 years. After 5 years, the closed block would reopen, and a different block would close for 5 years, and so forth. In addition, bottom trawls used in the remaining open areas would be required to have sweeps and footropes equipped with disks/bobbins to reduce contact area and proximity to the seafloor.

Aleutian Islands: Alternative 5B would include a number of components such as open areas, closed areas, TAC reductions, coral/bryozoan and sponge bycatch limits, additional fishery monitoring measures, and a comprehensive research and monitoring plan (Figure ES-10).

Gulf of Alaska: Prohibit the use of bottom trawls for all groundfish fisheries in designated sites of the upper to intermediate slope (200 to 1,000 m). Additionally, prohibit the use of bottom trawls for targeting GOA slope rockfish on the GOA upper to intermediate slope (200 to 1,000 m), but would allow vessels endorsed for trawl gear to use fixed gear or pelagic trawl gear to fish for rockfish in these areas. See Figure ES-9.

Alternative 6 (Closures to All Bottom-tending Gear in 20 percent of Fishable Waters): Alternative 6 would prohibit the use of all bottom-tending gear (dredges, bottom trawls, and pelagic trawls that contact the bottom, longlines, dinglebars, and pots) for commercial fisheries within approximately 20 percent of the fishable waters (i.e., 20 percent of the waters shallower than 1,000 m) in the GOA, AI, and BS. See Figure ES-11.

Environmental Consequences

The alternatives for minimizing the adverse effects of fishing on EFH are a range of specific management options. The alternatives all start with the status quo fishery management regime that includes a variety of measures that help to reduce the potential effects of fishing on habitat (e.g., area closures, gear restrictions, and limitations on fishing effort). Alternatives 2 through 6 would add progressively more restrictive management measures. The short-term economic and socioeconomic effects of the EFH fishing impact minimization alternatives can be clearly described, at least in qualitative terms: fishery management measures impose costs that can be estimated in terms of revenue at risk or other empirical measures. The ecological effects of the alternatives to minimize the effects of fishing on EFH are more difficult to assess because current scientific information does not provide a clear picture to link habitat conservation measures with specific quantifiable benefits to the productivity, survival, and recruitment of managed fish species. Limited information is available to describe the effects on productivity of managed species from habitat alteration caused by fishing. Likewise, there are no proven techniques for quantifying the benefits to target species that may accrue as a result of adopting any of the alternatives to minimize the effects of fishing on EFH (although many studies worldwide have documented the results of implementing various closed areas). In summary, although short-term costs to the industry are relatively easy to identify, the long-term economic and socioeconomic benefits that may accrue from habitat conservation measures are harder to predict with much precision. Nevertheless, the EIS uses the best information available to summarize the effects of fishing on EFH and the consequences of the alternatives.

The EIS evaluates the effects of fishing on habitat by using a quantitative mathematical model developed for this analysis by the NMFS Alaska Fisheries Science Center. The model estimates the proportional reductions in habitat features relative to an unfished state, assuming that fishing will continue at the current intensity and distribution until the alterations to habitat and the recovery of disturbed habitat reach equilibrium. The model provides a tool for bringing together all available information on the effects of fishing on habitat, such as fishing gear types and sizes used in Alaska fisheries, fishing intensity information from observer data, and gear impacts and recovery rates for different habitat types. Due to the uncertainty regarding some input parameters (e.g., recovery rates of different habitat types), the results of the model are displayed as point estimates, as well as a range of potential effects.

After considering the available tools and methodologies for assessing effects of fishing on habitat, the Council and its Scientific and Statistical Committee concluded that the model incorporates the best available scientific information and provides a good approach to understanding the impacts of fishing activities on habitat. Nevertheless, it is important to understand that the model and its application in this EIS have many limitations. Both the developing state of this new model and the limited quality of available data to estimate input parameters prevent drawing a complete picture of the effects of fishing on EFH. The model incorporates a number of assumptions about habitat effect rates, habitat recovery rates, habitat distribution, and habitat use by managed species. The quantitative outputs of the analysis may convey an impression of rigor and precision, but the results actually are subject to considerable uncertainty.

The analysis indicates that there are long-term effects of fishing, particularly bottom trawling, on benthic habitat features off Alaska. If the current pattern of fishing intensity and distribution continues into the future, living habitat features that provide managed species with structure for refuge would be reduced by 0 to 11 percent, with the largest reduction occurring on soft substrates of the Aleutian slope area. Hard corals would be reduced by 0 to 16 percent, with the largest reduction occurring on hard substrates of the Aleutian shallow water area. There would be almost no reduction (0 to 3 percent) in infaunal and epifaunal prey for managed species. Viewed another way, habitat loss due to fishing off Alaska is

relatively small overall, with most of the available habitats unaffected by fishing (infaunal prey are 97 to 100 percent unaffected, epifaunal prey are 97 to 100 percent unaffected, living structure is 89 to 100 percent unaffected, and hard corals are 84 to 98 percent unaffected). The EIS analysis concludes that no Council-managed fishing activities have more than minimal and temporary effects on EFH for any FMP species (Table ES-6). Additionally, the analysis concludes that all fishing activities combined have minimal, but not necessarily temporary, effects on EFH. This may indicate that no additional actions are required pursuant to the EFH regulations (50 CFR part 600, Subpart J). Nevertheless, the analysis indicates that additional practicable measures could be taken to protect, conserve, and enhance EFH.

The EIS discusses the effects of each alternative on habitat, target species, the economic and socioeconomic aspects of federally managed fisheries, other fisheries and fishery resources, protected species, and ecosystems and biodiversity. Using a qualitative analysis, the EIS characterizes effects on each issue as negative, neutral, positive, or unknown (Table ES-7) and provides a narrative explanation of the anticipated effects (Table ES-8). Alternative 1 would add no new fishery management measures and would have no effects relative to the status quo. Alternative 2 would have no substantial effects on habitat, target species, communities, protected species, or ecosystems. It would have relatively limited costs (economic costs of the alternatives are discussed in more detail below) and would provide slight positive effects for GOA deep-water Tanner crabs and golden king crabs. Alternative 3 would have positive effects on epibenthic structures and coral on the GOA slope, impose higher economic costs, and cause marginal reductions in safety for the fishing fleet. Its effects are otherwise similar to those of Alternative 2. Alternative 4 would have positive effects on coral in the AI area, benefits for epibenthic structures in the BS due to trawl gear modifications, and modest benefits for GOA slope rockfish habitats. Costs to the fishing industry would be more than twice as high as in Alternative 3, and there would be additional adverse consequences for safety. Alternative 5A would benefit coral substantially in the AI, have positive effects on epibenthic structures and coral in the GOA, and benefit epibenthic structures in the BS due to trawl gear modifications. However, Alternative 5A would double industry costs again relative to Alternative 4, and would have additional consequences for safety and for western GOA communities. Alternative 5B would have the same effects as Alternative 5A in the GOA and the BS. In the AI, it would provide considerably more protection of coral and sponge habitats. Economic costs to the industry and monitoring and enforcement costs would be far higher, and there might be adverse effects to Steller sea lion foraging success in the AI. Alternative 6 would have moderately positive effects on epibenthic structures in all areas and would benefit coral habitats in the GOA and AI. Costs to the fishing industry and communities would be dramatically higher and would extend to state-managed fisheries if corresponding measures were adopted in state waters. Additionally, Alternative 6 might cause adverse effects on Steller sea lions in portions of the AI due to the displacement of fishing effort from other areas, possibly resulting in more sea lion interactions with vessels or gear, or the concentrated removal of sea lion prey.

This EIS also compares each of the alternatives for minimizing the effects of fishing on EFH to a pre-status quo scenario to provide additional context. Over the years, the Council has implemented numerous measures to protect habitat. The pre-status quo scenario reflects conditions (environment, stock size, etc.) absent all area closures, effort reduction, gear measures, and rationalization programs. By comparing each of the alternatives to the pre-status quo scenario, the comparative summary illustrates that all seven of the alternatives start with a common suite of management measures that already provide a substantial degree of habitat protection. The status quo alternative (Alternative 1) includes only those existing management measures, whereas all of the other alternatives include the existing management measures plus additional measures.

Practicability Analysis

To assist in determining whether additional management measures are practicable, the EIS considers the long- and short-term costs and benefits of the potential management measures to EFH, associated fisheries, and the nation. A summary of the relative habitat conservation benefits and the relative costs associated with each alternative appears in Table ES-9. Given the limited adverse effects on EFH, and the costs and benefits of the alternatives, it appears that most alternatives would be practicable to implement, with the exception of Alternative 6, which would have substantially greater adverse effects on fishermen, communities, and associated industries than attributable benefits.

Relative to Alternative 1 (status quo), Alternatives 2 and 3 would provide very little habitat conservation benefit because the closure areas would reduce the effects of fishing only slightly, and only on the GOA slope area. Alternative 4 would provide some degree of additional habitat conservation for all three regions (BS, AI, and GOA) through the use of bottom-trawl closures in portions of each region, as well as bottom-trawl gear modifications for vessels fishing in the BS. Alternative 5A would increase the amount of protection further by expanding the size of the bottom trawl closures in the BS and AI and closing areas of the GOA slope to all bottom trawling. Alternative 5B would further minimize the effects of fishing by closing additional areas in the AI (including areas with high incidental catch rates of corals and sponges), reducing catch, and setting bycatch limits for bryozoans/corals and sponges. Alternative 6 would minimize the effects of fishing activities because approximately 20 percent of the available habitats would be left virtually undisturbed by fishing and, thus, would be allowed to recover to an unfished state. However, the large amount of fishing effort could be redistributed from areas of effort concentration to previously unfished or lightly fished areas, negating some potential benefits of this alternative.

There are also economic and socioeconomic costs associated with the alternatives to minimize the effects of fishing on habitat. Alternative 2 would have relatively minimal costs (gross revenue at risk $0.9 million). Alternatives 3, 4, and 5A would involve moderate costs to the fishing fleets (gross revenue at risk $2.7 million to $7.9 million). Alternative 5B would involve higher costs to the fleet (direct loss of $15.2 million, plus gross revenue at risk of $7.9 million) and would have negative effects on shoreside support industries and western GOA communities. Alternative 6 would have very high relative costs to the fleet (gross revenue at risk of $236 million) and negative effects on shoreside support industries and coastal fishing communities.

From a practical standpoint, the alternatives differ in the habitat areas closed and the resulting amount of habitat conservation, as well as the economic and socioeconomic effects. Some areas considered for bottom trawl closures would provide habitat conservation benefits at almost no additional cost. In particular, the closure area on the lower slope and basin represents a precautionary conservation measure that would restrict future fisheries, but would not have direct economic costs to the current fishing industry.

To illustrate the practicability of each type of closure area, Table ES-10 provides a comparison of the amount of area closed, by gear type, on the shelf and upper slope (less than 1,000 m) and on the lower slope/basin area (more than 1,000 m). Most fisheries, especially trawl fisheries, currently occur on the shelf and upper slope areas, so the amount of closure area at depths less than 1,000 m reflects the relative amount of habitat conservation provided by restricting current fisheries. Some of the bottom trawling closures contained in Alternative 5B, and to a lesser extent in Alternatives 4 and 5A, could prevent potential adverse effects on relatively undisturbed deepwater benthic habitats. Moreover, these closures would provide habitat benefits with almost no short-term costs.

Table ES-1. Environmental Consequences Summary

Criterion	Past and Present Trends	External Factors: Foreign & Subsistence Fishing	External Factors: Pollution	External Factors: Climatic Cycles	External Factors: Non-Fishing Activities	Future Mgmt. Actions	EFH - Designation Alternatives 1	2	3	4	5	6	HAPC - Designation Alternatives 1	2	3	4	5	Alternatives to Minimize the Effects of Fishing on EFH 1	2	3	4	5A	5B	6
Habitat																								
Prey Species	Historic fishing activity may have had localized negative effects on prey species.	Historic bottom fishing may have destroyed coral and otherwise altered bottom habitats.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0					E-	0				0	0	0	0	0	0	0
Benthic Biodiversity	Where fishing activity has been heavy, it may have destroyed coral and otherwise altered bottom habitats.		U	E+/E-		E+	E-	0					E-	0				0	0					
Habitat Complexity	Historic and current trawl fisheries may have had a negative effect on benthic habitat complexity in some areas.		U	E+/E-		E+	E-	0					E-	0				0	0		0			
Target Species - Groundfish																								
Groundfish Fishing Mortality and Stock Biomass	Most of the target groundfish species in the BSAI and GOA are above MSST and considered to have stable biomass.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	0	0	0	0	0	0	E-	0				0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Spatial/Temporal Concentration of Catch	Currently groundfish catch concentrations are stable; however, trends are unknown.		U	E+/E-		E+		0	E-	E-	E-	E-		0	E-	E-	E-	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Productivity (spawning/breeding)	Most species of groundfish have stable levels of spawning/breeding success. Some species are negatively affected by contact with fishing nets. Spawning and breeding success for some groups of groundfish is unknown.		U	E+/E-		E+	E-	0					E-	0				0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Prey Availability (feeding)	Food resources and feeding habits for many of the target groundfish species are considered stable. Food availability and feeding habits for some groundfish species are unknown.		U	E+/E-		E+	E-	0					E-	0				0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Growth to Maturity	Many of the target groundfish species are considered to have stable rates of growth to maturity. For some groups of groundfish, the trend is unknown, while others are potentially at risk due to fishing activities.		U	E+/E-		E+	E-	0					E-	0				0/U	0/U	0/U	0/U	0/U	0/U	0/U
Target Species - Crab, Scallop, Salmon																								
Crab, Scallop, and Salmon Fishing Mortality	Salmon that spawn in Alaska display a stable trend. Crab display a stable trend; some stocks are approaching over-fished status. Scallops are not over-fished or approaching over-fished status.	Foreign fishing outside the BSAI and GOA will continue to have a negative effect on salmon populations that migrate beyond those boundaries, and their prey. Fishing activities within the BSAI and GOA are not expected to affect salmon, crabs, or scallop populations or their prey significantly.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Crab, Scallop, and Salmon Spatial/Temporal Concentration of Catch	Concentration of fishing effort in time and space for salmon, crab, or scallops could potentially alter the genetic diversity of populations through selective fishing.		U	E+/E-		E+		0	E-	E-	E-	E-		0	E-	E-	E-	0	0	0	0	0	0	
Crab, Scallop, and Salmon Productivity (spawning/breeding)	The majority of areas in Alaska support healthy stocks of salmon. Nearshore crab habitat may have been damaged by bottom fishing gear in the past. Scallop productivity has been relatively stable.		U	E+/E-		E+	E-	0						0				0	0	0	0			
Crab, Scallop, and Salmon Prey Availability (feeding)	Most of the prey species of salmon are stable except herring, which is currently declining. Prey for crab is very common and has not been compromised. Dredging activities can both increase and reduce prey availability for scallops.		U	E+/E-		E+	E-	0					E-	0				0	0	0	0	0	0	0
Crab, Scallop, and Salmon Growth to Maturity	The rate of growth to maturity for salmon has remained relatively stable. Trawl fishing and dredging may have affected juvenile crabs and scallops, though not significantly overall.		U	E+/E-		E+	E-	0					E-	0				0	0	0				

Positive effect
Negative effect
Neutral/positive effect
Neutral/negative effect

NA = Not Applicable
U = Unknown Effect
0 = No Effect
E- = Negative Effect
E+ = Positive Effect
E-/E+ = Mixed Effect

Table ES-1. Environmental Consequences Summary (continued)

Criterion	Past and Present Trends	External Factors				Future Mgmt. Actions	EFH - Designation Alternatives						HAPC - Designation Alternatives					Alternatives to Minimize the Effects of Fishing on EFH						
		Foreign & Subsistence Fishing	Pollution	Climatic Cycles	Non-Fishing Activities		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5A	5B	6
Federally Managed Fisheries																								
Passive Use	The trend for passive use or non-consumptive use values is unknown.	The effect of foreign and subsistence fishing on passive use values is unknown.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0					E-	0				0						
Gross Revenue	The number of participating catcher vessels, processors, and motherships is declining. The longevity of inshore processing plants varies by location.	If harvest levels of Alaska groundfish fall as a result of EFH regulation, foreign fisheries could capture market share currently being served by Alaska product.	U	E+/E-		E-	U	0	U	U	U	U	0/U	0	0/U	0/U	0/U	0	0	E-	E-	E-	E-	E-
Operating Costs	Operating costs have increased over time and are expected to continue to do so.	Input costs such as fuel, labor, and insurance fluctuate with world market.	U	E+/E-		E-		0	E-	E-	E-	E-		0				0	E-	E-	E-	E-	E-	E-
Costs to U.S. Consumers	Domestic consumption of fish product has increased.	Costs are affected by demand and trends in world markets.	U	E+/E-		E-	U	0	U	U	U	U	0	0	0	0	0	0	E-	E-	E-	E-	E-	E-
Safety	Rate and severity of injury is decreasing. Search and rescue times are improving. These trends are expected to improve continuously.	NA	U	E+/E-		E-	0	0	0	0	0	0	0	0	0	0	0	0	E-	E-	E-	0	E-	E-
Socioeconomic Effects on Existing Communities	The level of dependence upon fishing activities varies with location along coastal Alaska.	NA	U	E+/E-		E-		0	E-	E-	E-	E-		0				0	0	0	0			E-
Effects on Regulatory and Enforcement Programs	Recent management actions have increased the cost of some regulatory and enforcement programs.	The primary external factor is continued monitoring and enforcement of foreign fishing.	U	E+/E-		E-		0	E-	E-	E-	E-		0	E-	E-	E-	0	E-	E-	E-	E-	E-	E-
Other Fisheries and Fishery Resources																								
State-managed Groundfish	Cod and sablefish are considered to be declining and at depressed levels. Pollock is considered to be stable though at depressed levels. Lingcod and rockfish populations are apparently stable.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.		E-	0					E-	0				0	0	0	0	0	0	E-
State-managed Crab and Invertebrate Species	Dungeness crab fisheries in certain locations have been closed following a collapse of these populations. King, tanner, and Korean hair crab populations are severely depressed from over-harvest. Weathervane scallop harvest is at stable levels.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-			E-	0					E-	0				0	0		0			E-
Herring	Herring populations have fluctuated historically. Since the 1970s, populations have increased steadily.	Foreign fishing has negatively affected herring populations.	U	E+/E-		0	E-	0					E-	0				0	0	0	0	0	0	0
Halibut	Halibut populations are healthy with recent catch at record levels.	There is a small amount of bycatch of halibut in foreign fisheries outside the BSAI and GOA boundaries, but not enough to impact US stocks.	U	E+/E-		0	E-	0					E-	0				0	0	0	0	0	0	E-

Negative effect
Neutral/positive effect
Neutral/negative effect

NA = Not Applicable
U = Unknown Effect
0 = No Effect
E- = Negative Effect
E+ = Positive Effect
E-/E+ = Mixed Effect

Table ES-1. Environmental Consequences Summary (continued)

Criterion	Past and Present Trends	External Factors: Foreign & Subsistence Fishing	External Factors: Pollution	External Factors: Climatic Cycles	External Factors: Non-Fishing Activities	Future Mgmt. Actions	EFH - Designation Alternatives: 1	2	3	4	5	6	HAPC - Designation Alternatives: 1	2	3	4	5	Alternatives to Minimize the Effects of Fishing on EFH: 1	2	3	4	5A	5B	6
Protected Resources																								
ESA Mammals	The whale populations have been depleted by commercial whaling, though some species are slowly recovering. The Steller sea lion population has increased steadily since 1979.	Native Alaska hunters are allowed a harvest quota that is below the potential biological removal of this population. Impacts due to foreign fisheries are considered negligible.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0					E-	0				0	0	0	0	0		
Other Mammals	Trends for the 16 protected mammals are unavailable.	Historic foreign fisheries have had lasting negative effects on large marine mammals. Several species of marine mammals are harvested during subsistence hunts.	U	E+/E-		E+	E-	0					E-	0				0	0	0	0	0	0	0
ESA Salmon	Overharvesting and declining spawning habitat are the most likely causes for the federal ESA listing of 12 salmonid stocks likely to range in Alaska waters.	Directed catch and bycatch by foreign/JV fisheries have had a negative effect on listed salmon and steelhead, which, to a lesser extent, continues today. Subsistence harvest is likely restricted to unlisted salmonids originating in Alaska.	U	E+/E-		E+	E-	0					E-	0				0	0	0	0	0	0	0
ESA Seabirds	The short tailed albatross population has declined historically, though current trends show a steady increase. In contrast, Steller's eider has dramatically declined and continues to do so.	Some fishing activities impact seabird populations negatively through direct or indirectly caused fatalities.	E-	E+/E-		E+	E-	0					E-	0				0	0	0	0	0	0	0
Other Seabirds	Some populations of seabirds are increasing (northern fulmar and gulls), while others continue to decline (albatross, kittiwake, elders). Murre populations are stable.		E-	E+/E-		E+	E-	0					E-	0				0	0	0	0	0	0	0
Ecosystems																								
Predator-Prey Relationships	Trophic levels of the BSAI and GOA are considered stable over the last 40 years.	NA	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	0/E+	U	0	U	U	U	U	E-	0				0	0	0	0	0	0	0
Energy Flow and Balance	Energy flow and balance are not significantly affected by fishing activities.	NA	U	E+/E-		0/E+	0	0	0	0	0	0	E-	0				0	0	0	0	0	0	0
Biodiversity	Biodiversity trends are unknown, though declines resulting from fishing are possible.	Subsistence fishing could slightly increase risk to diversity on the ecosystem level.	U	E+/E-		0/E+	0	0	0	0	0	0	E-	0				0	0					
Non-fishing Activities																								
Costs to Federal and State Agencies	Costs are generally increasing.	Increased regulation of foreign or subsistence fishing would likely increase costs to federal and state agencies.	U	E+/E-	U			0	E-	E-	E-			0	E-	E-	E-	0	0	0	0	0	0	0
Costs to Non-fishing Industries and Other Proponents of Affected Activities	Costs are generally increasing.	NA	U	E+/E-	U			0	E-	E-	E-			0	E-	E-	E-	0	0	0	0	0	0	0

Positive effect
Negative effect
Neutral/positive effect
Neutral/negative effect

NA = Not Applicable
U = Unknown Effect
0 = No Effect
E- = Negative Effect
E+ = Positive Effect
E- / E+ = Mixed Effect

Table ES-2. Comparative Summary of Effects of EFH Description Alternatives

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Habitat						
Prey species	E-	Ø	E+	E+	E+	E+/E-
Benthic biodiversity	E-	Ø	E+	E+	E+	E+/E-
Habitat complexity	E-	Ø	E+	E+	E+	E+/E-
Target Species						
Fishing mortality	Ø	Ø	Ø	Ø	Ø	Ø
Spatial/temporal concentration of catch	E+	Ø	E-	E-	E-	E-
Productivity	E-	Ø	E+	E+	E+	E+/E-
Prey availability	E-	Ø	E+	E+	E+	E+/E-
Growth to maturity	E-	Ø	E+	E+	E+	E+/E-
Economic and Socioeconomic Aspects of Federally Managed Fisheries						
Passive use	E-	Ø	E+	E+	E+	E+/E-
Gross revenue	U	Ø	U	U	U	U
Operating costs	E+/E-	Ø	E-	E-	E-	E-
Costs to consumers	U	Ø	U	U	U	U
Safety	Ø	Ø	Ø	Ø	Ø	Ø
Socioeconomic effects on fishing communities	E+/E-	Ø	E-	E-	E-	E-
Effects on regulatory and enforcement programs	E+	Ø	E-	E-	E-	E-
Other Fisheries and Fishery Resources						
Halibut, state-managed groundfish, state-managed crab, herring, salmon, forage fish, and other species	E-	Ø	E+	E+	E+	E+
Protected Resources						
ESA-listed salmon, marine mammals, and seabirds; other marine mammals; and other seabirds	E-	Ø	E+	E+	E+	E+
Ecosystems and Biodiversity						
Predator-prey relationships	U	Ø	U	U	U	U
Energy flow and balance	Ø	Ø	Ø	Ø	Ø	Ø
Biodiversity	Ø	Ø	Ø	Ø	Ø	Ø
Non-fishing Activities						
Costs to federal and state agencies	E+	Ø	E-	E-	E-	E+/E-
Costs to non-fishing industries or other proponents of affected activities	E+	Ø	E-	E-	E-	E+/E-

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table ES-3. Comparison of EFH Description Alternatives

Summary Factor	Alternative 1: No Action (no EFH description)	Alternative 2: Status Quo/ General Distribution	Alternative 3: Revised General Distribution	Alternative 4: Presumed Known Concentration	Alternative 5: Ecoregion Strategy	Alternative 6: EEZ Only
Relative size of EFH areas	No EFH descriptions at all.	Existing EFH relatively broad.	Somewhat smaller EFH for many species, representing the areas that comprise approximately 95% of the population.	Smaller EFH for most species, representing the areas that comprise approximately 75% of the population.	Broadest EFH of all the alternatives.	Smallest EFH description of all the alternatives.
Consistency with the Magnuson-Stevens Act and the EFH regulations (50 CFR 600.815(a)(1))	Not consistent; fails to describe and identify EFH.	Not consistent; relatively broad and risk averse approach, but does not use the most recent scientific information available.	Consistent; relatively broad and risk averse approach; includes more recent information than Alternative 2.	Consistent; narrower approach that more rigorously distinguishes habitat areas with the highest relative abundance of managed species.	Consistent; describes EFH based on assemblages of species that use similar habitat complexes.	Not consistent; fails to describe EFH in nearshore waters and rivers that are necessary for critical life stages of managed species.
Overall efficacy and relative merits	Not responsive to statutory and regulatory requirements.	Retains existing EFH; no change from the status quo.	Very similar to Alternative 2; applies more recent information and better mapping, resulting in geographically smaller EFH descriptions for some species; any actions to conserve EFH could focus on these smaller areas.	Similar to Alternatives 2 and 3 but uses a narrower interpretation of the available scientific information, resulting in smaller EFH for many species; any actions to conserve EFH could focus on these smaller areas.	Similar to the effects of Alternatives 2, 3, and 4, but uses a very different approach and results in broader EFH, making it harder to distinguish EFH from all potential habitats.	Identical to Alternative 3 for offshore waters; fails to describe EFH in nearshore waters and rivers, so not responsive to statutory and regulatory requirements.

Table ES-4. Comparative Summary of Effects for HAPC Identification Alternatives

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Habitat Prey species Benthic biodiversity Habitat complexity	E-	Ø	E+	E+	E+
Target Species Fishing mortality Spatial/temporal concentration of catch Productivity Prey availability Growth to maturity	E-	Ø	E+	E+	E+
Economic and Socioeconomic Aspects of Federally Managed Fisheries Passive use Gross revenue Operating costs Costs to consumers Safety Socioeconomic effects on fishing communities Effects on regulatory and enforcement programs	E+/E-	Ø	E+/E-	E+/E-	E+/E-
Other Fisheries and Fishery Resources Halibut, state-managed groundfish, state-managed crab, herring, salmon, forage fish, and other species	E-	Ø	E+	E+	E+
Protected Resources ESA-listed salmon, marine mammals, and seabirds; other marine mammals; and other seabirds	E-	Ø	E+	E+	E+
Ecosystems and Biodiversity Predator-prey relationships Energy flow and balance Biodiversity	E-	Ø	E+	E+	E+
Non-Fishing Activities Costs to federal and state agencies Costs to non-fishing industries or other proponents of affected activities	E+	Ø	E-	E-	E-

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table ES-5. Comparison of Alternative Approaches for Identifying HAPCs

Summary Factor	Alternative 1: No Action (no HAPC identified)	Alternative 2: Status Quo HAPC Designations	Alternative 3: Site-based Concept	Alternative 4: Type/Site-based Concept	Alternative 5: Species Core Area
Relative size of HAPC	No HAPC identification at all.	Quite broad: living substrates in shallow waters, living substrates in deep waters, and freshwater areas that support anadromous salmon.	Size depends upon future Council action.	Size depends upon future Council action.	Size depends upon future Council action.
Consistency with the EFH regulations (50 CFR 600.815(a)(8))	Consistent; does not lead to HAPC identification, but HAPCs are not a required component of FMPs.	Consistent; regulations allow identification of specific types of habitat within EFH as HAPCs.	Consistent; regulations allow identification of specific areas of habitat within EFH as HAPCs.	Consistent; regulations allow identification of specific areas of habitat within EFH as HAPCs.	Consistent; regulations allow identification of specific areas of habitat within EFH as HAPCs.
Overall efficacy and relative merits	Fails to take advantage of a tool available to the Council to highlight particularly valuable and/or vulnerable habitats within EFH.	Retains existing approach to HAPC identification; however, the broad and general nature of the existing HAPCs may limit their efficacy.	Limits approach to HAPC identification to specific sites, rather than permitting HAPC designations for general types of habitat wherever they may be found; could be more effective than Alternative 2 by virtue of being more focused.	May offer more potential benefits for target species than the other alternatives because the stepwise process of selecting habitat types and then specific sites could yield a more rational and structured effort to ensure that HAPCs focus on the habitats within EFH that are most valuable and/or vulnerable.	Limits HAPC identification to specific sites supporting habitat functions for individual target species; has the potential to benefit target species more directly than the other alternatives, although the paucity of scientific information about habitat requirements of individual species could limit the effectiveness of this approach.

Table ES-6. Comparative Summary of Alternatives to Minimize the Adverse Effects of Fishing on EFH

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Habitat							
Prey species	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Benthic biodiversity	Ø	Ø	E+	E+	E+	E+	E+
Habitat complexity	Ø	Ø	E+	Ø	E+	E+	E+
Target Species							
Groundfish	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U
Salmon	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Crabs	Ø	Ø	Ø	Ø/E+	Ø/E+	Ø/E+	Ø/E-/E+
Scallops	Ø/U	Ø	Ø	Ø	Ø	Ø	Ø/E-
Economic and Socioeconomic Aspects of Federally Managed Fisheries							
Passive use	Ø	E+	E+	E+	E+	E+	E+
Gross revenue	Ø	Ø	E-	E-	E-	E-	E-
Operating costs	Ø	E-	E-	E-	E-	E-	E-
Cost to consumers	Ø	E-	E-	E-	E-	E-	E-
Safety	Ø	E-	E-	E-	Ø	E-	E-
Related fisheries	Ø	Ø	E-	Ø	E-	E-	E-
Shoreside industries	Ø	Ø	Ø	Ø	Ø	Ø/E-	E-
Communities	Ø	Ø	Ø	Ø	Ø/E-	Ø/E-	E-
Management and enforcement	Ø	E-	E-	E-	E-	E-	E-
Other Fisheries							
State-managed groundfish	Ø	Ø	Ø	Ø	Ø	Ø	E-
State-managed crab	Ø	Ø	E+	Ø	Ø/ E+	Ø/ E+	E-
Herring	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Halibut	Ø	Ø	Ø	Ø	Ø	Ø	E-
Protected Species							
ESA-listed mammals	Ø	Ø	Ø	Ø	Ø	E-	Ø/E-/U
Other mammals	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ESA-listed salmon	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ESA-listed seabirds	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Other seabirds	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Ecosystems							
Predator-prey relationships	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Energy flow and balance	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Diversity	Ø	Ø	E+	E+	E+	E+	E+

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table ES-7. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Habitat	No substantial adverse effects are anticipated. Fishing activities do not affect EFH in a manner that is more than minimal and temporary in nature.	Small area closures to rockfish bottom trawls on GOA slope would have no substantial effects on habitat.	Closure of GOA slope to rockfish bottom trawling would have positive effects on epibenthic structures and coral on GOA slope.	Bottom trawl closures would have positive effects on protection of coral in the AI area. Gear modifications may have a positive effect on epibenthic structures in BS. Small area closures on GOA slope to rockfish bottom trawl fishing would have no substantial effects on habitat.	Bottom trawl closures would have positive effects on epibenthic structure and coral in GOA; substantially improved protection of coral in the AI would occur. Gear modifications may have a positive effect on epibenthic structures in BS.	Same effects as Alternative 5A in GOA and BS would occur. The substantially larger closures in AI would provide more protection of coral and epibenthic structures.	Closures to bottom tending gear would have moderately positive effects on epibenthic structures in all areas and positive effects on the protection of coral on the AI and GOA slope areas.
Target Species	Uncertain, but no substantial effects are anticipated.	Uncertain, but no substantial effects are anticipated.	Uncertain, but no substantial effects are anticipated.	Uncertain, but no substantial effects are anticipated. Bering Sea closures may benefit growth of snow crabs.	Same effects as Alternative 4 would occur.	Same effects as Alternative 4 would occur.	For most species, no substantial effects are anticipated. Negative effects are anticipated for scallops and some crabs.

Table ES-7. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH (continued)

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Economic and Socioeconomic Aspects of Federally Managed Fisheries	No substantial effects are anticipated.	Gross revenue at risk is < $ 1 million. Slight increases in costs (operating, consumer, management, enforcement) expected. No effects on communities are expected.	Gross revenue at risk is $ 2.6 million. More increases in costs and reduction in safety are expected. No effects on communities are expected.	Gross revenue at risk is $ 3.5 million. Even more increases in costs and reduction in safety are expected. No effects on communities are expected.	Gross revenue at risk is $ 7.9 million. Even more increases in costs and reduction in safety are expected. Negative effects on western GOA communities are expected.	Gross revenue loss of $15.2 million would occur due to AI TAC reduction, in addition to $ 7.9 revenue at risk in GOA and BS. Even more increases in costs and reduction in safety would be expected. In particular, monitoring and enforcement costs would greatly increase. Negative effects on Western GOA communities are expected.	Gross revenue at risk is $236 million. Increases in costs and a reduction in safety of smaller fixed-gear vessels are expected. Negative effects on Alaska coastal communities dependent on fishing are expected.
Other Fisheries	No substantial effects are anticipated.	Some slight positive effects to GOA deepwater Tanner crabs and golden king crabs are expected.	Same as Alternative 2, but slightly more benefits are expected.	Same as Alternative 2.	Same as Alternative 3.	Same as Alternative 3.	Would reduce revenue of halibut and state groundfish and crab fisheries.

Table ES-7. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH (continued)

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Protected Species	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	Steller sea lion foraging success in AI may be impacted by spatial and temporal concentrations of fishing effort in nearshore areas.	Steller sea lion foraging success in AI may be impacted by spatial and temporal concentrations of fishing effort in nearshore areas.
Ecosystems	No substantial effects are anticipated.	No substantial effects are anticipated.	Trawl closure areas may have a positive effect on diversity in GOA.	Positive effects on diversity are expected in GOA, BS, and AI areas.	Alternative 5A would have slightly more benefits to diversity than Alternative 4 due to larger closure areas.	Similar to Alternative 5A, but slightly more benefits would occur in the AI area.	Closures to bottom tending gear would have positive effects in GOA, BS, and AI areas.

Table ES-8. Synopsis of Habitat Benefits and Economic Costs of Alternatives to Minimize the Adverse Effects of Fishing on EFH

	Percentage of Fishable Waters Closed[1] (in addition to existing closures)			Relative Sensitivity of Protected Habitats (Based on LEI Scores)					Annual Revenue At Risk (in millions)					
Alt.	GOA	BS	AI	GOA	BS	AI	Other Habitat Measures[2]	TOTAL ADDED BENEFITS[3]	GOA Ground-fish	BSAI Ground-fish	Crab	Scallop	Halibut	TOTAL COSTS[4]
1	0%	0%	0%	–	–	–	–	–	$0	$0	$0	$0	$0	$0
2	3.6%	0%	0%	High	–	–	–	very low	$1	$0	$0	$0	$0	$1
3	10.4%	0%	0%	High	–	–	–	low	$2.7	$0	$0	$0	$0	$2.7
4	3.6%	6.0%	19.7%	High	Low	High	gear	medium	$0.9	$2.6	$0	$0	$0	$3.5
5A	11.4%	8.0%	30.6%	High	Low	High	gear	med/high	$3.6	$4.3	$0	$0	$0	$7.9
5B	11.4%	8.0%	77.9%	High	Low	High	gear TAC bycatch	highest	$3.6	$19.5	$0	$0	$0	$23.1
6	17.4%	17.0%	19.7%	L/M/H[5]	L/M/H	L/M/H	–	medium	$163.8	[6]	$34.1	$1	$38.3	$237.2

NOTES:

1. Fishable waters are defined as those waters < 1000 m within the historic effort distribution. Closures are for bottom trawling, except for Alternative 6, which closes areas to all bottom tending gear (dredges, bottom trawls, pelagic trawls that contact the bottom, longlines, dinglebars, and pots).
2. In addition to closure areas, Alternatives 4, 5A, and 5B include restrictions on configuration of bottom trawl sweeps and footropes. Alternative 5B also includes TAC reductions for AI mackerel, cod, and rockfish, as well as bycatch limits for bryozoans/corals and sponges.
3. Alternatives were ranked relative to the status quo and the alternative with the highest benefits to EFH.
4. Total costs (direct loss and at-risk loss to gross revenue) reflect the long- and short-term costs to assist in assessing practicability, but do not include any long-term benefits of increased catches that might be attributable to habitat protection, because sufficient information does not exist to estimate any such benefits.
5. L/M/H: L = low, M = medium, H = high
6. BSAI groundfish revenue at risk included with GOA

Table ES-9. Total Area Closed on a Year-round Basis, by Gear Type and Depth, for the Alternatives and Pre-Status Quo Baseline

Measures	Baseline	Alternative 1 Status Quo	Alternative 2 GOA Slope Trawl Closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5 Extended Bottom Trawl Closures	Alternative 5B Prohibit Trawling in AI Coral/Sponge Areas	Alternative 6 Closures to All Bottom Tending Gear
Area closed to bottom trawling year-round:								
Shelf & upper slope (<1,000m)								
Bering Sea	0nm²	30,000nm² (12.9 %)	30,000nm² (12.9 %)	30,000nm² (12.9 %)	63,014nm² (27.1%)	67,677nm² (29.1 %)	67,677nm² (29.1%)	55,610nm² (23.9 %)
Aleutian Islands	0nm²	16,349nm² (53.4 %)	16,349nm² (53.4 %)	16,349nm² (53.4 %)	23,012nm² (75.1 %)	25,735nm² (84.0 %)	30,133nm² (98.3 %)	19,391nm² (65.6 %)
Gulf of Alaska	0nm²	15,929nm² (19.5 %)	18,907nm² (23.1%)	24,390nm² (29.8 %)	18,907nm² (23.1 %)	25,219nm² (30.8 %)	25,219nm² (30.8 %)	23,087nm² (28.2 %)
Lower slope & basin (>1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	57,835nm² (94.6%)	58,047nm² (95.0%)	58,047nm² (95.0%)	2,951nm² (4.8%)
Aleutian Islands	0nm²	1,037nm² (0 %)	1,037nm² (0 %)	1,037nm² (0 %)	21,531nm² (8.2%)	80,692nm² (30.8%)	260,141nm² (99.4%)	17,841nm² (6.8%)
Gulf of Alaska	0nm²	40,674nm² (4.2 %)	41,126nm² (4.2 %)	71,388nm² (7.4 %)	41,126nm² (4.2%)	72,643nm² (7.5 %)	72,643nm² (7.5 %)	0nm² (0 %)
TOTAL	0nm²	103,989nm² (6.4%)	91,490nm² (5.6 %)	127,235nm² (7.8 %)	226,432nm² (13.8%)	331,020nm² (20.2%)	513,783nm² (31.4%)	118,850nm² (7.3%)
Area closed to all bottom tending gear:								
Shelf & upper slope (<1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	39,610nm² (17.0%)
Aleutian Islands	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	6,036nm² (19.7 %)
Gulf of Alaska	0nm²	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	18,052nm² (22.0%)
Lower slope & basin (>1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	2,951nm² (4.8%)
Aleutian Islands	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	16,774nm² (6.4 %)
Gulf of Alaska	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)
TOTAL	0nm²	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	83,423nm² (5.1 %)

NOTES: Total area within regions and depth zones is as follows. For areas < 1,000 m: Bering Sea = 232,616nm², Aleutian Islands = 30,654nm², GOA = 91,914nm²; for areas > 1,000 m: Bering Sea = 61,121nm², Aleutian Islands = 261,739nm², GOA = 969,010nm².

Closure areas are calculated based on the amount of area closed to directed fishing for at least one target species (e.g., some SSL closures in AI) year-round, as well as areas closed to all trawling on a year-round basis.

Figure ES-1. Areas Closed Year-round to Bottom Trawling

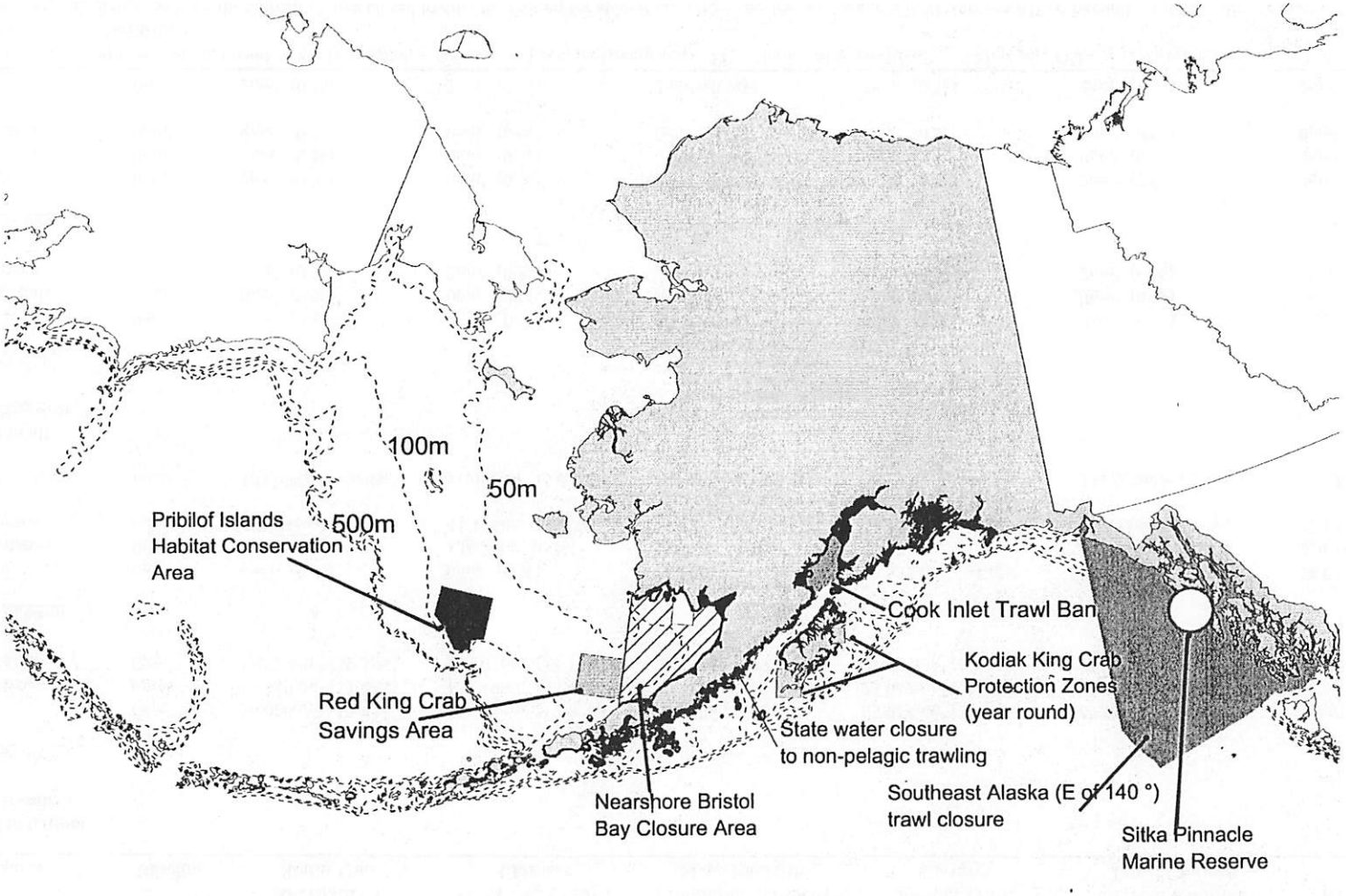


Figure ES-2. Alternative 2: Gulf Slope Bottom Trawl Closures

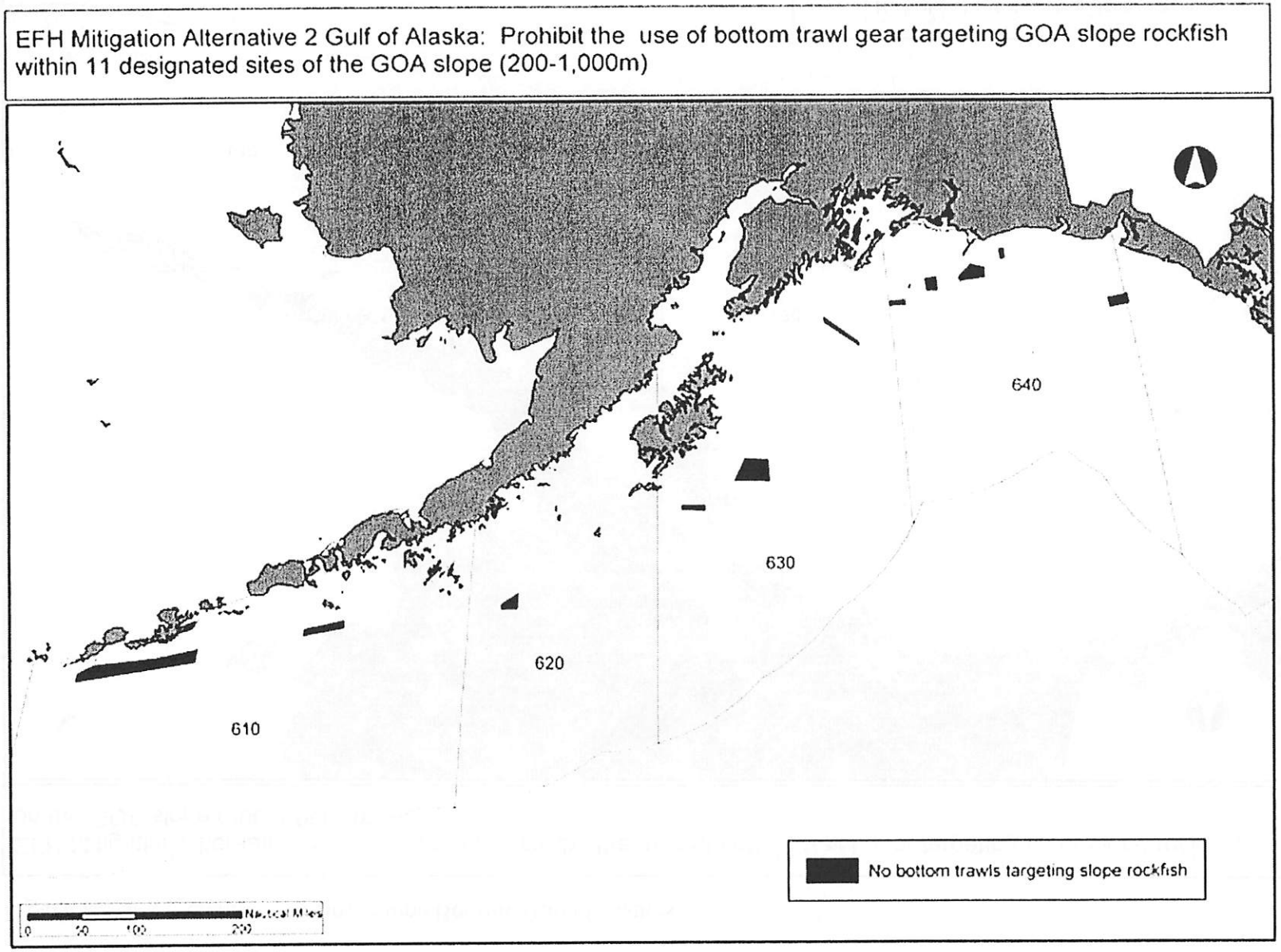


Figure ES-3. Alternative 3: Upper Slope Bottom Trawl Closures

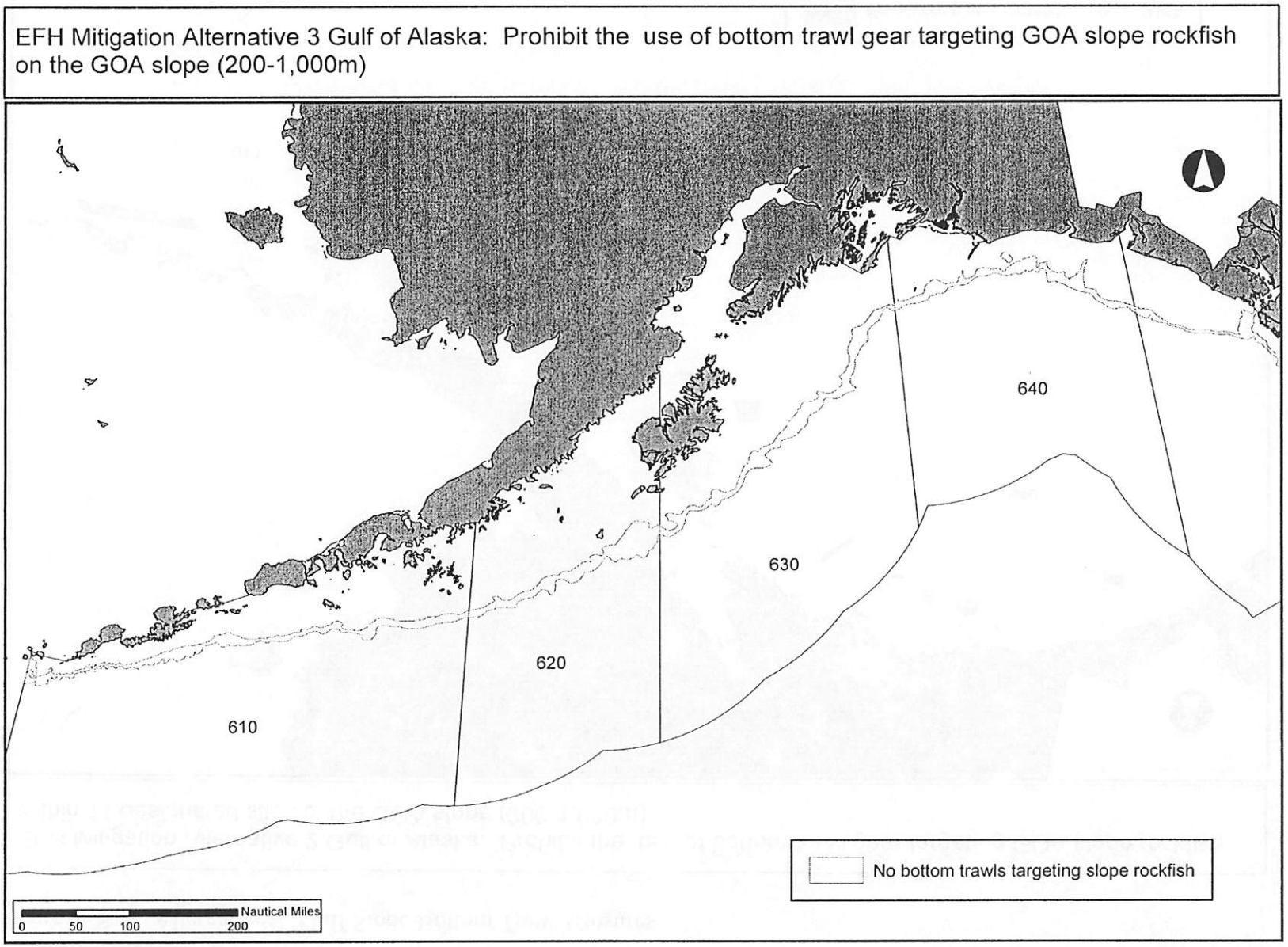


Figure ES-4. Alternative 4: Bering Sea Open/Closed Areas

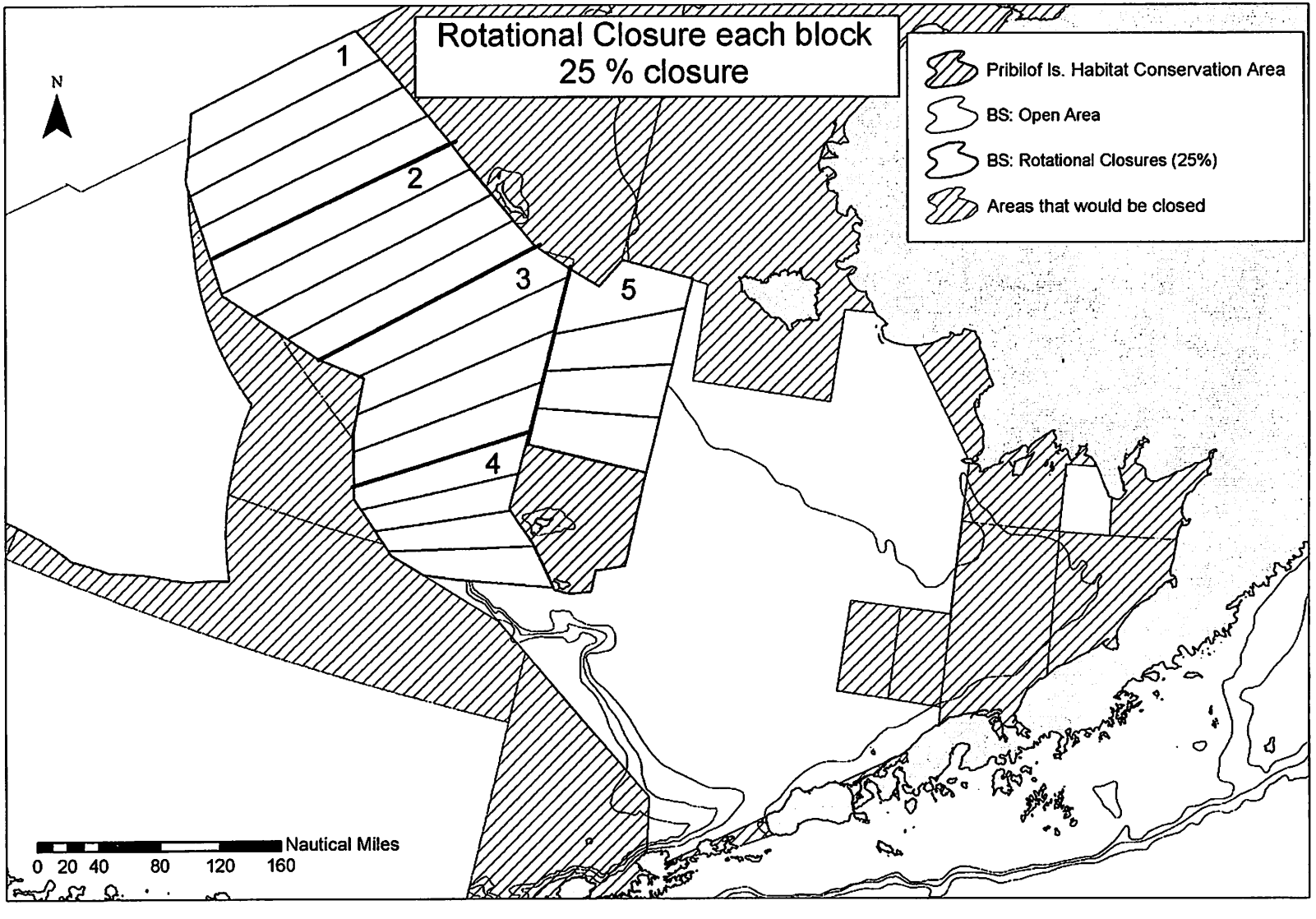


Figure ES-5. Alternative 4: Aleutian Islands Closure Areas

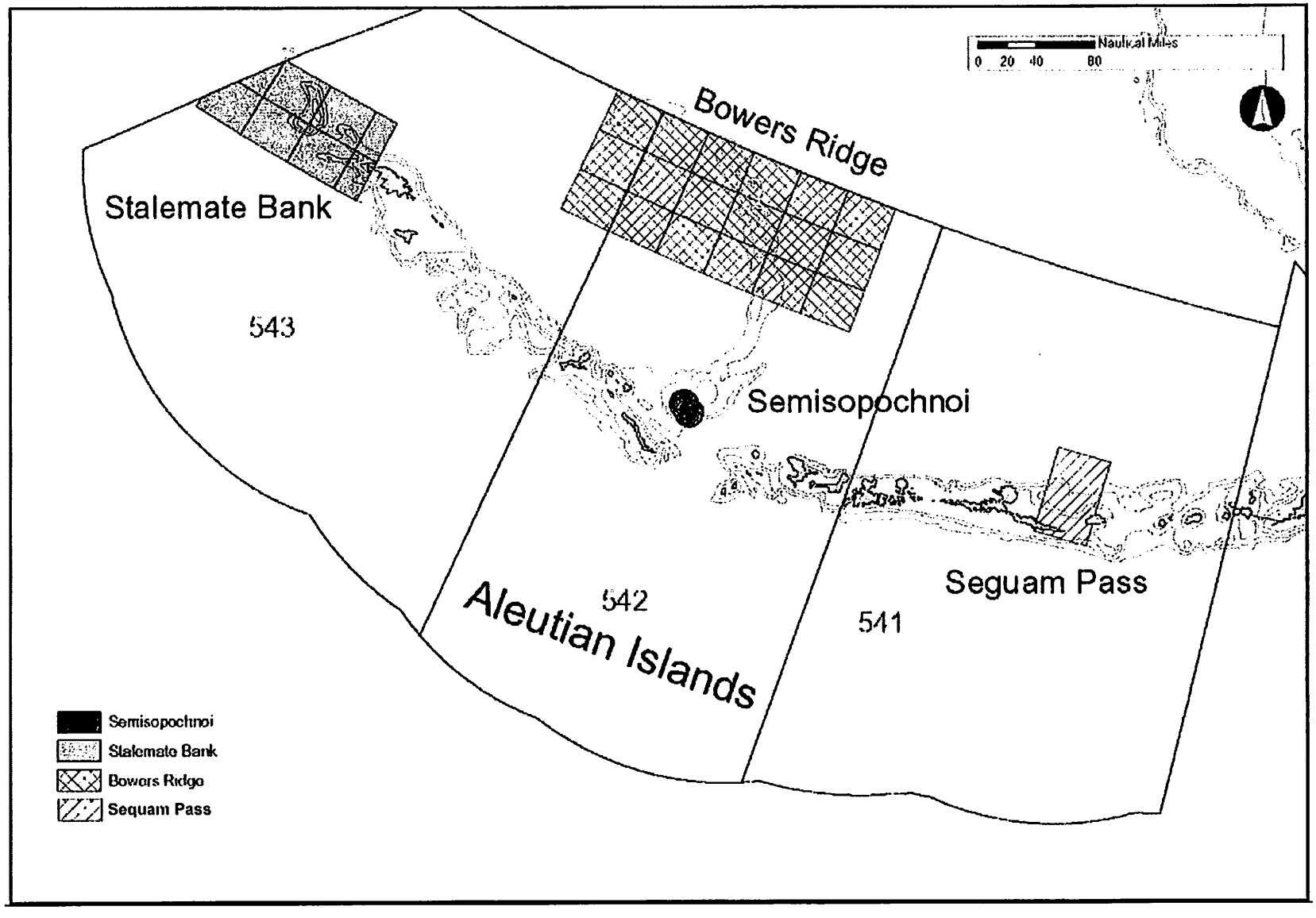


Figure ES-6. Alternative 4: GOA Closure Areas

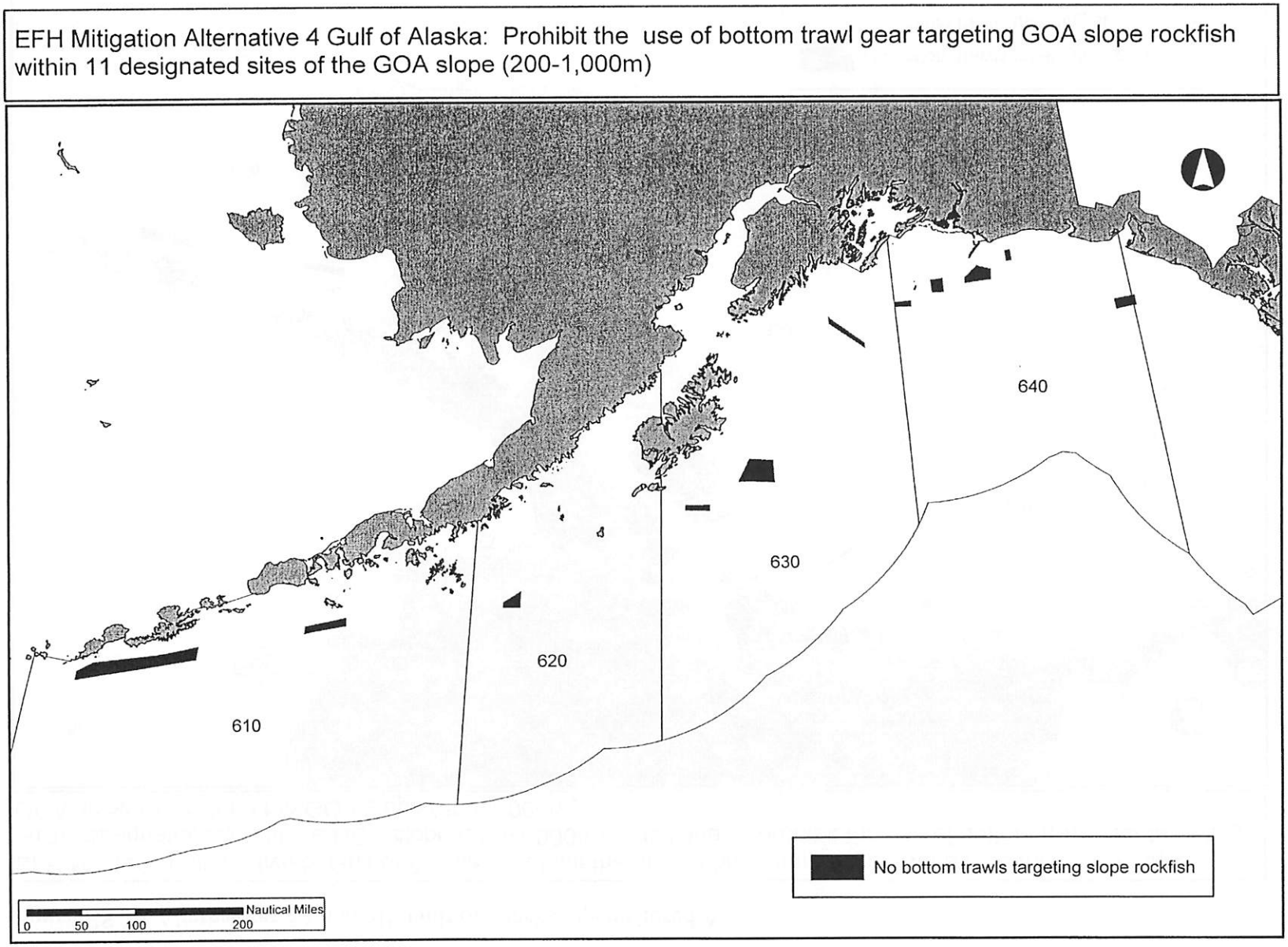


Figure ES-7. Alternatives 5A and 5B: Gulf of Alaska Open/Closed Areas

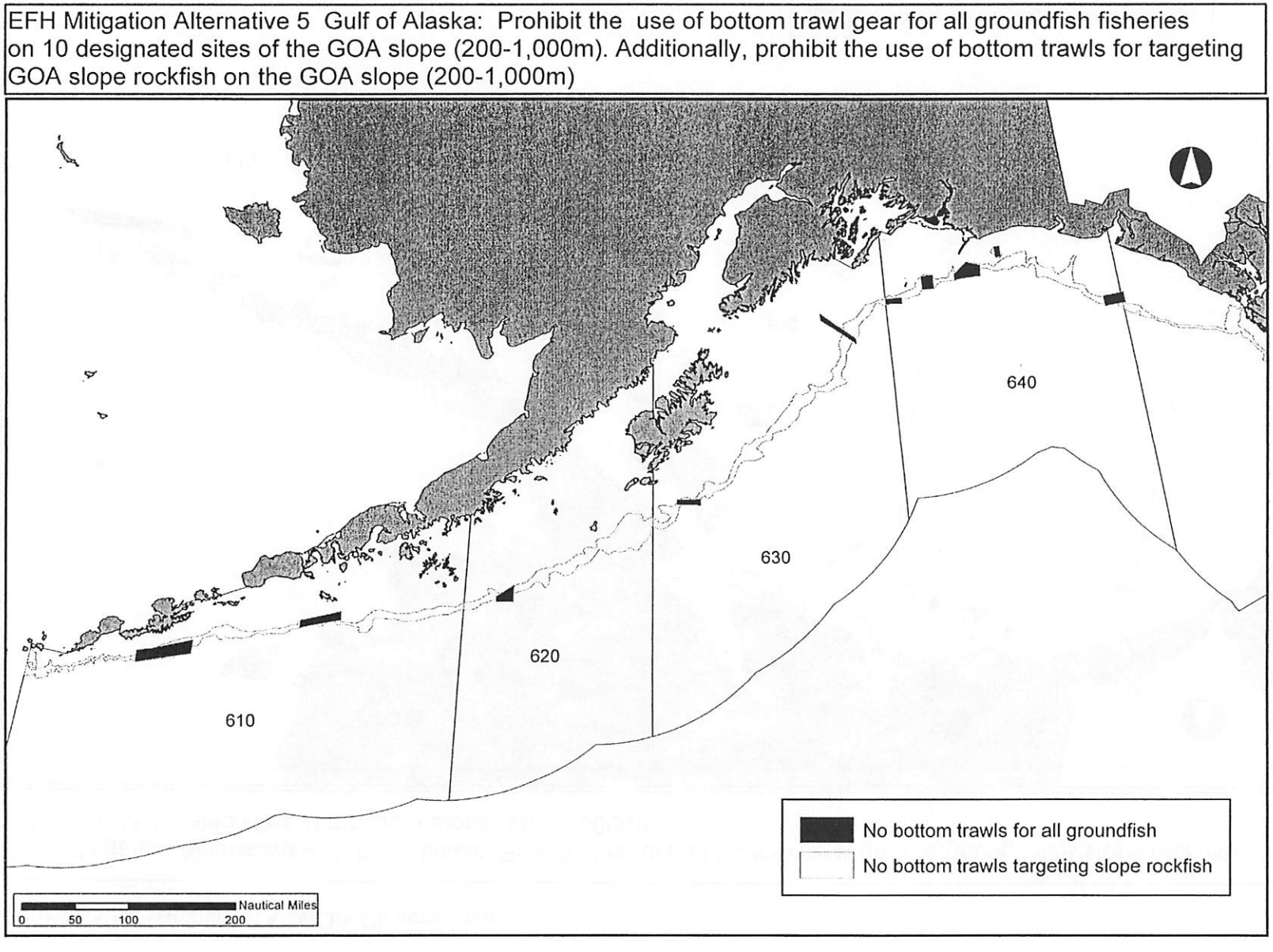


Figure ES-8. Alternative 5A: Aleutian Islands Closure Areas

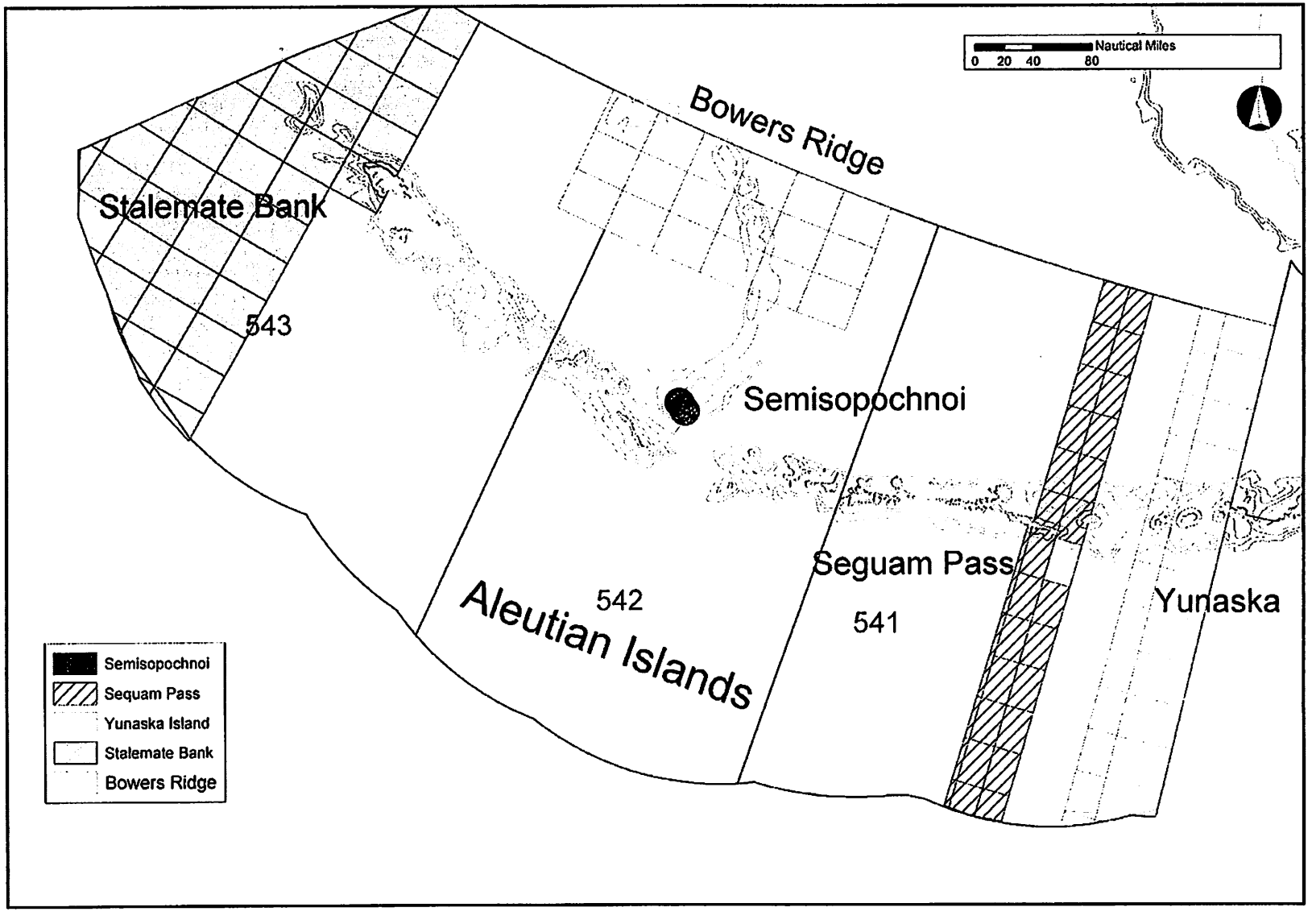


Figure ES-9. Alternatives 5A and 5B: GOA Closure Areas

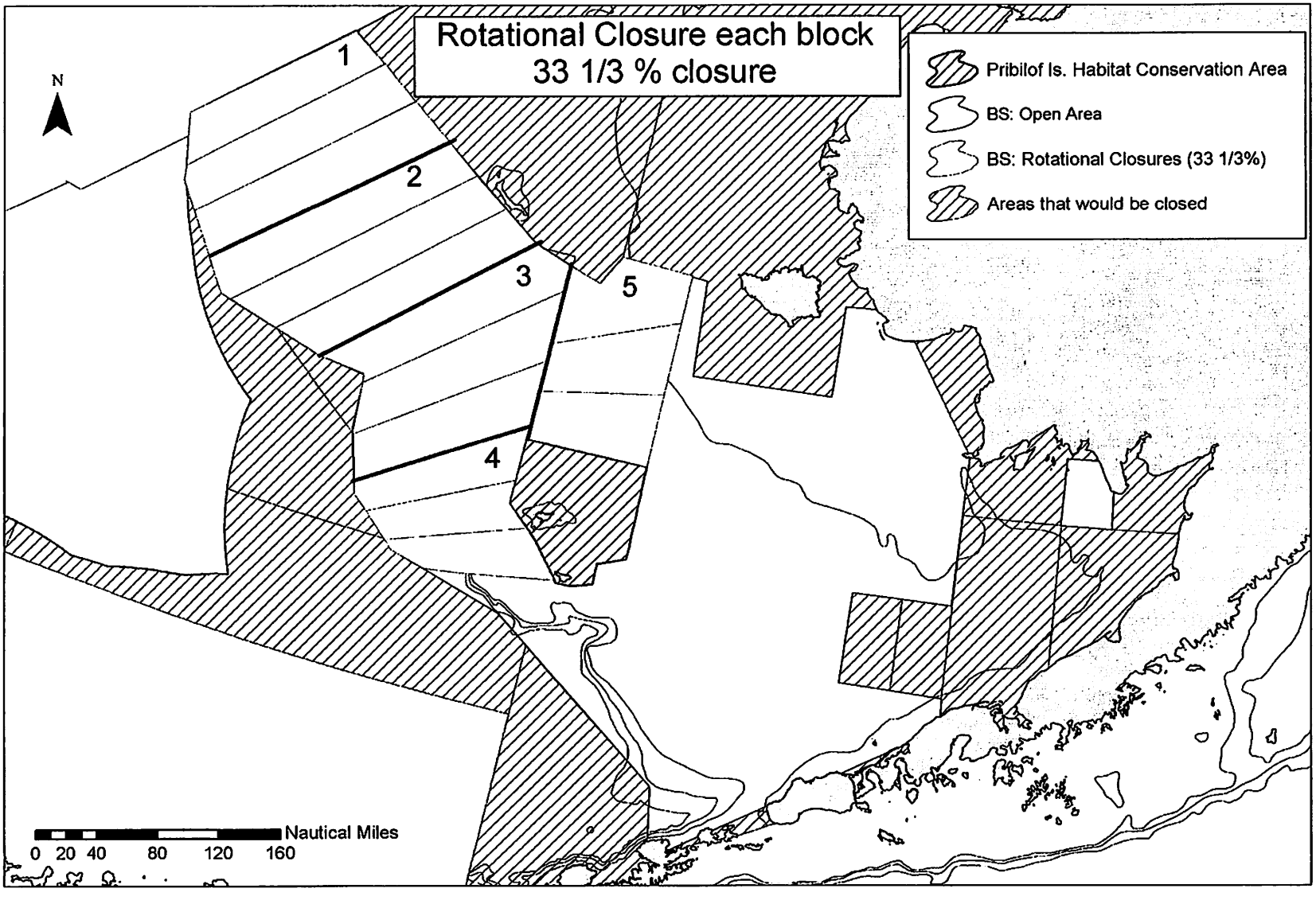


Figure ES-10. Alternative 5B: Aleutian Islands Open/Closed Areas

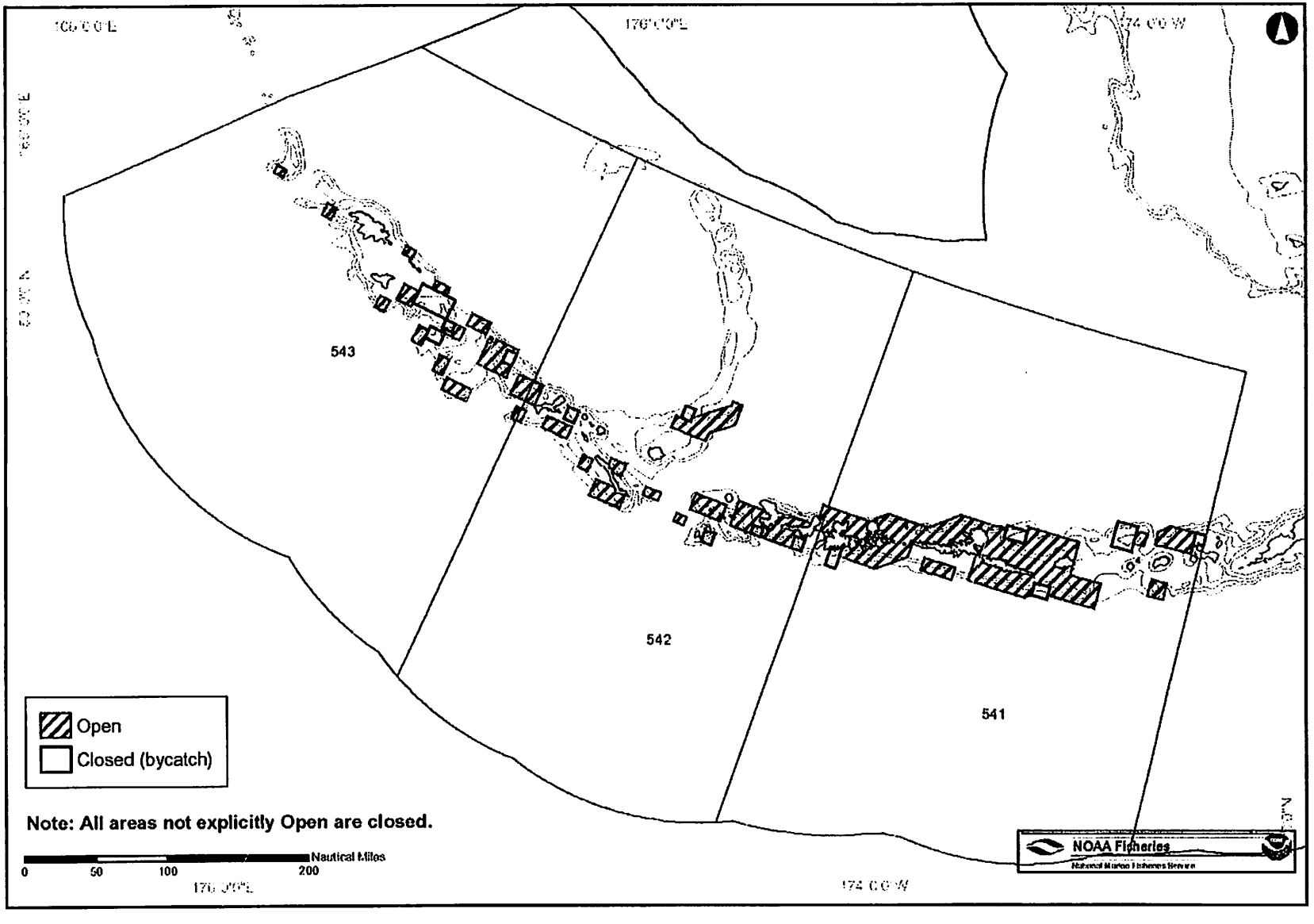


Figure ES-11. Alternative 6: Closure Areas (Gulf of Alaska)

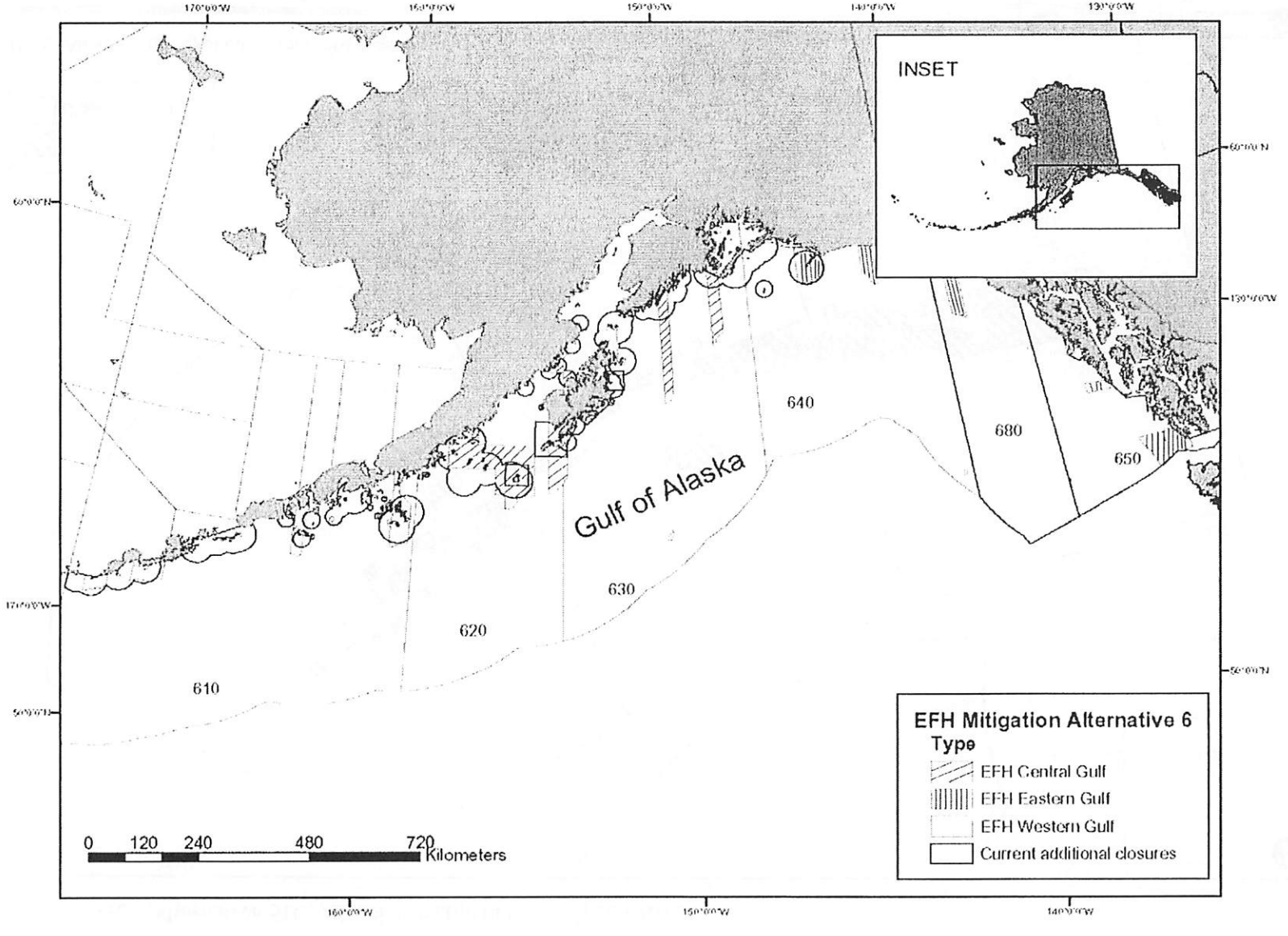


Figure ES-12. Alternative 6: Closure Areas (Aleutian Islands)

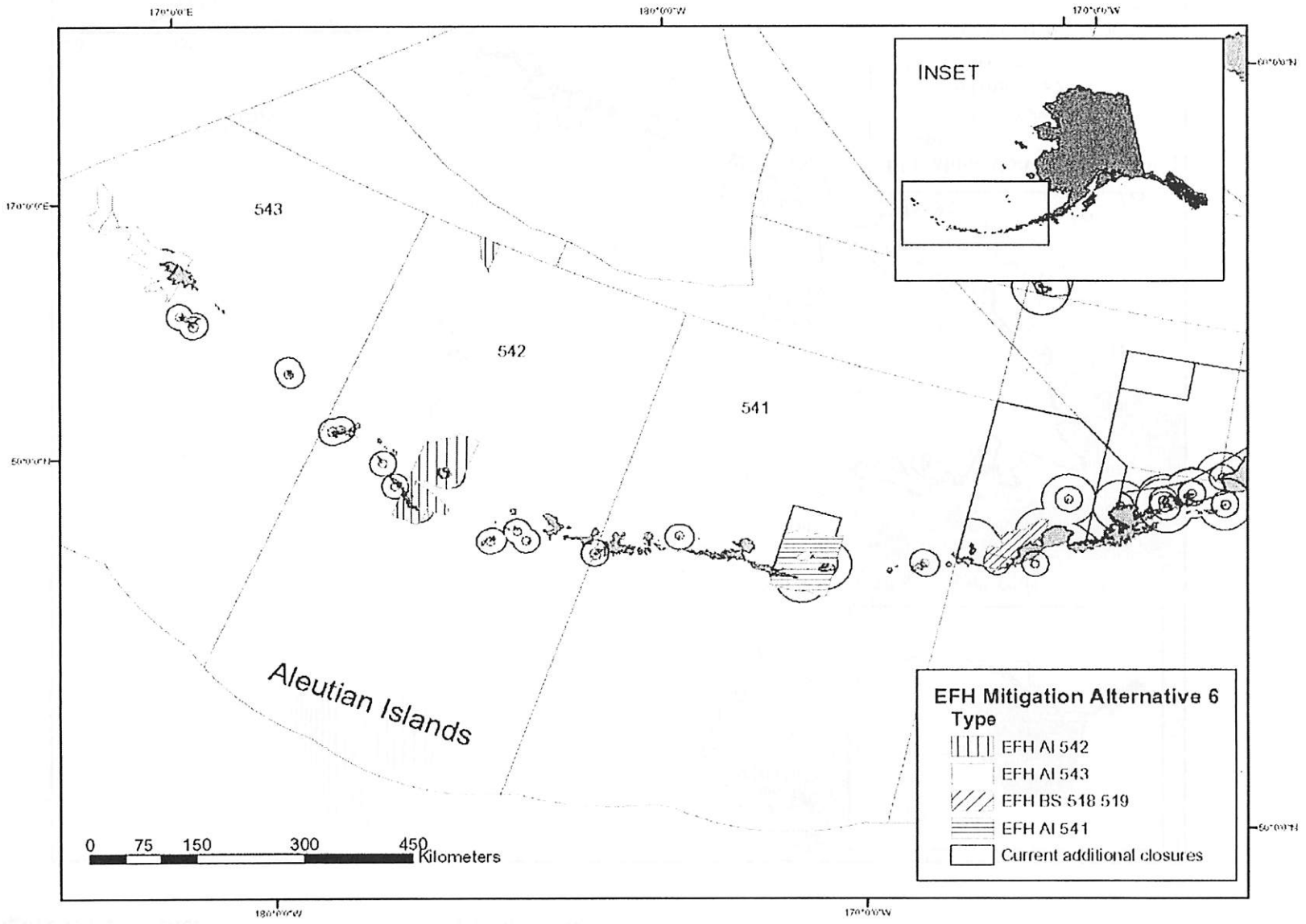
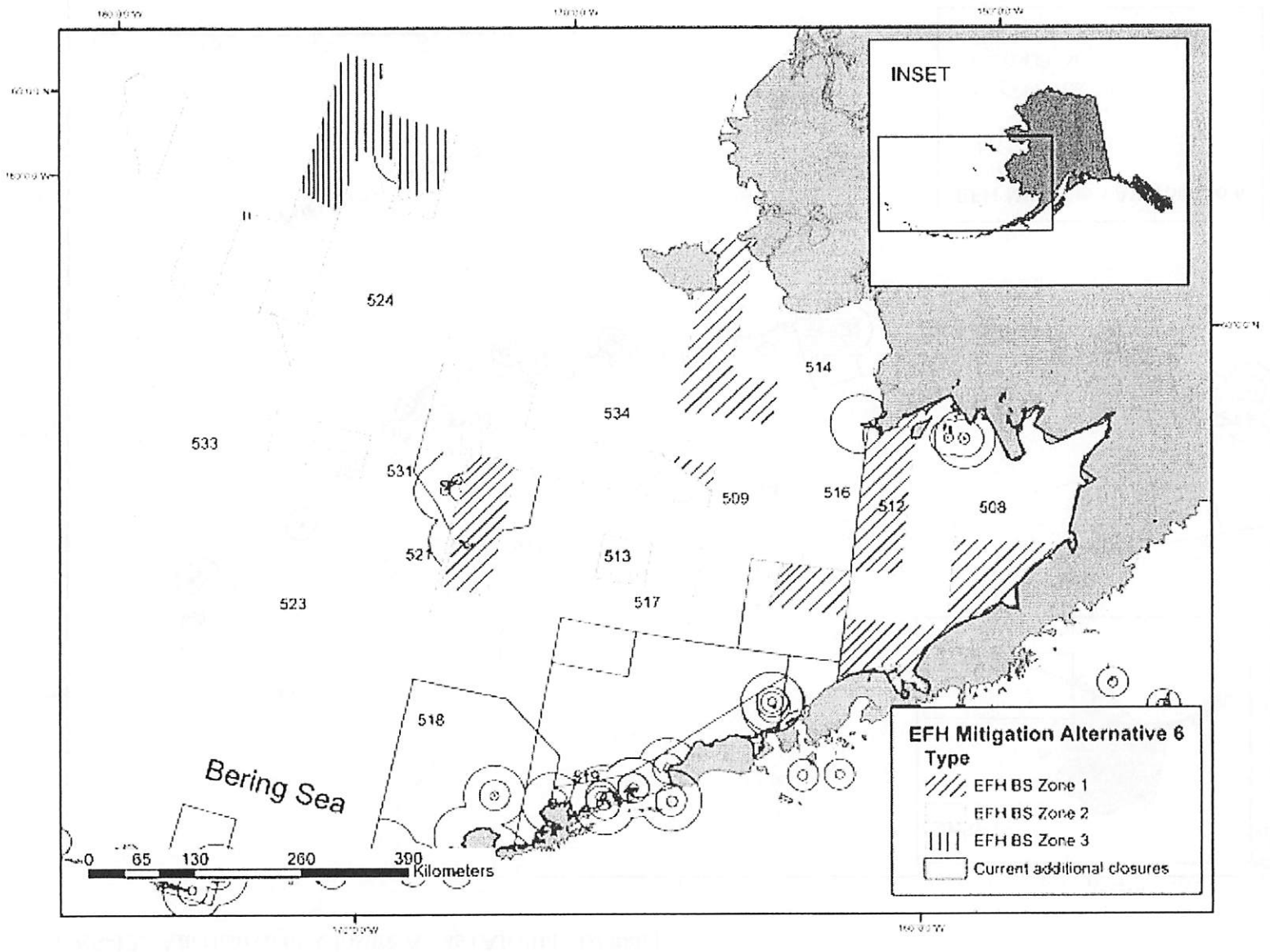


Figure ES-13. Alternative 6: Closure Areas (Bering Sea)



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

AGENDA C-3(b)
OCTOBER 2003

September 10, 2003

Dennis Austin, Interim Chair
North Pacific Fishery Management Council
605 West Fourth Avenue, Suite 306
Anchorage, Alaska 99501-2252

Dear Mr. Austin:

Enclosed is Appendix E to the Preliminary Draft Environmental Impact Statement (EIS) for Essential Fish Habitat (EFH) Identification and Conservation in Alaska. This appendix constitutes the National Marine Fisheries Service's written recommendations for the EFH provisions of the Council's fishery management plans, pursuant to section 305(b)(1)(B) of the Magnuson-Stevens Fishery Conservation and Management Act and 50 CFR 600.815(b). My staff and I will review these recommendations with the Council during the October meeting, and we look forward to working with the Council to select preferred alternatives for the EIS.

Sincerely,

For James W. Balsiger
Administrator, Alaska Region

Enclosure

National Marine Fisheries Service
Recommendations for the EFH Provisions of
North Pacific Fishery Management Council Fishery Management Plans
September 10, 2003

Section 305(b)(1)(B) of the Magnuson-Stevens Fishery Conservation and Act requires that "The Secretary, in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the identification of essential fish habitat, the adverse impacts on that habitat, and the actions that should be considered to ensure the conservation and enhancement of that habitat." The EFH regulations at 50 CFR 600.815(b) elaborate on this requirement as follows:

> Development of EFH recommendations for Councils. After reviewing the best available scientific information, as well as other appropriate information, and in consultation with the Councils, participants in the fishery, interstate commissions, Federal agencies, state agencies, and other interested parties, NMFS will develop written recommendations to assist each Council in the identification of EFH, adverse impacts to EFH, and actions that should be considered to ensure the conservation and enhancement of EFH for each FMP. NMFS will provide such recommendations for the initial incorporation of EFH information into an FMP and for any subsequent modification of the EFH components of an FMP. The NMFS EFH recommendations may be provided either before the Council's development of a draft EFH document or later as a review of a draft EFH document developed by a Council, as appropriate.

The North Pacific Fishery Management Council and the National Marine Fisheries Service (NMFS) are developing an Environmental Impact Statement (EIS) to consider potential modifications to the Essential Fish Habitat (EFH) provisions of the Council's five Fishery Management Plans (FMPs). NMFS has used a variety of means to provide recommendations and information to assist the Council with this EIS, such as providing biological information regarding the habitat requirements of managed species; developing spatial analyses of distribution data to facilitate the identification of EFH; developing a model used in the EIS to evaluate the effects of fishing on EFH; developing and/or assisting with all of the analyses in the EIS; participating on the Council's EFH Committee and providing staff support for the Committee's work; and providing technical and policy guidance to advise the Council on how best to fulfill the EFH requirements of the Magnuson-Stevens Act. This appendix to the EIS constitutes NMFS' written recommendations pursuant to 50 CFR 600.815(b).

Recommendations Regarding the Description and Identification of EFH

The EIS evaluates six alternatives for the description and identification of EFH. The alternatives are presented in Section 2.3.1, and their environmental consequences are evaluated in Section 4.1. As discussed in the comparative summary of the alternatives in Section 4.5.1, three of the alternatives would not comply with the requirements of Section 303(a)(7) of the Magnuson-Stevens Act and the EFH regulations at 50 CFR 600.815(a)(1)(iv). Alternatives 1 and 6 are not consistent with the Magnuson-Stevens Act or the EFH regulations because they would not describe and identify any habitats (Alternative 1) or all habitats (Alternative 6) necessary to managed species for spawning, breeding, feeding, or growth to maturity. Alternative 2 is not consistent with the Magnuson-Stevens Act or the EFH regulations because it does not reflect the best (most recent) scientific information available, as required by national standard 2 (16 U.S.C. 1851(a)(2)) and 50 CFR 600.815(a)(1)(ii)(B).

Alternatives 3 through 5 are consistent with the Magnuson-Stevens Act and the EFH regulations. As discussed in Section 4.5.1 of the EIS, those alternatives take different approaches that influence their overall efficacy. In summary, Alternative 3 applies the same approach used in the status quo (Alternative 2) EFH designations, which are relatively broad in scope and are premised on a risk averse approach, but Alternative 3 applies more recent information, improved analytical tools, and better mapping. Alternative 3 would result in geographically smaller EFH areas for some species. Alternative 4 uses a narrower interpretation of the available scientific information, and would result in smaller EFH areas for many species. Alternative 5 uses a very different, habitat-based, ecoregion approach that would result in broader EFH descriptions than the status quo Alternative 2, making it harder to distinguish EFH from all available habitats.

NMFS recommends that the Council endorse Alternative 4 for describing and identifying EFH. Experience implementing the EFH provisions of the Magnuson-Stevens Act using the existing EFH areas (the status quo Alternative 2) since 1999 suggests that there may be advantages to describing and identifying EFH more narrowly in cases where sufficient scientific information exists. Where Level 2 (relative abundance) information is available for adult and/or juvenile life stages, narrower EFH designations would highlight habitat areas that commonly support higher concentrations of the managed species. Such areas presumably represent higher relative habitat value compared to other habitats for the species. Describing and identifying these smaller areas as EFH for specific managed species would enable the Council, NMFS, other federal and state agencies, and fishing and non-fishing industries to focus on smaller areas for purposes of avoiding and minimizing adverse effects to the habitat. Smaller EFH areas – in cases where identifying EFH more narrowly is supported by the best available scientific information – would help to prioritize management efforts and could therefore be a more effective tool for habitat conservation than larger areas. Larger EFH areas arguably may be more risk averse, and that rationale was used by the Council in 1998 to support the existing EFH designations (Alternative 2). However, for some species (e.g., BSAI Pacific cod) sufficient information exists to identify concentration areas with a fairly high degree of confidence. Also, it is relevant to note that the total aggregated area of EFH descriptions for all managed species would be identical under Alternatives 2, 3, and 4 because data limitations for certain species (e.g., Coho salmon) would lead to equally broad EFH designations under any of those alternatives. In summary, Alternative 4 would identify EFH as the area of presumed known concentration for species for which sufficient information exists, and for the remaining species and life stages it would identify EFH according to the general distribution of the species as in Alternative 3.

Recommendations Regarding the Approaches for Identifying HAPCs

The EIS evaluates five alternative approaches for identifying HAPCs. The alternatives are presented in Section 2.3.2, and their environmental consequences are evaluated in Section 4.2. As discussed in the comparative summary of the alternatives in Section 4.5.2, all of the alternatives are consistent with the EFH regulations, which encourage (but do not require) identification of HAPCs and allow HAPCs to be identified as either areas or types of habitat within EFH.

Alternative 1 would rescind the existing HAPCs and provide for no new HAPCs, and thus would fail to take advantage of a tool available to the Council to highlight particularly valuable and/or vulnerable habitats within EFH. Alternative 2 would retain the status quo HAPCs, but the broad and general nature of the existing HAPC designations limits their efficacy as a tool for prioritizing discrete habitat areas. Alternative 3 would limit HAPCs to specific sites, rather than permitting HAPCs to be identified for general types of habitat wherever they may be found, and therefore could be more effective than Alternative 2 by virtue of being more focused. Alternative 4 may offer more potential benefits for target

species than the other alternatives because the stepwise process of selecting habitat types and then specific sites could yield a more rational and structured effort to ensure that HAPCs would focus on the habitats within EFH that are most valuable and/or vulnerable. Alternative 5 would limit the identification of HAPCs to specific sites supporting habitat functions for individual target species. It therefore has the potential to benefit target species more directly than the other alternatives, although the scarcity of scientific information about habitat requirements of individual species could limit the effectiveness of this approach.

NMFS recommends that the Council endorse Alternative 4 as the preferred approach for identifying HAPCs. As noted above, Alternative 4 has the advantage of encouraging specific site-based HAPCs that are more focused than the status quo HAPC designations, and it also provides a means for the Council to select habitat types of concern first as a way to prioritize the kinds of habitat for which site-specific HAPC designations should be considered. This approach would promote a structured analysis of candidate HAPCs, thereby encouraging the screening process to evaluate specific areas that meet characteristics defined by the Council as being especially important.

Alternative 4 would rescind the existing HAPC designations (living substrates in deep water, living substrates in shallow water, and freshwater areas used by anadromous salmon) and adopt a new type/site based approach for HAPCs. NMFS' support for this alternative should not be construed to imply that the existing HAPCs represent unimportant habitat types. On the contrary, the habitat types included in the existing HAPCs are extremely important for Council managed species. However, for management purposes, identifying habitat types of concern and then designating specific HAPC sites within those habitat types would yield a more effective tool for habitat conservation.

Recommendations Regarding Measures to Minimize the Effects of Fishing on EFH

The EIS analyzes seven alternatives to minimize to the extent practicable the adverse effects of fishing on EFH. Appendix B evaluates the effects of fishing on EFH in Alaska, and concludes that no Council-managed fishing activities have more than minimal and temporary effects on EFH for any FMP species. Additionally, the analysis concludes that all fishing activities combined have minimal, but not necessarily temporary, effects on EFH. However, Appendix B and Section 4.3 both note that considerable uncertainty remains regarding these conclusions. The fishing impacts model and its application in the EIS have many limitations. Both the developing state of this new model and the limited quality of available data to estimate input parameters prevent the analysis from drawing a complete picture of the effects of fishing on EFH. The model incorporates a number of assumptions about habitat effect rates, habitat recovery rates, habitat distribution, and habitat use by managed species. The quantitative outputs of the analysis may convey an impression of rigor and precision, but the results actually are subject to considerable uncertainty. Thus, while the available information does not identify adverse effects of fishing that are more than minimal and temporary in nature, that finding does not necessarily mean that no such effects exist.

NMFS recommends that the Council pursue three courses of action regarding the effects of fishing on EFH:

1. The Council should continue to analyze carefully the effects of its management actions on sea floor habitats. NMFS remains committed to assisting the Council with such analyses.

2. The Council should continue to support research funded by NMFS, the North Pacific Research

Board, and other entities to improve scientific understanding of the effects of fishing on habitat, the linkages between habitats and managed species, and the recovery rates of sea floor habitats following disturbance by fishing gear.

3. The Council should take specific precautionary management actions to avoid additional disturbance to fragile sea floor habitats that may be especially slow to recover – most notably deep water coral communities.

Although NMFS is not recommending any particular measures at this time, two avenues are especially promising. First, as noted in Section 4.5.3, precautionary actions to prohibit bottom-contact trawling (bottom trawling as well as pelagic trawling that contacts the bottom) in the lower slope/basin areas deeper than 1000 m would protect such habitats from reasonably foreseeable future impacts with almost no short-term costs. The Council could either endorse one of the EIS alternatives that includes such areas, or identify specific lower slope/basin area closures to be analyzed separately from other measures in a distinct new alternative, and then endorse that alternative at the December 2003 Council meeting.

Secondly, the Council could use its forthcoming HAPC process as a means to identify and protect corals and other especially fragile habitats that recover slowly following disturbance. The HAPC process described in Appendix J includes a step for the Council to establish priorities for the kinds of HAPCs it will consider. Choosing corals and other similarly sensitive and slow-growing biogenic habitats as the highest priority would set a course toward additional protection of such habitats in the near future, while affording all stakeholders ample opportunity for involvement in the identification of such areas and the development of appropriate management measures.

Recommendations Regarding Other Actions to Conserve and Enhance EFH

One of the requirements of Section 303(a)(7) of the Magnuson-Stevens Act is for FMPs to identify "other actions to encourage the conservation and enhancement of" EFH. This requirement refers to actions other that those necessary to minimize to the extent practicable the adverse effects of fishing on EFH. The EFH regulations require that FMPs identify activities other than fishing that may adversely affect EFH and recommend options to avoid, minimize, or offset adverse effects.

Appendix G of the EIS discusses threats to EFH from activities other than fishing, and provides recommendations for conducting such activities in a manner to promote the conservation and enhancement of EFH. Appendix G discusses a wide variety of activities, such as mining, forestry, agriculture, oil and gas development, dredging, and filling wetlands. The recommendations presented in Appendix G are advisory, and are not binding upon entities involved in non-fishing activities. NMFS recommends that the Council endorse the Appendix G recommendations.

Appendix J
Proposed HAPC Identification Process

Prepared by

North Pacific Fishery Management Council
and
Tetra Tech FW

August 2003

CONTENTS

TABLES

ACRONYMS AND ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
AP	Advisory Panel
Council	North Pacific Fishery Management Council
EFH	essential fish habitat
EIS	environmental impact statement
FMP	Fishery Management Plan
HAPCs	habitat areas of particular concern
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
SSC	Scientific and Statistical Committee

J.1 Introduction

The habitat area of particular concern (HAPC) identification process consists of establishing HAPC criteria and priorities, issuing a call for proposals, using a proposal screening process, conducting scientific review, and initiating a public review process. Before this process can be implemented, the North Pacific Fishery Management Council (Council) will have to decide on options for (1) HAPC criteria, (2) priorities, and (3) a stakeholder process.

In June 1998, the Council identified several habitat types as HAPCs within essential fish habitat (EFH) amendments 55/55/8/5/5. Habitat types, rather than specific areas, were identified as HAPCs because little information was available regarding specific habitat locations. These HAPC types included the following:

1. Areas with living substrates in shallow waters (e.g., eelgrass, kelp, mussel beds)
2. Areas with living substrates in deep waters (e.g., sponges, coral, anemones)
3. Freshwater areas used by anadromous fish (e.g., migration, spawning, and rearing areas)

The history of North Pacific Council HAPC designations is provided in Chapter 2 of the EFH environmental impact statement (EIS).

In April 2001, the Council formed the EFH Committee to facilitate industry, conservation community, Council, and general public input into the EFH EIS process. The committee worked cooperatively with Council staff and the National Marine Fisheries Service (NMFS) to identify alternative HAPC criteria, as well as approaches that could be used to designate and manage HAPC areas. The Committee aided in formulating the HAPC designation alternatives referred to in Chapter 2 and developed recommendations for a HAPC process.

This appendix summarizes the process that will be used to identify HAPC types or sites, consistent with the alternative HAPC approach chosen through action #2 of this EIS. A joint stipulation and court order in the *AOC v. Daley* case mandated that NMFS work with the Council to develop a process for the evaluation and possible designation of HAPCs and the implementation of any associated measures. NMFS must promulgate any resulting regulations, supported by appropriate National Environmental Policy Act (NEPA) analysis, no later than August 13, 2006.

The schedule of decision making and initiation of the HAPC process is as follows. In October 2003, the Council will choose a preliminary preferred alternative for a HAPC approach (i.e., HAPCs as types, sites, or both). Once this decision is made, the Council will adopt a process to identify HAPCs based on the options contained in this appendix. In other words, the Council will decide whether to provide additional focus for HAPCs (add additional criteria; identify priority habitats for HAPC consideration), decide how often proposals for HAPCs will be solicited from the public, and decide on a stakeholder review process.

The public may wish to provide comments on this draft process at the October 2003 Council meeting.

J.2 HAPC Considerations and Priorities

J.2.1 HAPC Considerations

HAPCs are those areas of special importance that may require additional protection from adverse effects. Regulations at 50 CFR 600.815(a)(8) provide that "FMPs should identify specific types or areas of habitat within EFH as habitat areas of particular concern based on one or more of the following considerations:

(i) The importance of the ecological function provided by the habitat.
(ii) The extent to which the habitat is sensitive to human-induced environmental degradation.
(iii) Whether, and to what extent, development activities are, or will be, stressing the habitat type.
(iv) The rarity of the habitat type."

The Council may wish to add additional criteria to the considerations established in the EFH regulations.

Whether the Council designates HAPCs as habitat sites or types, management measures, if needed, would be applied to a habitat feature or features in a specific geographic location. The feature(s), identified on a chart, would have to meet the considerations established in the regulations and would be developed to address identified problems for FMP species. They would have to meet clear, specific, adaptive management objectives.

Evaluation and development of HAPC management measures, where management measures are appropriate, are guided by the EFH Final Rule.

J.2.1.1 Considerations Option 1

Under Option 1, the Council would identify HAPCs based on the four considerations in the EFH regulations (Section J.2.1 of this appendix). The EFH regulations also specify that habitats that are particularly vulnerable to specific fishing activities should be identified for possible designation as HAPCs. HAPC designation is intended to identify areas known to be important to species in need of additional protection from adverse impacts (fishing or non-fishing). Designation of HAPCs is intended to determine what areas within EFH should receive more of the Council's and NMFS' attention when providing comments on federal and state actions and to establish higher standards to protect and/or restore such habitat.

J.2.1.2 Considerations Option 2

Under Option 2, the Council would establish additional criteria for HAPC identification to supplement the four considerations in the EFH regulations.

J.2.2 HAPC Priorities

The Council may wish to prioritize what types of HAPCs would be considered in the proposal cycle. These priorities would be identified in the call for proposals.

J.2.2.1 Priority Option 1

Under this option, the Council can elect not to set priorities. Any and all types of HAPC proposals would be evaluated, so long as they meet the considerations listed in the EFH regulations.

J.2.2.2 Priority Option 2

Under this option, the Council may select habitat priorities (priorities are reviewed and modified or reaffirmed prior to each call for proposals). This would focus proposals on specific species and/or habitats of concern to the Council.

The following examples of priority options are not necessarily mutually exclusive:

1. The Council can rank the four considerations for HAPCs in the EFH regulations according to the Council's priorities. HAPC proposals that target higher Council priorities can be weighted higher than others.

2. The Council can emphasize habitat critical to "species of concern" (species that appear to be in need of additional levels of protection from adverse impacts due to fishing or non-fishing activities). These habitat priorities could be further defined on a local, regional or areawide scale (depleted, over-fished, etc.).

3. The Council can establish one or more of the existing HAPC designations as a priority:

   a. Areas with living substrates in shallow waters (e.g., eelgrass, kelp, mussel beds)
   b. Areas with living substrates in deep waters (e.g., sponges, coral, anemones)
   c. Freshwater areas used by anadromous fish (e.g., migration, spawning, and rearing areas)

J.3 Call for Proposals for the HAPC Process

Any member of the public may propose a HAPC. Potential contributors include fishery management agencies, other government agencies, scientific and educational institutions, non-governmental organizations, communities, and industry groups.

J.3.1 Contents of Proposals

Scientific and technical information on habitat distributions, gear effects and fishery distributions, and economic data should be made easily accessible before issuing a call for proposals. NMFS' Alaska Region website has a number of valuable tools for assessing habitat distributions, understanding ecological importance, and assessing impacts. Information on EFH distribution, living substrate distribution, fishing effort, catch and bycatch data, gear effects, known or estimated recovery times of habitat types, prey species, and freshwater areas used by anadromous fish is provided in the EFH EIS.

The format for a HAPC proposal should include the following:

- Provide the name of proposer, address, and affiliation
- Provide a title for the HAPC proposal and a single, brief paragraph concisely describing the proposed action.
- Identify the habitat and FMP species that the HAPC proposal is intended to protect.
- State the purpose and need.
- Describe whether and how the proposed HAPC addresses the four considerations set out in the final EFH regulations.
- Define the specific objectives for this proposal.
- Propose solutions to achieve these objectives (how might the problem be solved?).
- Establish methods of measuring progress towards those objectives.
- Define expected benefits of the proposed HAPC; provide supporting information/data, if possible.
- Identify the fisheries, sectors, stakeholders, and communities to be affected by establishing the proposed HAPC (who would benefit from the proposal; who would it harm?) and any information you can provide on socioeconomic costs.
- Provide a clear geographic delineation for the proposed HAPC (written latitude and longitude reference point and delineation on an appropriately scaled National Oceanic and Atmospheric Administration [NOAA] chart).

- Provide the best available information and sources of such information to support the objectives for the proposed HAPC (citations for common information or copies of uncommon information).

J.3.2 Proposal Cycle

Proposal cycle options are designated below.

Option 1: Proposals are solicited and reviewed every 3 years or 5 years.
Option 2: Proposals can be submitted during the regular plan/regulatory cycle (summer call for proposals due in the fall) or on a separate cycle.

J.4 Proposal Screening Process

Council staff will screen each proposal to determine its completeness and consistency with the EFH regulations. If information is inconsistent or incomplete, the proposal will be rejected.

J.4.1 Initial Scientific Review

The Council will establish a HAPC technical/scientific panel consisting of scientists who have federal, state, university, and independent affiliations and represent appropriate disciplines. For NMFS, this could consist of the Alaska Fisheries Science Center staff familiar with habitat distributions and species requirements in the Alaska Region. For the Alaska Department of Fish and Game (ADF&G), the Council could seek biologists familiar with crab, scallop, salmon, and rockfish habitats/species requirements. For the University of Alaska, participants could be sought from the School of Fisheries and Ocean Sciences. Independent scientists familiar with the science of marine protected areas and marine reserves could be asked to participate as well.

When organizing the scientific panel, considerations of individuals' time, availability, and funding for travel are important. For the accelerated process that will start some time before November 2003, state and federal employees may be the only ones available. If NMFS or the Council cannot fund expenses for university and other independent scientists, it would still be useful to invite them to participate, recognizing funding limitations. Some independent scientists may have great interest in participating and may have available funding. The scientific committee may send comments on proposals out to a few independent researchers to acquire additional review and new perspectives. In the long term, NMFS may want to seek funding from sources such as the North Pacific Research Board to fund independent and interagency participation in a formal HAPC review process.

The science panel will review the proposal for goals, objectives, and appropriate management measures. If management measures are included, the panel will review such measures for suitability to an adaptive management approach. Proposals will be forwarded to the next step with recommendations and comments. When the rationale of a proposal has merit, but it lacks supportive data, the scientific committee will make a reasonable effort to provide references regarding appropriate data queries and information sources to fill in the missing information.

J.4.2 Committee Review

Proposals will be reviewed by the EFH Committee, and management measures will be evaluated for 1) ecological considerations and 2) socioeconomic practicability, and recommendations will be prepared for the Council family (Advisory Panel [AP], Scientific and Statistical Committee [SSC], Council).

The Council will select a range of HAPC alternatives for analysis. Preliminary management measures will be identified where appropriate.

J.4.3 Stakeholder Process(es)

The EFH Committee will recommend a stakeholder review process. If one or more communities are affected, the Committee will recommend appropriate outreach. Different stakeholder processes may be appropriate based on the nature of the HAPC proposal. The Council may consider the following options:

Option 1: The stakeholder process is conducted by the EFH Committee.

a) The EFH Committee holds meetings in each region affected by proposals.
b) The EFH Committee holds meetings in location(s) determined to be most convenient.

Option 2: The Council establishes a HAPC Committee. The HAPC Committee could consist of stakeholders from different communities, industry representatives, current EFH Committee members, independent scientists, native/tribal representatives, conservation non-governmental organizations (NGOs), and federal and state representatives.

a) The HAPC Committee holds meetings in each region affected by proposals.
b) The HAPC Committee holds meetings in location(s) determined to be most convenient.

Option 3: In addition to the EFH Committee, two stakeholders from each region affected by proposals are appointed to the committee.

Option 4: The Council establishes a committee with additional scientists and stakeholders.

a) The HAPC Committee, plus two scientists and two stakeholders from each region affected by proposals, holds meetings to review HAPC proposals.
b) The EFH Committee, plus two scientists and two stakeholders from each region affected by proposals, holds meetings to review HAPC proposals.

Option 5: Council asks that appropriate regional fish and game advisory committees review proposals and report their comments back to the Council and the EFH/HAPC Committee.

Option 6: Three regional committees of stakeholders are formed to review proposals in their designated regions: Gulf of Alaska, Bering Sea, and Aleutian Islands. Each regional committee could have a representative from the current EFH Committee. The representative would help keep groups working in a consistent framework (i.e., one or both chairs of the EFH Committee).

J.5 Scientific Review Process

Technical review teams (ecological and socioeconomic) would review proposals before conducting public workshops to evaluate proposals using defined ecological and socioeconomic criteria.

The evaluation of candidate HAPCs, whether they are habitat types, specific sites or a network of habitat areas, should incorporate scientific review at multiple stages of the public process. Recognizing the importance of integrated scientific review to a process for identifying and evaluating potential HAPC areas, the Council stated the following at the April 2003 meeting,

"The evaluation (of HAPCs) shall include efficacy, scientific review and appropriate mitigation measures."

A preliminary step in evaluating HAPC proposals is to develop scientific criteria against which the proposals will be measured. An accepted list of scientific criteria will help guide what habitat types to consider; focus critical habitat areas for inclusion; and give guidance regarding the size, shape, and configuration of specific HAPC sites. These criteria are suggested for use by the scientific review panel when evaluating proposals. The criteria should also be adopted by the Council and presented to the public, so that the public understands how proposals will be scored. These ecological/social criteria may be different from other criteria that the Council uses to evaluate proposals (e.g., practicability and enforceability).

These options are not intended to be mutually exclusive. Other participants may have ideas for additional ecological criteria.

J.5.1 Evaluation Procedure

The team should evaluate each proposal and determine how well it meets the criteria for HAPC and whether designation and management measures are warranted. The review should be based on whether the proposal has an acceptable degree of scientific merit.

In the Council Environmental Assessment of Habitat Areas of Particular Concern (Council 2000), proposed HAPC types and areas were evaluated using a ranking system that provided a relative score by weighing them against the four considerations established in the EFH regulations. A written description should accompany the ranking so it is clear what data, scientific literature, and professional judgments were used in determining the relative score.

Table J-1. HAPC Ranking System Matrix

Proposed HAPC Area	Data Level	Sensitivity	Exposure	Rarity	Ecological Importance
Seamounts and Pinnacles	1	Medium	Medium	High	Medium
Ice Edge	3	Low	Low	Low	High
Continental Shelf Break	3	Medium	Medium	Low	High
Biologically Consolidated Sediments	1	Low	Medium?	Low	Unknown

*Note: This matrix is put forward for the purpose of discussion. If additional criteria are adopted (see recommendations above), they should be incorporated into the evaluation matrix or considered in written comments by the scientific panel. Other ranking methods may be useful.
Source: Council 2000

Each proposal should be evaluated against some type of standardized system that weighs the proposal against the adopted ecological criteria and socioeconomic criteria (if social scientists are part of the committee). The scientific review panel should also provide comments regarding whether the proposal meets stated goals and objectives. The science review team could also rank the proposals.

J.5.2 Scientific Uncertainty

There will always be some level of scientific uncertainty in the design of proposed HAPCs and how they meet their stated goals and objectives. Some of this uncertainty may arise because the public will not have access to all relevant scientific information. Recognizing time and staff constraints, however, the scientific committee cannot be expected to fill all the information gaps of proposals.

The Council will have to recognize data limitations and uncertainties and weigh precautionary strategies for conserving and enhancing HAPCs while maintaining sustainable fisheries. The scientific panel should highlight available science and information gaps that may have been overlooked or are not available to the submitter of the HAPC proposal.

J.5.3 Socioeconomic Criteria

FMPs must minimize impacts on EFH "to the extent practicable," so socioeconomic considerations have to be balanced against expected ecological benefits at some relevant point in the development of measures. The EFH regulations at 50 CFR 600.815(a)(2)(ii) state that FMPs should "identify a range of potential new actions that could be taken to address adverse effects on EFH, include an analysis of the practicability of potential new actions, and adopt any new measures that are necessary and practicable." In contrast to a process where the ecological benefits of EFH or HAPC measures are the singular initial focus and a later step is used to determine practicability, this alternative approach would consider practicability simultaneously. The benefit of this simultaneous consideration is that it would help to avoid the risk of creating a set of alternatives that may hold benefits to habitat, but that may not individually or collectively pass the practicability test.

To accomplish this simultaneous evaluation, relevant social and economic information should be developed from the outset. Specifically, HAPC proposals should identify, as extensively as possible, the exact locations that would be affected if the proposed HAPC mitigation measures were implemented. Proposals and preliminary technical analysis should also identify, to the extent possible, affected fishing communities. The analysis should include some initial assessment of the potential effects on those communities, employment and earnings in the fishing and processing sectors, and related infrastructure. Preliminary analysis should also include information on the potential for relocating fishing activities to other areas if the proposed mitigation is enacted.

As soon as possible in the initial technical review process, the socioeconomic information provided in the proposal should be assessed by social scientists on the technical review teams. Team members should begin to supplement this information, as needed, to analyze the resulting economic and social impacts of proposals, both individually and cumulatively. Analysis should include cultural values of the area; tourism and non-consumptive recreational use potential; an assessment of the effects on fishing communities, including changes in net revenues; efficiency changes; net national benefit consideration from such things as deadweight losses for unrecoverable fishing opportunities (if applicable) or changes in CPUE; and attendant efficiency losses from the outcome of increasing effort in sub-optimal fishing areas or areas with higher bycatch rates.

To accomplish these objectives, economists and other social scientists will have to be included on separate HAPC technical review teams. Management and enforcement will also need representation in the early stages of HAPC review. Because the teams are designed to evaluate both ecological and socioeconomic tradeoffs separately from the outset, the technical review teams' tasks will be to evaluate the environmental benefits, social and economic costs, and general management cost and enforceability of individual proposals. The Committee recommends that two teams be created, one ecological and one socioeconomic, and that their reviews be conducted simultaneously.

A cumulative effects analysis must be considered because there may be many HAPC proposals that pass initial review. Cumulative effects must be assessed because several HAPC proposals considered at the same time or in sequence could affect the same groups of fishermen or communities and fisheries or management areas as a whole.

Assessment of the practicability consideration up front for HAPC proposal development and evaluation would create an additional initial burden on groups or individuals making proposals and on social scientists serving on preliminary scientific on preliminary review teams. In overall scope and depth of work, however, the same elements would be required if the practicability test were left for later consideration. The benefit of this early consideration of social, economic, and management cost and enforcement practicability is that the alternatives developed for analysis are more likely to be approved because an assessment of practicability has already been undertaken.

J.6 Public Review Process

A technical/public workshop will be conducted. The Science/Technical review team, EFH/HAPC review committee, and the public will meet to review stakeholder recommendations. The EFH/HAPC committee will finalize recommendations to the Council on management measures, research design, and adaptive management strategy.

The Council will receive a summary of public comments and take final action on HAPC selections and management alternatives. Each proposal received and/or considered by the Council would have one of three possible outcomes:

(1) The proposal could be accepted and the area would be designated as a HAPC.
(2) The proposal could be used to identify an area or topic requiring more research, which the Council would request from NMFS or another appropriate agency.
(3) The proposal could be rejected.

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ADF&G 2002. Marine Protected Areas in Alaska: Recommendations for a Public Process. Alaska Department of Fish and Game Division of Commercial Fisheries. Juneau, AK.

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Council 2000. Draft Environmental Assessment/Regulatory Impact Review. Habitat Areas of Particular Concern. North Pacific Fishery Management Council. Anchorage, AK.

Roberts, C.M. et al. 2003. Application of Ecological Criteria in Selecting Marine Reserve and Developing Reserve Networks. Ecological Applications. 13(1): S215-S228.

ATTACHMENT 1

Summary of Steps in the HAPC Identification Process

Proposed by the EFH Committee

The Committee suggests that, consistent with the NEPA process, the Council adopt the following outline.

1. A. Council considers establishing HAPC criteria.
   B. Council considers establishing HAPC priorities.
   C. Priorities are reviewed every HAPC cycle.
   D. Council receives comment from scientific community, AP, NMFS, ADF&G, public.
   E. Criteria for scientific evaluation of proposals are identified, along with criteria for evaluating management measures.

   NOTE: The EFH Committee seeks suggestions on how to develop the appropriate ecological and socioeconomic criteria for evaluating HAPC proposals in two separate processes.

2. The Council issues a call for proposals (open to ADF&G, NMFS, public, etc.). Proposals are submitted on a HAPC form developed by the Council.

3. The Council staff screens proposals to determine consistency with EFH Final Rule and application completeness. If not consistent or complete, the proposal is rejected. If accepted, the proposal is forwarded to the next step.

4. The SSC reviews proposals for goals, objectives, and appropriate management measures. If management measures are included, the SSC reviews such measures for suitability to an adaptive management approach. Two discrete scientific bodies provide a preliminary evaluation of these proposals for 1) ecological considerations and 2) socioeconomic practicability. The SSC then forwards proposals with recommendations and comments.

5. The EFH/HAPC Review Committee reviews the proposals, evaluates and prepares recommendations for Council family (AP, SSC, Council).

6. The Council selects a range of HAPC alternatives for analysis to address each identified priority. The Council identifies preliminary management measures, where appropriate, and initiates NEPA analysis.

7. The Council initiates stakeholder process(es).

8. The Council schedules and conducts a technical/public workshop.

9. The Science/Technical review team EFH/HAPC review committee, and public meet to review stakeholder recommendations.

10. The EFH/HAPC committee finalizes recommendations for Council on management measures, research design, and adaptive management strategy.

11. The Council solicits public comment on NEPA analysis.

12. Council staff compiles and summarizes public comments for Council.

13. The Council takes final action on HAPC selections and management alternatives.

Each proposal that the Council receives and/or considers will have one of three possible outcomes:

1. The proposal could be accepted, and the area would be designated as a HAPC.

2. The proposal could be used to identify an area or topic requiring more research, which the Council would request from NMFS or another appropriate agency.

3. The proposal could be rejected.

ATTACHMENT 2
ADDENDUM: FROM NEW ENGLAND COUNCIL
SUPPORTIVE DATA AND INFORMATION

The HAPC proposal form will have a section asking the submitter to include any supportive data and other relevant material. The New England Fishery Management Council has detailed a list of accepted information sources to support HAPC proposals. This or a similar list may be useful to detail, so the public knows what scientific information the review panel will be looking for.

From NEFMC Habitat Areas of Particular Concern Process:

General Scientific Data and Information – The information used by the proposer to justify a HAPC proposal comes from scientific peer-reviewed journals, government technical reports, or from unpublished scientific data. This category includes any scientific data or information that are not site-specific but still bear relevance on the issue by demonstrating one of the HAPC criteria.

Site-Specific Scientific Data and Information – The information used by the proposer to justify a HAPC proposal comes from scientific peer-reviewed journals, government technical reports, or from unpublished scientific data. This category includes any scientific data or information that are derived from or for the specific area under consideration in the HAPC proposal.

Literature Review - The information used by the proposer to justify a HAPC proposal comes from a review of peer-reviewed literature and government technical reports. This includes summaries of the results of scientific studies published in peer-reviewed journals and technical documents. The literature review may be prepared by the proposer or may be prepared by another source and should clearly articulate the link between the area, habitat type, or species in question with at least one of the HAPC criteria.

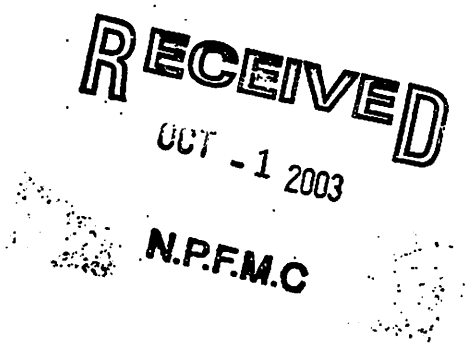
Substrate Mapping – The information used by the proposer to justify a HAPC proposal includes substrate mapping of the specific area under consideration. The source of the substrate mapping should be a federal agency, such as the U.S. Geological Survey, a state agency, an academic institution, or a research collaborative. The substrate maps should be provided to the Council and readily available for external review.

Oceanographic Information – The information used by the proposer to justify a HAPC proposal includes information on the oceanographic features occurring in the specific area under consideration. This information can include, but not be limited to, the tracking of currents, identification of relatively stable and persistent gyres, oceanographic fronts, thermoclines, haloclines, or pycnoclines. Reference to any transient oceanographic feature(s) should include a description of the importance of the feature to the target species or habitat type.

Traditional Knowledge: Incorporate all traditional knowledge as information to justify a HAPC proposal.

175 South Franklin Street, Suite 418 Juneau, Alaska 99801 907-586-4050

Delivered Via Facsimile 907-271-2817



September 30, 2003

Dr. James Balsiger, Regional Administrator
NOAA Fisheries, Alaska Region
709 West 9th Street
Anchorage, Alaska 99802-1668

Dear Dr. Balsiger:

We have reviewed with great interest the Fisheries Service's preliminary draft Essential Fish Habitat Environmental Impact Statement ("EFH EIS"). While we have many significant concerns with the development, range, and adequacy of its alternatives, and the document's overall conclusions, this letter is confined to our concern about the agency's conclusion that the adverse effects of fishing on EFH may not require minimization measures.

The preliminary draft EFH EIS's conclusion of whether fishing efforts are minimal or temporary is entirely based upon the habitat effects model developed by Fisheries Service scientists. We appreciate the agency's effort toward an ecological approach to fisheries management, as well as the agency's acknowledgement of the model's significant limitations. We are concerned, however, that the Fisheries Service's ultimate conclusions do not adequately account for the recognized and considerable uncertainties inherent in the model's assumptions, data and results.

For example, the Fisheries Service's conclusion that Council-managed fishing activities do not have more than minimal and temporary effects on EFH is inconsistent with the high long term effect index (LEI) values for corals. Corals had the highest LEI values of the fishing effects analysis. The model identifies some areas where LEI values are high and localized, and where fishing effects on habitat are adverse and more than temporary. Yet, it recommends no steps for mitigation.

The Magnuson Stevens Act requires that NMFS identify and describe Essential Fish Habitat, and minimize the adverse effects of fishing on that habitat to the extent practicable. Over the past several years, the body of science concerning both the importance of intact marine habitat and the effects of fishing gear on habitat has grown substantially. We believe that the weight of the evidence requires that NMFS recognize

that such effects are significant and persistent, and implement appropriate mitigation measures in all three regions – the Bering Sea, Aleutian Islands and Gulf of Alaska. We do not believe that the agency's recommended approach is consistent with the data presented in the preliminary draft EIS and the agency's statutory and regulatory obligations. We look forward to discussing this issue, recommendations for amendments, and the adequacy of the current suite of alternatives during the October meeting of the North Pacific Fishery Management Council.

Sincerely,

/s/

Jim Ayers,
Director
Pacific Region

Alaska Marine Conservation Council

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September 29, 2003

Dennis Austin, Interim Chairman
North Pacific Fishery Management Council
605 W. 4th Avenue, Suite 306
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Dr. James Balsiger
Regional Director
NMFS Alaska Region
PO Box 21668
Juneau, AK 99802-1668

RE: Agenda Item C-3: Essential Fish Habitat
- Preliminary Draft Environmental Impact Statement

Dear Dr. Balsiger and Mr. Austin:

The Alaska Marine Conservation Council has worked for many years with the North Pacific Fishery Management Council (the Council), to actively promote marine habitat conservation in the Gulf of Alaska, Aleutian Islands and Bering Sea. The Council is now poised to advance habitat conservation by choosing a preliminary preferred alternative for the designation of essential fish habitat (EFH), criteria for designating Habitat Areas of Particular Concern (HAPC) and measures to minimize the adverse effects of bottom trawling on EFH. To further advance fishery management towards an ecosystem based approach and provide for the long-term sustainability of our fisheries and marine ecosystems, AMCC recommends that the Council and the National Marine Fisheries Service (NMFS) adopt the following preliminary preferred alternatives:

- Describe and Identify EFH: Alternative 3 (Revised General Distribution)
- Adopt an Approach for Identifying HAPCs: Alternative 4 (Type/Site Based Concept)
- Minimize Adverse Effects of Fishing on EFH: Alternative 5-B (Bottom Trawl Closures in All Management Areas with Sponge and Coral Area Closures in the Aleutian Islands)

Recommendations Regarding the Description and Identification of EFH
AMCC supports Alternative 3, which will update existing EFH descriptions with more recent scientific information and improved mapping. This alterative will designate as

EFH all habitats within the general distribution of a managed species (FMP species) life stage. This alternative is the most risk-averse based on our current knowledge of habitat use by FMP species.

In the preliminary draft EFH EIS, NMFS has recommended that the Council endorse an approach that will designate as EFH, core areas for a species life stage when known concentration information is available (Alternative 4). AMCC cannot support this approach because focusing on current estimates of species abundance fails to account for future changes in spatial distribution as a result of inter-annual variation or long-term shifts in ocean climates. Alternative 4, the core area approach, result in a false sense of precision that may lead to adverse impacts going unchecked within essential fish habitat.

In the 1999 Environmental Assessment of EFH, the Groundfish Technical Team recommended against using core areas to define essential fish habitat for FMP species:

> The advice in the NFMS guidelines to use risk-averse and ecosystem approaches and **the best scientific information available suggests that the general distribution should be used to designate EFH** necessary to maintain healthy stocks and ecosystems and sustain productive fisheries. While areas of known concentrations are identified for some species life stages, the Groundfish Technical Team recommends that EFH be defined at this time as the general distribution for all groundfish species life stages in the Gulf of Alaska, Bering Sea and Aleutian Islands.[1]

Recommendations Regarding Approaches for Identifying HAPCs
AMCC supports Alternative 4, the type/ site based concept, as the most logical approach for identifying Habitat Areas of Particular Concern. Under this alternative the Council would select types of habitats like "living substrates in deep water" as habitats of particular concern because they meet one or more of the HAPC considerations; ecological importance, rarity, sensitivity, and vulnerability to human-induced disturbance.

Designating a HAPC type would not necessarily result in management measures. Like the current HAPC type designations, this would simply provide focus for research and elevate attention towards particular habitat areas. Specific sites that meet the considerations established in the regulations could subsequently be designated and management measures designed to address problems identified for FMP species and their habitat. In the preliminary draft EFH EIS, NMFS states, "Alternative 4 may offer more potential benefits for target species than the other alternatives because the stepwise process of selecting habitat types and then specific sites could yield a more rational and structured effort to ensure that HAPCs would focus on the habitats within EFH that are most valuable and/or vulnerable."[2]

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[1] NPFMC 1999. Essential Fish Habitat Environmental Assessment. Pg 54
[2] Preliminary Draft EFH EIS, ES-5.

The analysis does note that the adoption of Alternative 4 will rescind current HAPC designations of living substrates in deep and shallow water and freshwater areas used by anadromous fish. AMCC agrees with NMFS in stating that, "support of this alternative should not be construed to imply that the existing HAPCs represent unimportant habitat types. On the contrary, the habitat types included in the existing HAPCs are extremely important for Council managed species. However, for management purposes, identifying habitat types of concern and then designating specific HAPC sites within those habitat types would yield a more effective tool for habitat conservation."[3] *Recognizing that existing HAPC types are "extremely important for Council managed species", AMCC recommends that the Council make it their intent to retain living substrates in deep and shallow waters and freshwater areas used by anadromous fish as habitat types of particular concern.*

Recommendations Regarding Measures to Minimize the Effects of Fishing on EFH
Among the alternatives to mitigate fishery impacts on essential fish habitat, AMCC supports the adoption of alternative 5-B for the preliminary draft EFH EIS. This is a significant departure from the NMFS recommendations, which are essentially that no immediate action be taken to mitigate fishery effects on EFH. We agree with the NMFS recommendations to continue to analyze carefully the effects of fishing on sea floor habitats, to support research on EFH, and to take additional precautionary management actions to protect long-lived sea floor habitats such as coral gardens. However, these actions further delay the region-wide conservation and enhancement of essential fish habitat. The Council should not pass on the opportunity to make it their intent to mitigate fishery impacts throughout the North Pacific region, to advance fishery management towards an ecosystem based approach and to provide for the long-term sustainability of our fisheries and marine ecosystems.

- Alternative 5-B provides the most comprehensive approach to protecting coral and sponge habitats in the Aleutian Islands. The NMFS analysis of alternative 5-B finds that, "While moderate, substantial changes were estimated for coral LEIs (long term effects index) (-11 percent for coral in the shallow habitat and –20 percent for coral in the deep habitats), the very large proportion of both habitat types closed to trawling affords very substantial protection to coral in the AI."[4]

- Alternative 5-B substantially reduces habitat impacts along the Gulf of Alaska slope. "LEI values were substantially reduced for soft-bottom bio- (structure) (-47 percent) and nonliving (-24 percent) structure, hard bottom bio- (-54 percent) and nonliving (-57 percent) structure. Estimated increased effects on adjacent deep shelf habitats from fishing redistribution were small proportional increases (less than 5 percent) to effects that were already small (less than 5 percent)."[4]

- Alternative 5-B will have positive effects for opilio crab in the Bering Sea. The analysis of 5-B finds, "The closure areas in the BS overlap with the opilio crab

[3] Preliminary Draft EFH EIS, Appendix E. Pg 3.
[4] Preliminary Draft EFH EIS, Appendix E. Pg 4-193.

EFH areas of concentration. The trawl closure areas may improve habitat and reduce bycatch mortality for opilio crab within the closure area by eliminating potential impacts due to bottom trawling."[5]

- According to NMFS assessments, Alternative 5-B is practicable even though there are short-term operational costs.[6] The long-term positive effects to sensitive habitats, FMP crab species, and health to the marine ecosystem would outweigh the estimated costs.

- The analysis of 5-B does predict a potential adverse effect to Steller sea lions if this alternative were implemented. The analysis of this potential consequence (page 4-226) appears to be extremely cursory and more explanation is needed.

- Alternative 5-B maintains current fishing patterns by leaving open, areas historically important to fisheries using bottom trawls, while closing areas with high coral and sponge bycatch. This alternative would actually close some areas of SSL critical habitat to bottom trawling while maintaining existing fishing patterns. Adoption of this alternative does not open areas inside SSL critical habitat that are presently closed.

Concerns about the Fishery Effects Analysis

While the preliminary draft EFH EIS contains very useful information, the overall conclusions of the analysis are significantly flawed. By relying on the results of an unproven model of fishing effects that NMFS admits is "subject to considerable uncertainty" and a narrow interpretation of the law, NMFS concludes that none of the fishing activities have more than minimal and temporary effects on essential fish habitat for FMP species managed by the Council. The primary factors for this determination are based on (1) the spatial scale of fishery impacts in relation to the total essential fish habitat area in the North Pacific region and (2) reliance on minimum stock size threshold (MSST) considerations as the primary indicator of the health and productivity of a stock's essential fish habitat.

1) **A matter of scale:** The fishery impacts analysis states, "Across broad habitats, LEIs were generally small." However, "In particular locations, certain LEIs (particularly for living structure) were quite substantial."[7] The analysis recognizes that bottom trawling has significant and lasting effects in some habitats, especially for living structure, including coral, with some areas experiencing 50 to 100 percent estimated eventual reduction of the habitat feature. But the authors conclude that these effects are "minimal" because they considered them to be small across broad habitats. This assessment disregards the EFH final rule, which states, "Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may **include site-specific** or habitat-wide impacts, including individual, cumulative, or synergistic

[5] Preliminary Draft EFH EIS. Pg 4-216.
[6] "Given the limited adverse effects on EFH, and the costs and benefits of the alternatives, it appears that most alternatives would be practicable to implement, with the exception of Alternative 6..." ES-10.
[7] Preliminary Draft EFH EIS. Pg B-21

consequences of actions."[8] By evaluating only whether or not fishing effects are "minimal" across broad regions of habitat, NMFS is ignoring aspects of the EFH final rule and biasing the results toward the conclusion that fishing effects are minimal.

2) **Relating fishing effects on EFH to MSST considerations:** The authors of the effects of fishing on EFH for FMP species have used MSST as the primary threshold for evaluating if fishing affects the habitats necessary to fish for spawning, breeding, feeding, or growth to maturity.[9] In most cases this has lead to very a cursory analysis leading to quick conclusions of a minimal and temporary effect on FMP species habitat.

   Using MSST as the threshold consideration to determine if impacts to EFH are more than minimal and not temporary is unreasonable. There is presently a lack of scientific information available on how fish and crab utilize habitat features, yet it is not to be misconstrued that a link does not exist. The EFH EIS should take an approach similar to Programmatic SEIS where the authors focus on the habitat features that might provide functions to managed species. They consider that linkages to productivity exist but do not depend specifically on demonstrating those linkages.[10] This approach is more consistent with the preamble to the EFH Final Rule where NMFS states; "It is not appropriate to require definitive proof of a link between fishing impacts to EFH and reduced stock productivity before Councils can take action to minimize adverse impacts to EFH to the extent practicable. Such a requirement would raise the threshold for action above that set by the Magnuson-Stevens Act."[10]

We hope that the Council will recognize the shortcomings of the fishery effects model and the inherent inconsistency of relating the model's results to requirements of the EFH Final Rule. More importantly, the effects of bottom trawling on sensitive marine habitats and the vulnerability of living habitat features to impacts are widely recognized in the scientific literature here in Alaska and around the world. This must not be lost when considering the conclusions of the EFH EIS. With this in mind, the agency should give further scrutiny to their analysis and the Council should make it their intent to mitigate adverse bottom trawl impacts on essential fish habitat throughout the North Pacific region.

Sincerely,

Ben Enticknap
Fishery Project Coordinator

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[8] EFH Final Rule §600.810 (a)
[9] For example see Atka mackerel evaluation in Preliminary Draft EFH EIS. Appendix B-37
[10] Alaska Groundfish Fisheries Programmatic SEIS. September 2003. Pg 4.1-7.
[10] Federal Register/ Vol. 67, No. 12/ January 17, 2002. Pg 2354.

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October 1, 2003

Mr. Dennis Austin, Interim Chairman
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Dr. James Balsiger
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Re: Preliminary Draft Environmental Impact Statement on Essential Fish Habitat

Dear Mr. Austin and Dr. Balsiger:

The Marine Conservation Alliance (MCA) is writing to submit comments on the Essential Fish Habitat (EFH) Preliminary Draft Environmental Impact Statement (EIS) analysis and alternatives and to recommend the choice of a preliminary preferred alternative and a Habitat Areas of Particular Concern (HAPC) process by the Council at its October 2003 meeting. The Marine Conservation Alliance (MCA) is a broad-based coalition of coastal communities, fixed and mobile gear fishermen, Community Development Quota groups, vessel owners, processors, support industries and consumers directly and indirectly involved in the Alaska groundfish and crab fisheries. The coalition members have joined together to support science-based policy that protects the marine environment and promotes long-term sustainability of both fishery resources and the North Pacific fishing community that depends on those resources.

The MCA recommends the Council choose, as Preliminary Preferred Alternatives, the following:

EFH Designation:	Alternative 4;
HAPC Designation:	Alternative 3; and
Mitigation:	Alternative 1, with a HAPC process.

The MCA also recommends the Council and the Agency continue to move forward with the EIS process as scheduled, and focus on the present set of alternatives presented in the Preliminary Draft EIS. Any expansion of the list of alternatives at this point in the process would be a disservice to the public, which must consider an extremely complex set of issues and analyses to comment effectively. Finally, the MCA provides comments on several parts of the analysis, with emphasis on an analysis of practicability and economic effects, Appendix B on the effects of fishing, and Appendix J on a Council process to identify HAPC.

Purpose and Need Statement

The purpose and need for the action is well-expressed in the Problem Statement adopted by the Council in December 2002, which states the Council intends to take action under the Magnuson-Stevens Fishery Conservation and Management Act (MSA, or Act) to protect the productivity of Fishery Management Plan (FMP) species by considering possible measures to reduce any adverse effects of fishing on habitat that is essential to those FMP species. In compliance with the EFH provisions of the Act, the EIS analyzes a broad suite of alternative mitigation measures to determine both their efficacy in protecting EFH and their practicability for the affected fishing industry. The regulations require the Council to look at long-term and short-term costs and benefits of mitigation measures to EFH, fisheries, and the nation. 50 CFR 600.815(a)(2)(iii). The Act and the regulations direct the Council to analyze potential benefits in the context of the productivity of the FMP managed species.

The purpose of the Act is to manage the Nation's fisheries to achieve Optimum Yield, which, by definition, is to harvest that amount of fish that "will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational alternatives, and taking into account the protection of marine ecosystems." 16 U.S.C. 1802 (28). Productivity of the managed species is central to the overall goals of the Act, and provides the setting within which to assess potential benefits to EFH of any mitigation measures. The Act makes no provision for EFH outside of that setting, i.e., the Act contains no mandate to protect EFH without the link to the core goal of ensuring productivity of managed species.

Range of Alternatives

The MCA believes the range of alternatives clearly meets National Environmental Policy Act requirements and should not be amended or changed. The MCA recommends the Council and the Agency not add an additional alternative, as the Agency appears to suggest on page 4 of its September 10, 2003 memorandum to the Council.

The Council and the Agency have revised the list of alternatives and added new alternatives several times during the past year. The Council's EFH Committee has met many times to build and review alternatives, and the public has had numerous opportunities to recommend additional alternatives. In the preliminary draft EIS, the authors list eleven alternatives that were considered and rejected. Those alternatives were rejected because they were subsumed in the current active alternatives, were inconsistent with the legal requirements of the MSA, or were impracticable.

The MCA supports NMFS recommendations one (continuing to analyze effects of management actions on seafloor habitat) and two (supporting research to improve understanding of the effects of fishing on habitat) regarding minimization of effects of fishing on pages three and four of its memorandum, and believes each will improve the ability of the Council and the Agency to protect EFH in the manner required by the MSA. However, the MCA opposes recommendation number three (taking specific actions prohibiting fishing in areas where deep-water coral communities may exist) as unnecessary and unsupported by the EFH provisions of the MSA or the EFH regulations. In its memorandum, the Agency states the Council could take action to avoid disturbance to deep-water seafloor habitats where no fishing occurs. This recommendation is flawed for several reasons: no analysis supports the recommendation; no potential or current adverse effect is shown on the productivity of FMP managed species; and no analysis demonstrates deep seabed areas meet the definition of essential fish habitat.

First, no analysis in the preliminary draft EIS supports the conclusion that these deep seabed areas should be protected under the MSA. The EFH provisions of the MSA are a part of a Congressionally mandated program to manage the Nation's ocean fisheries, not an open-ended regulatory authorization to protect areas within the U.S. Exclusive Economic Zone. As noted above, the overriding purpose of the MSA is to achieve Optimum Yield so our fisheries can sustainably "...contribute to the food supply, economy, and health of the Nation...." 16 U.S.C. 1801 (a)(1). The protection of EFH must be considered in the development of each FMP, but it does not even rise to the level of the ten National Standards that form the structure on which fishery management measures must be built. The MSA does not provide the statutory authority for the Agency to take protective action simply because the Agency believes it is a good idea. Protective measures must be analyzed within the bounds of the MSA and meet specific requirements of the MSA.

Second, the MSA requires that EFH be protected from actual adverse effects of fishing. Because no fishing occurs in the deep seabed areas recommended for protection, adverse effects from fishing cannot exist. In its memorandum, the Agency concludes

"...no Council-managed fishing activities have more than minimal and temporary effects on EFH for any FMP species." If the Agency finds there are no adverse fishing effects in the areas presently fished, it cannot safely assume such effects exist in areas that are not fished. No links to the productivity of managed species are even suggested by the Agency, let alone rising to the level of requiring protection under the statutory requirements.

Third, the Agency recommends "lower slope/basin areas deeper than 1000 meters" be protected as EFH. The protection of habitat is not a free-standing goal of the MSA. Even though the first step for EFH protection is to determine the fisheries involved, there is no suggestion of what fisheries might be affected. Next, habitat "necessary to fish for spawning, breeding, feeding, or growth to maturity" of the managed species must be identified. 16 U.S.C. 1802(1). No managed species are identified in this recommendation. Next, there must be a linkage to the managed species, but none is suggested here. Then, adverse effects must be identified that are more than minimal and not temporary. No effects whatsoever are suggested by the Agency. Finally, the mitigation measures recommended must be practicable, but again, the Agency suggests nothing specific on this point.

The MCA believes it would be a disservice to the public and to the regulatory process to add another alternative and necessitate further analysis. The preparation of the EIS and the implementation of EFH measures are on a tight schedule. The Agency makes no suggestion as to an amended schedule if a new alternative were added in December. Effective opportunity for public input is required, but the time line leaves little room for effective input on a new alternative.

Practicability

The MSA requires any management measures taken to protect EFH be practicable, and it directs the Council to consider long- and short-term costs and benefits to the Nation, EFH, the industry, and dependent communities. Although a formal cost-benefit analysis is not required, the EFH Regulations do require a balancing of costs and benefits. That balancing requirement is in the regulatory provision requiring a determination of practicability. 50 CFR 600.815(a)(2)(iii). If the costs are significant and benefits speculative or unknown, then the relevant mitigation measures are deemed not practicable.

Given the conclusion in this Draft EIS that no fishing effects on EFH are more than minimal and temporary, the only logical conclusion is that none of the proposed measures are practicable (if no benefits exist on one side of the scale, by definition, the

costs side of the scale will be greater). Inexplicably, the Draft EIS concludes just the opposite—that all of the alternatives except Alternative Six are practicable.

The MCA finds several significant flaws in the analysis in Appendix C, which are listed below, and is concerned by the statement in Chapter 4 (pp. 4-388 & 389) that the Agency has not yet chosen a methodology to determine practicability. Without a methodology being chosen, the MCA does not understand how any conclusion on practicability could be reached.

First, the analysis in Appendix C makes no effort to measure the possible benefits to EFH in either a quantitative or qualitative manner. Instead, in the analysis of each alternative, the authors state the proposed mitigation measures are assumed to have benefit to EFH because the Council selected them as alternative mitigation measures. This circular approach to analyzing benefits is never explained in Appendix C. The Agency's memorandum recommends no mitigation measures be implemented since none of the effects of fishing on EFH are found to be more than minimal and temporary. Consequently, the benefits to EFH are non-existent under the regulatory standard, not positive benefits as is assumed in Appendix C. Appendix C also assumes that fishing is "consuming habitat" in economic terms, while the Agency finds that there is no adverse effect on EFH in regulatory terms.

Second, Appendix C states the MSA finds that EFH conservation is good by definition and provides benefits, allowing the authors to assume a statutory direction to protect EFH, thus providing a starting point in favor of protection and against practicability. The MSA and the regulations provide a careful structure for making mitigation decisions and do not make presumptions (in fact, as discussed below, the MSA and the regulations require a balancing).

Third, Appendix C assumes that reducing habitat "consumption" will produce greater long-term benefits, and thus starts the analysis with a second presumption against practicability. The analysis of EFH benefits in the Draft EIS makes no such finding. On page C-20, the EIS "quotes" the MSA to state that EFH conservation will lead to more robust fisheries. It goes on to assume the MSA also states that minimizing damage to EFH from fishing practices will sustain or even increase the production and yield from FMP-managed species and "other species important to the fishing industry in Alaska...." The MSA makes no statement that EFH conservation will lead to more robust fisheries or that minimizing damage to EFH will sustain or increase productivity, and the reference to "other" non-FMP species is irrelevant to EFH. The assumptions stated on p. C-20 are circular and ignore the linkages that must be made to determine that habitat is EFH. If the Council finds a particular habitat performs an essential function for an FMP-managed

species that supports productivity, and if the Council finds that fishing is having an adverse effect on that habitat, and if the Council finds that the adverse effect is more than minimal and temporary, then the Council should consider mitigation measures. Only after those linkages are demonstrated can the conclusion be stated that EFH protection will lead to more robust fisheries and increase productivity. Assuming a conclusion before performing the analysis is a flawed process.

Fourth, Appendix C determines the amount of fishing revenue "at risk" by comparing the amount of catch from an area that would be closed to the total catch in that fishery, and then measuring "at risk" revenue in the same proportion. The authors also assume much of the fishing operation can be moved to another area or fishing vessels can switch to another gear to avoid a restriction, both questionable assumptions. Appendix C makes no attempt to analyze the other closures and restrictions that apply in the North Pacific and that make a shift of effort from one area to another difficult. The existing closures are extensive and limiting to most vessels. Appendix C also ignores the regulatory restrictions that prevent a trawler, for example, from shifting from trawl gear to pot gear. LLP requirements make that impossible if the vessel is not already designated for both types of gear. Few vessels are so designated currently because of increasing restrictions from recency and rationalization. Appendix C also makes a determination of "fishable area" so that it can compare the amount of area that would be closed to the amount of area that would be available. The method for determining areas to be "fishable" is not stated. If it simply includes every area where any groundfish have been caught, the analysis fails to determine that all such areas are actually fishable for large amounts of groundfish.

Fifth, Appendix C's commentary on the six mitigation alternatives fails to provide any method of balancing or measuring benefits vs. costs. Again, Appendix C assumes that EFH exists and assumes that there are benefits to productivity of managed species, but provides no metric to measure benefits or to compare benefits to costs.

Finally, the Draft EIS concludes on p. 4-391 that all of the alternatives are practicable, except for alternative six. This conclusion is stated on the same page in which the Draft EIS states that none of the fishing effects are more than minimal and temporary, i.e. that no benefits would be achieved under the regulatory structure of EFH protection. The conclusion of practicability is made without any balancing of costs and benefits, in violation of the EFH Regulations which specifically require a balancing, without the choice of any metric to measure benefits against costs, and without a choice as to the method of determining practicability (pp. 4-388 & 389). The conclusion is simply not supported by the analysis.

Methods and data used to assess economic impacts and implementation/ enforcement costs

For purposes of selecting a preliminary preferred alternative, MCA would like to point out that there are large deficiencies in the assessment of costs to industry of the proposed mitigation alternatives. Additionally, we think there are inconsistencies in the analysis of implementation and enforcement costs. It is important for the Council to consider these deficiencies before a preliminary preferred alternative is selected because the EFH EIS analysis appears to suggest that while some of the alternatives may not have much benefit to EFH, at least the alternatives do not impose significant economic impacts on industry (or large implementation and enforcement costs). In our opinion, these conclusions on impacts and costs are off the mark. The current analysis overlooks and underestimates economic costs to industry and the nation, and fails to evaluate effects in the very important context of the overcapitalized fisheries.

The long-term effects of open access in terms of overcapitalization and lack of profitability constitute the relevant affected human environment baseline for the proposed mitigation measures. Perhaps the most troubling aspect of the current EIS analysis is that it lacks the required rigorous and systematic consideration of benefits and costs including the application of a discount rate to balance future costs and benefits against near term effects. The lack of an adequate benefit/cost perspective is covered in MCA's comments on practicability above. The comments below focus on the EFH EIS' analysis of economic effects and assessment of implementation and enforcement costs in the EFH EIS:

1. For GOA alternatives, inappropriate comparisons between expected reductions in revenues to total annual revenues

   Both for catcher vessels and catcher processors, expected reductions in revenues for the GOA alternatives are compared in the analysis to annual revenues for the entire sector. Not all vessels in the sector fish for rockfish or the other affected slope fisheries. For those that do, effects of alternatives should be compared to total revenues in affected slope fisheries for the specific sector. The analysis currently evaluates effects of GOA slope alternatives on catcher vessel and H&G revenues (separately) for all fisheries in all management areas. For vessels that fish in the GOA slope fisheries, the slope fisheries often account for a large portion of annual gross revenue, often as much as 20% for some catcher vessels. In short, the negative economic impacts would be quite dramatic on the subset of vessels that depend heavily on the slope fisheries, possibly driving some of them out of business. Additionally, due to the license limitation program (LLP) in

place, not all vessels that fish in the GOA have the ability to attempt to make up revenues in other areas, such as Bering Sea or Aleutian Islands fisheries. Lastly, the distinction made in the analysis between local Kodiak boats and non-Kodiak vessels is artificial and inappropriate. The catcher vessels that fish rockfish deliver it to Kodiak processors and are thus an integral part of the local processors' fleets. Impacts need to be considered for the entire rockfish CV fleet not just the local boats.

2. First wholesale prices for the catcher processor sector in the GOA alternatives

   The first wholesale prices used to evaluate total revenue and "revenue at risk" seem quite low. With CORE reporting of first wholesale prices becoming required this year, it was hoped that these data would be available for the EFH analysis. If CORE data are not yet available, then industry would be willing to supply data. Based on a quick evaluation of prices used for the at-sea sector, the estimations in the analysis appear to undershoot total and "revenue at risk" by about 30% for the GOA alternatives.

3. Use of ex-vessel revenues for catcher vessels ignores a substantial and important portion of economic effects of the GOA alternatives

   While the shoreside sector's economic activity involves two separate sectors, because the primary processing occurs in the GOA, both sets of economic activities have to be considered. To leave out shoreside processing ignores much of the value of the shoreside economic activity and underestimates economic impacts.

4. Assumptions about the industry's ability to make up slope rockfish revenues by fishing in areas not part of the GOA slope or by using alternative fishing gear

   For the catcher vessel fleet, data are not available to assign catch loss by haul location since virtually the entire fleet is 30% observed. Instead the analysis uses catcher vessel catch by statistical area based on ADF&G fish ticket information to determine the amount of catch from less than and greater than 200 meters. Where the GOA slope feature covers a portion of a statistical area, direct proportionality is assumed to correctly predict effects on catches and "revenue at risk" for that statistical area. This methodology could greatly underestimate the amount of catch attributable to the GOA slope area that would no longer be open to bottom trawling. This is because the entire harvest for any particular statistical area could have actually come from the geographic portion of the statistical area that is

greater than 200 m. For the CP sector, revenue at risk estimations were based on observer information, where individual tow location and catch composition was used to estimate the amount of affected catch. The analysis bases its conclusions on the percentage of observed catch attributable to hauls with haulback positions less than 200 meters. This assumption may not be viable because observed haulbacks that record a position with a corresponding depth of less than 200 meters may have involved fishing at depths greater than 200 meters. The sharp depth contours of the GOA slope nearly guarantees that fishing changes depth within individual. Secondly, for both sectors, the analysis concludes that GOA fishermen may be able to avoid losses by fishing with bottom trawls for slope species in areas not defined as the GOA slope (areas less than 200 meters depth for instance) or with pelagic trawl gear. One problem here is that if all fishermen are forced to fish in the areas of less than 200 meters depth where some slope rockfish complex species have been taken in the past, inefficiencies from crowding and grounds preemption issues would likely arise. Likewise, the most valuable components of the slope rockfish catches, such as shortraker rockfish and sablefish, would not be attainable under this scenario. Finally, it is basically pure speculation to conclude that "revenues at risk" may be made up by increasing pelagic trawling for slope rockfish. At present, a few areas of the GOA slope are known to have sufficient concentrations of slope rockfish that can be found sufficiently "off bottom" (at certain times) to allow fishermen to use pelagic-style nets. These conditions are currently thought to occur only in limited areas. In addition, many valuable species in the GOA slope complex have never been feasibly harvested with pelagic trawl gear.

5. Economic impacts need to be evaluated in the context of open access management

For all of the EFH mitigation alternatives, the affected fisheries are currently managed without any assigned rights to catch. It is important for the analysis to recognize this and apply basic economic theory its assessment of expected effects. Specifically, the analysis should explicitly recognize that in open access management, one would expect that the harvesting and processing sectors would be overcapitalized. The lack of assigned rights drives a "race for fish," where new entrants dissipate economic rents such that only infra-marginal rents are being attained. In this context, any reduction in annual revenue to the fishing or processing sectors can cause firms to fail. So even if revenue losses still appear minor in magnitude (although we feel they will no longer be as low as they are currently estimated to be once points 1-4 above are addressed), the open access context of these impacts must be elucidated in the analysis so the reader will understand that all firms are likely operating at or just above variable cost

margins. Given this baseline condition, the analysis cannot overlook the fact that any additional loss of revenue can have large effects.

6. Determinations of no community impacts are misguided

It appears that the analysis defines dependent community as the portion of the fleet that owns or operates fishing vessels out of a particular community. We feel the criterion for identifying a fishery-dependent community needs to be broadened to include the labor involved in fishing and processing as well as those people involved with the various direct and indirect support sectors such as fuel and parts providers, shipyards, insurance and accounting providers, etc. The analysis correctly identifies Kodiak as the most likely to be impacted of the GOA shoreside communities affected by GOA alternatives. Possibly due to the omission of consideration of impacts on the shoreside processing sector and failure to properly account for all revenue impacts of GOA alternatives, conclusions that "no community impacts" as a result of the GOA mitigation alternatives were made. This frankly seems absurd given that representatives of Kodiak have repeatedly commented during the development of the EIS that slope rockfish is a very important component of their community's tax base and seasonal labor flow. The community wanted to make it clear that Kodiak's ability to keep a year-round labor force depends on the rockfish fishery. For the at-sea sector, the analysis simply concludes that Seattle has too much economic activity and too many people relative to the estimated impacts, hence there are no effects on communities. In reality, the affected people are the catcher–processor owners and their employees who operate their businesses mostly out of the Ballard/Fishermen's Terminal area on Seattle's waterfront. This is actually a very definable community with dozens of fishing and marine dependent service businesses. Most of all, the Ballard/Fishermen's terminal community is not too large to not feel the impacts of the EFH alternatives. When a catcher processor business fails, the community in that portion of Seattle's waterfront is impacted. Additionally, most of the H&G vessels spend more than eight months per year in Alaska. This means that a significant portion of purchases of supplies, parts, fuel, and in-season repairs are made in Alaska, most often in Dutch Harbor, Kodiak, Adak, and Seward.

7. Methods to assess implementation and enforcement costs are not applied consistently for all alternatives

The assessment of effects of management alternatives in Chapter 4 only selectively raises the important issue of management and enforcement costs. For instance, the discussion of mitigation Alternative 2 provides a detailed account of

the potential costs of implementing and enforcing 11 GOA areas that would be closed to non-pelagic trawling. In contrast, Alternative 5b for the Aleutian Islands which would require tracking bottom trawl effort to ensure that fishing occurs only inside the literally dozens on non-contiguous open area boxes. Tracking and enforcing this Alternative 5b would likely present a whole order of magnitude more difficult task in terms of management and enforcement. Despite this, the analysis completely ignores these potential costs.

Alternatives to Describe and Identify EFH

The MCA supports Alternative 4 as the Preliminary Preferred Alternative to describe and identify EFH. This alternative, also recommended by the National Marine Fisheries Service, more narrowly defines EFH as areas of presumed known concentration of species managed by the NPFMC. The EFH descriptions would be revised using a narrower interpretation of the best available scientific information for those species and life stages for which sufficient information exists to identify possible areas of higher habitat function. MCA believes identifying and describing these smaller important areas as EFH would enable the Council, NMFS, and fishing interests to focus their ongoing conservation efforts more efficiently and effectively.

Alternative 4 is precautionary, as is necessary when much more information is needed regarding location of different habitats, as well as the importance of those habitats to the life stages and productivity of managed species.

Alternatives to Describe Approaches to Identifying HAPC

The MCA supports Alternative 3 as the Preliminary Preferred Alternative to describe approaches to identify Habitat Areas of Particular Concern. This alternative would allow the Council to adopt an approach which would permit specific sites within EFH to be selected to address a particular problem, and identified as HAPC. This alternative allows the Council to focus conservation measures on more specific locations, and to mitigate for specified impacts.

The NMFS recommends Alternative 4, which calls for identification of types of habitat with a potential need for added protection, then identification of sites within those types. While this approach would form a basis for the identification process, MCA fears that it could also be too limiting. For example, in the future we may have added information about habitats and their functions, and may be able to identify certain sites with both a high level of importance and a high probability of being affected. If those sites were not within the types identified as HAPC-process types, they may go

unprotected. MCA believes that the site approach guarantees more long-term flexibility for the establishment of any required protection.

EFH Alternatives to Minimize the Effects of Fishing on EFH

The MCA supports Alternative 1 as the Preliminary Preferred Alternative to minimize the effects of fishing on EFH. Under this alternative, no additional measures would be taken at this time to minimize the effects of fishing on EFH. However, a number of measures to protect habitat from potential negative effects of fishing are already in place, and these measures would remain.

The EIS analyzes seven alternatives to minimize, to the extent practicable. the adverse effects of fishing on EFH. Appendix B evaluates the effects of all North Pacific fisheries on EFH in Alaska, and concludes that no Council-managed fishing activities have more than minimal and more than temporary effects on EFH for any of the FMP species. Additionally, the analysis concludes the cumulative impact of all fishing activities combined have minimal, but not necessarily temporary, effects on EFH.

Although the analysis found some alternatives may be "practicable" based on an anticipated low cost to industry and communities (a conclusion with which MCA disagrees), none of the alternatives judged to be practicable were determined to bring significant benefit to managed species.

Importantly, additional mitigation measures seem unnecessary when there are no overfished groundfish species in the North Pacific. It is likely management measures already imposed in the North Pacific have contributed to the sustainability of the managed species and their habitat. Under Alternative 1, these regulatory measures would remain in place.

In July 2002, the Ocean Studies Board of the National Academy of Sciences (NAS) released their report "Effects of Trawling and Dredging on Seafloor Habitat." The report noted several important characteristics of Alaska bottom trawl fisheries relative to fishing effort. Bottom trawling occurs on less than half of the Alaska shelf. Of the areas fished, the intensity of bottom trawling is relatively low. Total bottom trawling (measured in number of tows) has declined significantly off Alaska during the 1990s, with a 30% reduction in the BS, a 50% reduction in the GOA, and a 33 % reduction in the AI. According to the NAS report, compared to the rest of the United States, the continental shelf off Alaska is subjected to relatively low bottom trawl effort.

The NAS report recommended tailoring management of effects of trawling and dredging to specific requirements of the habitats and the fisheries through a balanced combination of management tools, including: 1) fishing effort reduction; 2) modification of gear design and gear type; and 3) establishment of areas closed to fishing.

Past Actions by the Council and Agency to Protect Habitat

Efforts to integrate habitat considerations into fishery management go back to the Magnuson-Stevens Act in 1976. In 1983, NMFS adopted a National Habitat Conservation Policy, uniting its Magnuson-Stevens Act authority with its advisory responsibilities. The NMFS habitat policy was incorporated into the Alaska Region's FMPs through BSAI FMP Amendment 9 and GOA Groundfish FMP Amendment 14. Since then, the Council and NMFS have enacted specific measures that were designed, in part, to protect habitat from potential negative impacts of fisheries. These measures include gear restrictions, time and area closures, and harvest restrictions. Of these, the most widely used is closure of areas to certain gear types. This in effect creates a type of marine protected area.

Specific measures implemented in the North Pacific include the following:

Fishing Equipment Restrictions

The Council and NMFS have implemented several restrictions to fishing equipment, primarily to reduce bycatch, but these measures have also created the important benefit of reducing effects on EFH. Such restrictions include pelagic trawl requirement for the BSAI pollock fishery, scallop and dredge use limitations, pot size limitations in crab and groundfish fisheries, and allowable gear definitions which prohibit the use of unlisted gear types such as gillnets, explosives, chemicals, or other gears that could have adverse impacts on EFH.

Marine Protected Areas and Marine Managed Areas

Marine protected and/or managed areas can be used to preserve or restore fish habitats. Closing areas to particular gear types is a common tool used in fishery management to protect benthic habitat from adverse impacts. It is specifically cited in EFH management regulations and also noted in the NAS report as an effective mitigation tool. Over the years, the Council, NMFS, and the Alaska Board of Fisheries have adopted numerous area closures to protect habitat for fish, crabs, and marine mammals. Together, these closed areas exceed 130,000 square miles, a size twice that of the entire Georges Bank, or equal to the size of Indiana. These closures include the Pribilof Islands Habitat Conservation Area, the Bristol Bay Trawl Closure Area, the Red King Crab Savings Area, the Kodiak Trawl Closure Areas, the Southeast Alaska Trawl Prohibition, the Cook

Inlet Trawl Closure Area, the Sitka Pinnacles Marine Reserves, the Steller Sea Lion and Walrus Islands Closure Areas, Seasonal Groundfish Closures Areas, Scallop Dredge Closure Areas, and State Waters Trawl and Dredge Closure Areas.

Harvest Limits

The regulations for managing adverse effects on EFH from fishing note the fishery management actions to mitigate effects may include limits on the take of species. Limits presently in place include tightly controlled catch limits for target species and protected species, optimum yield limits capping the GOA at 800,000 mt and the BSAI at 2 million mt of groundfish removals, and a prohibition on development of a forage fish fishery. All of these management measures reduce the intensity of fishing effort and, therefore, effects on benthic habitat, as noted in the NAS report.

Effort Reduction and Limitation

The effects of fishing on fish habitat depend to some extent on the amount and intensity of fishing effort. Because fishing effort appears to have been controlled with existing catch limits and fishing effort reduction measures, additional measures to directly reduce fishing effort were thought to be neither reasonable nor practicable as tools to reduce the effects of fishing on EFH, and so were not included in the suite of alternatives. In addition to conservative catch limits there are several effort limitation measures already in place for groundfish, crab, and scallop fisheries, which further reduce intensity of fishing effort and gear impact to benthic habitat. Although habitat protection was not the primary rationale used in developing these programs, limiting effort does benefit habitat. Those programs include groundfish and crab moratorium, scallop vessel moratorium, groundfish and crab License Limitation Programs, and the scallop License Limitation Program.

Fishery Rationalization Programs

Rationalization of excess fishing capacity can result in reduced impacts to fish habitat. The NAS report noted "The establishment of some form of rights-based management program is one approach for meaningful and permanent reduction of fishing effort." The Council and NMFS have implemented rationalization programs for some fisheries already and other programs are under development, including efforts for the BSAI crab fishery, GOA groundfish fisheries, and BSAI non-pollock species. Existing rationalization programs include the halibut and sablefish Individual Fishing Quota (IFQ) program, the Community Development Quota (CDQ) groundfish and crab programs, and the American Fisheries Act, which rationalized the BSAI pollock fishery.

Precautionary Actions to Protect Habitat

In its recommendations to the Council on potential EFH actions, NMFS notes uncertainty remains regarding the application of the fishery impacts model to the EFH analysis. Nonetheless, the model is based upon the best scientific information available and, as discussed elsewhere in these comments, its application overestimates the effects of fishing because of the precautionary assumptions used in the model.

NMFS has recommended the Council consider additional precautionary options to protect deep-water coral communities even though fishery impacts have been determined to be minimal and temporary. One possible Council action would be to prohibit bottom-contact trawling in the lower slope/basin areas deeper than 1000 meters. The agency believes such a measure might protect habitats from future impacts with almost no short-term costs. This could be done either by endorsing one of the alternatives that includes this proposed closure, or identifying specific lower slope/basin closures to be analyzed separately from other measures in a distinct new alternative. This would require adding a new alternative to the EIS, which seems inappropriate at this late date, especially since the analysis shows fishery effects on habitat to be minimal and temporary.

Additionally, the proposed new alternative does not seem designed to protect the habitat of managed species from identifiable effects caused by fishing and so does not address the Council's problem statement. Further, because little is known about these deep basin areas, scientific data used to analyze this alternative would likely be limited and do little to increase certainty about the efficacy of this precautionary approach.

However, MCA is not backing off from a precautionary approach in the protection of habitat. In supporting Alternative 1, the MCA acknowledges and supports the continuation of the protective measures cited above. Importantly, the MCA supports using the HAPC process to identify discrete sites that deserve special habitat protection measures. The MCA believes, through the development of specific HAPC protection measures, the Council and the Agency can effectively use the best scientific information available to protect fragile and rare habitats that contribute to the productivity of the managed species.

Appendix B
Effects of Fishing

Comments on Habitat Effects Model

The habitat effects model in Appendix B is a pioneering analytical attempt to link the effects of fishing on essential fish habitat (EFH) to the long-term sustainability of

Alaska's managed groundfish species. We believe the analysts did a reasonable job assessing effects and attempting to evaluate linkages at all critical life stages for managed species. For this, we applaud the NMFS' very solid attempt to systematically evaluate habitat effects in the context required by the EFH mandate. Given the state of the art for scientific work in this area, this is no small accomplishment, especially considering the data gaps and outright lack of similar analytical work to use as technical guidance. Given these limitations, the analysis is appropriately candid in acknowledging the methodologies are clearly still in the development stage. As the text often explains, NMFS had to rely at times on proxy data to take the place of more appropriate data because those more suitable data were simply not available.

Throughout the development of the Appendix B analysis, several interested parties insisted that a precautionary approach be used in the development of the habitat effects model and selection of data to parameterize that model. To this end, these advocates insisted values used for habitat recovery times for long-lived invertebrates such as corals were not adequate. While there are no published studies to estimate recovery for corals and sponges in Alaska, analysts agreed to use recovery values from outside studies for some of the model runs. This was done to create an upper bound estimate of fishing effects.

Representatives of the fishing industry argued that data used to evaluate the spatial aspects of fishing in Alaska were overly broad and lacking appropriate detail, but alternate data to evaluate the sensitivity of the model were not available. MCA feels this was unfortunate because better data on the spatial aspects of fishing could have helped make the model more applicable to actual commercial fishing effects in Alaska. We also believe the end result would have been lower estimated effects on EFH from the model runs. In retrospect, the magnitude of effect scores may not be important compared to NMFS's overall finding that effects were not more than minimal or temporary. Regardless, MCA feels it is important to strive to make habitat effects models as realistic and pertinent as possible. While the text of Appendix B does admit, in several places, there is potential for an overestimation of fishing effects due to data limitations, the tendency for some reviewers is to overlook these issues and focus on the model results. For this reason, we have focused on these technical issues in our comments below. We hope this will help the Council consider the model results in a more informed manner. We also hope this will help illustrate the importance in the future of improving spatial data on fishing effort and intensity.

To evaluate the potential effects that lack of resolution in spatial data may have had on the model results, we must acknowledge a few basic features of the model and its application. The model applies fishing effort to 5 x 5 square kilometer blocks based on

recent historical observed fishing location data. Using these fishing location data, the model equilibrates (balances) assumed habitat recovery rates against how fishing is expected to affect habitat based on characterizations of effects on habitat features from published fishing effects studies. From this, the model calculates long-term effect index (LEI) scores to evaluate the relative effects of fishing on different types of benthic habitat in different areas. These ratings are based on the sum of effects versus recovery on 5 x 5 blocks across habitat features. Perhaps the most convenient way to look at the LEI scores is to see them as the estimated percent of a habitat feature affected in the long run by the cumulative effects of fishing when comparing the on-going fishing effect on a spatial basis to the estimated rate of recovery for different habitat features. Effects are also illustrated in terms of selected micro areas of intense fishing activity in the discussion section and on a 5 x 5 square block effect basis in Figures B.2.1-6.

While some may express concern over fisheries or areas with relatively high LEIs or sub-areas with relatively high estimated effects on EFH, as we explain below, a more precise source of spatial data might have greatly lowered assessed fishing effects from the model, particularly where fishing was thought to cover a large percentage of a habitat feature or portion thereof when, in fact, it probably does not in many cases. This possibility is mentioned in Appendix B as well. Page B-24 of the analysis mentions if fishing is inherently "patchier" than the way fishing effort was modeled, then the LEI scores and the analysis' sub–areas where effects might be relatively high. For example, the remarks in the analysis as to higher relative effects on intensively fished areas, such as Unimak Pass, might have taken an entirely different direction.

The notion trawling is inherently patchy is consistent with an important paper (Duplisea, 2003) referred to by Dr. Jon Heifetz in his remarks to the Council in Kodiak last June. In fact, commercial fishing effort is inherently patchy and anything but randomly applied. Due to data limitations, however, effort in the model was assigned to 5 x 5 square kilometer blocks as if fishing were essentially random. In effect, effort was assigned to a given block based on observed haulback location of the effort. So, if there was sufficient effort (based on area swept) assigned to a given block based on haulback location, then the model effectively assumes that all of the area in that block was actually fished. This assumption also assumes, incorrectly, that all relevant habitat features within the block are affected by fishing. Hence, due to a lack of resolution for the fishing effort data, we believe all indicators of fishing effects are upwardly biased.

A better source of effort data would have been data from vessel monitoring systems (VMS), which can be used to display the actual paths of fishing locations. From

the technical data collected on fishing gear, investigators may also evaluate trawling based on the actual width of the tow tracks. The industry has reviewed fishing bottom trawl effort in this more precise format to evaluate the degree to which trawling effort is repetitive and overlaps spatially. These data were plotted for bottom trawling effort by the entire catcher processor bottom trawl effort on an annual basis, and dramatically illustrated that even in high intensity fishing locations, a large portion of the area on a 5 x 5 block basis (or at other levels of resolution) remains unfished due to the highly clustered nature of the actual fishing effort.

Thus, the very patchy and repetitive spatial conduct of fishing appears to leave some (in many cases, a great deal) of the habitat unaffected, even in intensely fished areas and especially in medium to lightly fished areas. We feel this different approach to evaluation of the spatial aspects of fishing would likely have greatly affected all relevant indices of habitat effects of fishing in the model. This is an important possibility worthy of further exploration. Unfortunately, with the VMS requirement becoming universal only approximately one year ago, it is still too early for this data set to be useful for EFH effects modeling purposes. We have developed some examples of how fishing effort appears under the modeling approaches used in the EIS versus the actual area affected to illustrate this point to the Council. We hope to present this information in public testimony as part of our overall comments on the EFH EIS.

Before moving away from the issue of how limitations in the spatial aspects of effort may have upwardly biased estimates of fishing effects, we hasten to add one additional point regarding how this could have had an even greater effect in some management areas. Recall that the analysis states that there were no data available to determine the relative proportion of soft and hard bottom substrate for slope features in the Gulf of Alaska and Aleutian Islands. This required the use of assumptions about the proportion of hard to soft bottom. While this may not be an unreasonable approach given the state of development of the model, the downstream effect could mean that the assessment of effects on portions of features (e.g., Unimak Pass) and 5 x 5 blocks in Figures B-2 1-5 may suffer from even greater overestimation as a result of this approach.

Consider that in the assessment of relative effects of fishing in the B-2 figures in appendix B, fishing effort was applied proportionally to the assumed percentage of hard versus soft bottom substrates. So, if 80% of each block on the Aleutian Islands or GOA slope was assumed to be hard bottom substrate and 20% soft bottom, then the fishing was applied across that assumed distribution. Effectively, 80% of the fishing in any 5 x 5 block is assumed to be applied to hard bottom features. Once again, common sense should be used to evaluate this approach. We believe trawling in areas such as the Aleutian Islands or Gulf of Alaska slope is very spatially selective to "trawlable"

grounds, and most of the trawlable grounds are soft bottom substrates, sometimes adjacent to hard bottom substrates. The assumption that trawling occurs evenly across an assumed proportion of hard and soft bottom features could greatly overstate the effects on hard bottom slope features.

In this case, while the 80% hard, 20% soft ratio may be reasonable for the relative proportion of habitats in the Aleutian Islands, the notion that 80% of fishing occurs on hard bottom substrates and 20% in soft bottom substrates is questionable. Assuming we are correct that this proportion of fishing in hard bottom substrates markedly overstates actual fishing, then the model could further overstate fishing effects where proportions of substrate types and accompanying assumptions about fishing effort were made in the GOA and Aleutian Islands.

This is important because habitat features in hard bottom areas are where the model assumes invertebrates such as corals and sponges exist. For this reason, we are concerned that the micro area effects figures (B-2 1-5) will be used to attempt to identify hotspots for protection. For the reasons described above, the indices of relative effect in Figures B-2 may be more an artifact of the lack of data on substrate type than indicative of hotspots of actual effects.

Our final comment on the EFH model regards how we believe quantitative results should be viewed. While some advocates have used the rankings (LEI scores) from the Rose/Fujioka model to argue the EFH "sky" is falling in Alaska, we offer an alternative interpretation. This alternative interpretation relates to the notion of "affected" habitat, and essentially what the model never really attempts to elucidate to the reader regarding the meaning of "affected" in the first place.

As mentioned in Appendix B, the LEI scores estimate the percent of a given habitat feature "affected" at equilibrium, and readers are left to make their own assumptions as to what that really means. The notion of " affected" is especially noteworthy, considering the proliferation of environmental protection campaigns equating bottom trawling with "clear cutting." We believe it is intuitively obvious habitat affected by fishing in Alaska need not necessarily be considered to have reduced habitat function in terms of productivity of FMP species. Fishing location data strongly demonstrate that trawling and fixed gear fishing occurs repetitively within seasons and year after year at the same locations. Additionally, the NMFS trawl surveys identify concentrations of fish in the same locations that commercial fishing occurs, either contemporaneous with commercial fishing or in the summer months when groundfish fishing is usually not very active.

Logically, this is strong evidence fish are using fished (i.e., "affected") habitat again and again, even if that habitat has been exposed to commercial fishing for many years. Clearly, fished habitat is being used by managed groundfish species in their adult life stages, because fish are spending a great deal of the year, repeatedly year after year, in areas where commercial fishing is conducted.

Some striking examples of this are the intensively fished micro areas identified in the Appendix B text such as Unimak Pass, the central Bering Sea area between the Pribilof Islands, and the Red King Crab Savings Area just outside of Bristol Bay. Flatfish and pollock are caught in these areas for large portions of the year, each year. Likewise, cod are densely concentrated in the Pass "cod alley" year after year, during the pre-spawning period when they can be expected to aggregate in that micro-area. Another example is in the Aleutian Islands and Gulf of Alaska where GIS data show that trawlers catch Atka mackerel, Pacific cod, and rockfish in the same micro locations year after year.

We feel Appendix B could do more to guide the reader so as to not necessarily jump to the conclusion that "affected" habitat necessarily had reduced function in terms of productivity of groundfish. Instead, however, we feel the text leaves the reader with the assumption that affected means impaired habitat function because the focus of the analysis is mainly on what percentage of habitat is, at equilibrium, in a "non-affected" state. For this reason, we believe the Council and the public need to view LEI scores more critically. While the LEI is treated in the analysis as a percentage of habitat affected by fishing, there is good reason to conclude affected habitat still provides significant habitat function to adult stage groundfish.

From the MCA's perspective, an important question is whether the habitat not affected by fishing (according to the model, this number is generally greater than 90% for most habitat features) is any more productive for managed species than the "affected" percentage. We suggest this be a priority for future scientific investigation in Alaska.

Thank you for the opportunity to comment. Attached below are the MCA's previous comments on the proposed HAPC process you may consider at this meeting. We look forward to working with you on this important process.

Sincerely yours,

Ronald G. Clarke
Executive Director

Appendix J

MCA Comments on Proposed HAPC Process

Habitat areas of particular concern (HAPC) are those areas of special importance that may require additional protection from adverse effects. The interim final rule states, "In determining whether a type, or area of EFH is a HAPC, one or more of the following criteria must be met:

(i) The importance of the ecological function provided by the habitat.
(ii) The extent to which the habitat is sensitive to human-induced environmental degradation.
(iii) Whether, and to what extent, development activities are, or will be, stressing the habitat type.
(iv) The rarity of the habitat type."

In June 1998, the Council identified several habitat types as HAPC within the essential fish habitat amendments 55/55/8/5/5. Habitat types, rather than specific areas, were designated as HAPC because little was known at the time regarding where these habitat types were located. These HAPC types included:

1. Areas with living substrates in shallow waters (e.g., eelgrass, kelp, mussel beds, etc.)
2. Areas with living substrates in deep waters (e.g., sponges, coral, anemones, etc.)
3. Freshwater areas used by anadromous fish (e.g., migration, spawning, and rearing areas)

A summary of the History of HAPC by NPFMC is provided in Chapter 2 of the EFH EIS.

The Council formed an EFH Committee in April 2001 to act as a steering committee for the EFH EIS process. The Committee's overarching goal was to facilitate input by the industry, conservation community, Council, and general public into the EFH EIS process. In regards to HAPC, the committee worked cooperatively with Council staff and NMFS to identify alternative criteria and approaches that could be used to designate and manage HAPC areas. The Committee met for the first time May 20, 2001 and has continued to hold meetings through May 2003. The Committee aided in formulating the HAPC designation alternatives referred to in Chapter 2.

In April 2003 the Council directed the EFH Committee to develop and recommend a HAPC process. The EFH Committee met May 5-6 and developed a draft process, which is the basis for these comments from MCA. The process will need to be formalized by the Council to meet the requirements of the settlement agreement dated May 20, 2003.

In accordance with the Magnuson-Stevens act and the motion of the North Pacific Fishery Management Council (Council) of April 6, 2003, on EFH, NMFS will work with the Council to develop a process for the evaluation and possible designation of Habitat Areas of Particular Concern (HAPCs) and the implementation of any associated measures. Final regulations implementing HAPC designations, if any, and any associated management measures that result from this process will be promulgated no later than August 13, 2006, and will be supported by appropriate NEPA analysis.

In the process to prepare the EIS concerning EFH for the North Pacific fishery management region and in the process to consider the designation of HAPCs and the implementation of any associated management measures, NMFS will make public all available information not otherwise considered confidential, privileged, or protected under applicable laws and agreements with other governmental and trial entities, about the location, type and relative abundance of structure-forming invertebrates (e.g. corals and sponges) and their associated species, including but not limited to bycatch information gathered from at-sea observers, trawl survey data, and submersible/ROV information by NMFS and other scientists. NFMS will analyze all relevant information as part of the EFH EIS process and the HAPC process.

MCA Comments on HAPC Process Executive Summary

The MCA recommends that consistent with the NEPA process the Council adopt the following outline.

1. A. Council considers establishing HAPC criteria
   B. Council considers establishing HAPC priorities; priorities reviewed every HAPC cycle.

2. Call for proposals (open to ADFG, NMFS, public, etc., consistent with normal Council process and timing). Proposals submitted on HAPC form developed by Council.

3. Proposals screened by Council staff to determine consistency with EFH/HAPC Final Rule and application completeness. If not consistent or complete, proposal is rejected. If accepted, proposal is forwarded to next step.

4. Proposals reviewed by Technical Review Committee. Proposals are evaluated for:
   1) ecological considerations 2) socioeconomic practicability and 3) management and enforceability. Proposals forwarded to Council with recommendations and comments.

5. Council selects HAPC proposals for NEPA analysis.

6. Council determines appropriate stakeholder process.

7. Council determines need for further technical review

8. Public comment on NEPA analysis.

9. Council receives a summary of public comments and takes final action on HAPC selections and management alternatives, if any.

MCA Comments on Draft HAPC process

1A. Council consideration of establishing HAPC criteria

Public comment received from scientific community, AP, NMFS, ADFG, and public. Criteria for scientific evaluation of proposals identified, along with criteria for evaluating management measures. In soliciting HAPC proposals, the Council may decide to: identify as criteria only those considerations outlined in the EFH Final Rule; provide additional guidance to the public by establishing criteria or priorities in addition to those outlined in the EFH Final Rule; or adopt the category/process outlined by the ecosystem committee in 2001. These alternatives, along with some options or variations, are outlined below. Once identified, any additional criteria or priorities, along with the criteria developed for the scientific review, should be widely publicized to guide development of HAPC proposals.

Alternative A) HAPC identified using considerations from EFH final rule (outlined below).

According to the language of the NMFS EFH Final Rule, EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, to be particularly vulnerable to degradation, or to be particularly rare should be identified as a "habitat area of particular concern" (HAPC) to help provide additional focus for conservation efforts. The rule provides the four basic considerations of an area for HAPC designation. The four considerations are:

(1) the importance of the ecological function provided by the habitat;

(2) the extent to which the habitat is sensitive to human-induced environmental degradation;

(3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and,

(4) the rarity of the habitat type.

The Final Rule also specifies that habitats that are particularly vulnerable to specific fishing equipment types should be identified for possible designation as habitat areas of particular concern. The intent of the HAPC designation is to identify those areas that are known to be important to species that are in need of additional levels of protection from adverse impacts (fishing or non-fishing). Designation of habitat areas of particular concern is intended to determine what areas within EFH should receive more of the Council's and NMFS' attention when providing comments on federal and state actions, and in establishing higher standards to protect and/or restore such habitat.

Alternative B) Council establishes additional criteria for HAPC identification.

Criteria alternatives (alternatives are not intended to be mutually exclusive):

1) Whether the Council designates HAPC as sites or types, management measures, if needed, will be applied to a habitat feature in a specific geographic location, identified on a chart, that meet the considerations established in the regulations, and will be developed to address identified problems for FMP species and achieve clear, specific adaptive management objectives (included in the Introduction).

2) The evaluation and development of HAPC management measures, where management measures are appropriate, shall be guided by the EFH Final Rule.

Alternative C)

****MCA preferred alternative****

Council establishes additional criteria for HAPC identification as follows:

The Council requires that a proposal to designate a HAPC successfully address at least two of the considerations listed in the EFH Final Rule, with one of them being #4, rarity of the habitat type. The four considerations are:

(1) the importance of the ecological function provided by the habitat;

(2) the extent to which the habitat is sensitive to human-induced environmental degradation;

(3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and,

(4) the rarity of the habitat type.

Also, the Council requires that:

(1) a HAPC proposal address identified problems for FMP species, and

(2) management measures, if any, are applied in a specific geographic location, identified on a chart.

1B. Council considers establishing HAPC priorities; priorities reviewed every Council cycle.

Alternative A) Council does not set priorities

Alternative B) Council selects habitat priorities (priorities reviewed and either modified or reaffirmed prior to each call for proposals)

Rank the HAPC considerations established by NMFS according to the priorities of the Council. HAPC proposals that target higher Council priorities could be weighted higher than others.

Alternative C)

****MCA preferred alternative****

Council gives priority to the HAPC proposals that meet all four criteria in the EFH Final rule.

2. Call for proposals for HAPC Process

****MCA preferred alternatives****

(1) HAPC proposals should be solicited every five years, and

(2) on the same cycle as the regular plan or regulatory amendment cycle.

Proposal Cycle Options:

1. Proposals are solicited and reviewed every:
   a) 3 years b) 5 years
2. Proposals submitted during:
   a) regular plan/ regulatory amendment cycle (Summer call for proposals due in the Fall)
   b) Separate cycle

Any member of the public may propose a HAPC, including fishery management agencies, other government agencies, scientific and educational institutions, non-governmental organizations, communities, industry groups.

****MCA recommends****

that HAPC proposals be taken from any individual or entity permitted to submit proposals for regular plan/regulatory amendments.

The Format for a HAPC proposal should include:

- Name of proposer, address, and affiliation
- Title of proposal: *Provide a title for the HAPC proposal and a single, brief paragraph concisely describing the proposed action.*
- Identification of the habitat and FMP species the HAPC proposal is intended to protect.
- Statement of purpose and need.
- A description of whether and how the proposed HAPC addresses the four considerations set out in the final EFH regulations.
- Specific objectives for this proposal, including proposed management measures and their specific objectives, if appropriate.
- Proposed solutions to achieve these objectives (how might the problem be solved)
- Methods of measuring progress towards those objectives.

- Expected benefits to the FMP species of the proposed HAPC, and supporting information/data.
- Identification of the fisheries, sectors, stakeholders and communities to be affected by the establishment of the proposed HAPC (Who benefits from the proposal and who would it harm?) and any information you can provide on socioeconomic costs, including catch data from the proposed area over the last five years.
- Clear geographic delineation for proposed HAPC (written latitude and longitude reference points and delineation on an appropriately scaled NOAA chart)
- Provide best available information and sources of such information to support the objectives for the proposed HAPC. (*Citations for common information or copies of uncommon information*)

Proposals screened by Council staff to determine consistency with EFH Final Rule and application completeness. If not consistent or complete, proposal is rejected, If accepted, proposal is forwarded to next step.

Proposals reviewed by a Technical Review Committee.

The Council names a Technical Review Committee made up of scientists in the appropriate disciplines, social scientists and economists, and management and enforcement specialists. The team evaluates the proposals for ecological, socio-economic, management and enforceability considerations, and for practicability. The team ranks the proposals using a system like the matrix illustrated below, and makes their recommendations directly to the Council.

Evaluation of Candidate HAPC's:

The team should evaluate each proposal on the basis of how well it meets the criteria for HAPC established in step #1 and the requirements established in step #2 above, and determine whether designation and any management measures are warranted. The review team should give all considerations equal attention, but the overall depth of analysis at this stage needs further thought.

In the NPFMC Environmental Assessment of Habitat Areas of Particular Concern (NPFMC 2000), proposed HAPC types and areas were evaluated using a ranking system that provided a relative score to the proposed HAPCs by weighing them against the four considerations established in the EFH final rule.

Two more columns should be added to the matrix. One column is to score the level of socio-economic impact, with the lower the impact, the higher the score. The final column

is to score the level of likelihood that the proposal will successfully address the identified problem of the FMP species. To arrive at this score, reviewers must consider the known information on the relative linkage of the habitat function to the health and productivity of the FMP species.

The "Data Level" column should be modified to be "Level and Certainty of Data" to reflect not only the amount of data available, but also the scientific certainty of the information supporting the proposal.

A written description should accompany the ranking so it is clear what data, scientific literature, and professional judgments were used in determining the relative score.

Evaluation matrix of proposed HAPC types and areas, with example proposals for

Proposed HAPC area	Data Level	Sensitivity	Exposure	Rarity	Ecological Importance
Seamounts and Pinnacles	1	Medium	Medium	High	Medium
Ice Edge	3	Low	Low	Low	High
Continental Shelf Break	3	Medium	Medium	Low	High
Biologically Consolidated Sediments	1	Low	Medium?	Low	Unknown

illustration only. (NPFMC 2000)

Socioeconomic and other criteria:

The EFH mandate states that EFH measures are to minimize impacts on EFH "to the extent practicable" so socioeconomic considerations have to be balanced against expected ecological benefits at the earliest point in the development of measures. NMFS' final rule for developing EFH plans states specifically that (Section (2) *ii F.R.* page 2378) FMPs should "identify a range of potential new actions that could be taken to address adverse effects on EFH, include an analysis of the practicability of potential new actions, and adopt any new measures that are necessary and practicable". In contrast to a process

where the ecological benefits of EFH or HAPC measures are the singular initial focus and a later step is used to determine practicability, this approach would undertake the consideration of practicality simultaneously.

Specifically, HAPC proposals should be rated on their identifying as extensively as possible the exact locations that would be affected if the proposed HAPC mitigation measures were implemented. Proposals should also be rated on their identifying affected fishing communities and the potential effects on those communities, employment and earnings in the fishing and processing sectors, and related infrastructure.

Management and enforcement will also need representation in the review, to evaluate general management cost and enforceability of individual proposals.

5. Council selection of HAPC proposals for analysis, to address Council priorities if identified.

6. Stakeholder input

The Council retains the authority to set up a stakeholder process as appropriate to obtain input on proposals.

7. Technical reviews

The Council retains the authority to obtain additional technical reviews as needed from scientific, socio-economic and management experts.

8. Public comment on NEPA analysis

9. Council action

As per the normal Council process, the Council receives public comments and takes final action on HAPC selections and management alternatives.

Literature Cited:

ADF&G 2002. Marine Protected Areas in Alaska: Recommendations for a Public Process. Alaska Department of Fish and Game Division of Commercial Fisheries. Juneau, AK.

Auster, P.J. 2001. Defining Thresholds for Precautionary Habitat Management Actions in a Fisheries Context. North American Journal of Fisheries Management 21: 1-9.

NPFMC 2000. Draft Environmental Assessment/ Regulatory Impact Review. Habitat Areas of Particular Concern. North Pacific Fishery Management Council. Anchorage, AK.

Roberts. C.M. et al. 2003. Application of Ecological Criteria in Selecting Marine Reserve and Developing Reserve Networks. Ecological Applications. 13(1): S215-S228.

ADDENDUM: from New England Council
Supportive Data and Information:

The HAPC proposal form will have a section asking the submitter to include any supportive data and other relevant material. The New England Fishery Management Council has detailed a list of accepted information sources to support HAPC proposals. This or a similar list may be useful to detail, so the public knows what scientific information the review panel will be looking for.

From - NEFMC Habitat Areas of Particular Concern Process:

> General Scientific Data and Information – The information used by the proposer to justify an HAPC proposal comes from scientific peer-reviewed journals, government technical reports, or from unpublished scientific data. This category includes any scientific data or information that are not site-specific but still bear relevance on the issue by demonstrating one of the HAPC criteria.
>
> Site-Specific Scientific Data and Information – The information used by the proposer to justify an HAPC proposal comes from scientific peer-reviewed journals, government technical reports, or from unpublished scientific data. This category includes any scientific data or information that are derived from or for the specific area under consideration in the HAPC proposal.
>
> Literature Review - The information used by the proposer to justify an HAPC proposal comes from a review of peer-reviewed literature and government technical reports. This includes summaries of the results of scientific studies published in peer-reviewed journals and technical documents. The literature review may be prepared by the proposer or may be prepared by another source and should clearly articulate the link between the area, habitat type, or species in question with at least one of the HAPC criteria.

Substrate Mapping – The information used by the proposer to justify an HAPC proposal includes substrate mapping of the specific area under consideration. The source of the

substrate mapping should be a federal agency, such as the U.S. Geological Survey, a state agency, an academic institution, or a research collaborative. The substrate maps should be provided to the Council and readily available for external review.

Oceanographic Information – The information used by the proposer to justify an HAPC proposal includes information on the oceanographic features occurring in the specific area under consideration. This information can include, but not be limited to, the tracking of currents, identification of relatively stable and persistent gyres, oceanographic fronts, thermoclines, haloclines, or pycnoclines. Reference to any transient oceanographic feature(s) should include a description of the importance of the feature to the target species or habitat type.
NEPMC, 2002.

Traditional Knowledge: Incorporate all traditional knowledge as information to justify a HAPC proposal.

STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

ALASKA BOARD OF FISHERIES

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PHONE: (907) 465-4110
FAX: (907) 465-6094

October 2, 2003

Chris Oliver, Executive Director
North Pacific Fishery Management Council
605 W. Fourth St., Suite 306
Anchorage, AK 99501

Dear Mr. Oliver:

The joint North Pacific Fishery Management Council/Board of Fisheries protocol committee requested input from the board on the "Suggested working definitions for EFH and MPA processes (dated May 6, 2003). Enclosed you will find the board's recommendations.

The board discussed these recommendations at its October work session, and appreciates the opportunity to provide input to the council. The board recognizes that as the council moves forward to finalize its EFH process and identify areas in Alaska, the council will be consulting the board on any management actions that would be intended for state waters.

Please forward the board's recommendations to the council for its October meeting. Thank you.

Sincerely,

Diana Cote

Diana Cote, Executive Director
Alaska Board of Fisheries

Enclosure

Board of Fisheries MPA Committee
Recommendations to the NPFMC
on 5/6/03 EFH and MPA Process Working Definitions

The Board of Fisheries Committee of Marine Protected Areas (MPA's) recommends to the full Board that the following be sent to the NPFMC as suggested changes to their working definitions for EFH and MPA processes.

Marine
The committee finds this definition is acceptable as written, however it could be enhanced by clarifying that the State of Alaska has jurisdiction 0-3 miles from the baseline, and the Federal Government has jurisdiction from 3-200 miles.

Marine Protected Area (MPA)
The Committee recommends that this definition not be limited only to year-round protection measures (i.e.: seasonal protection measures should be included).

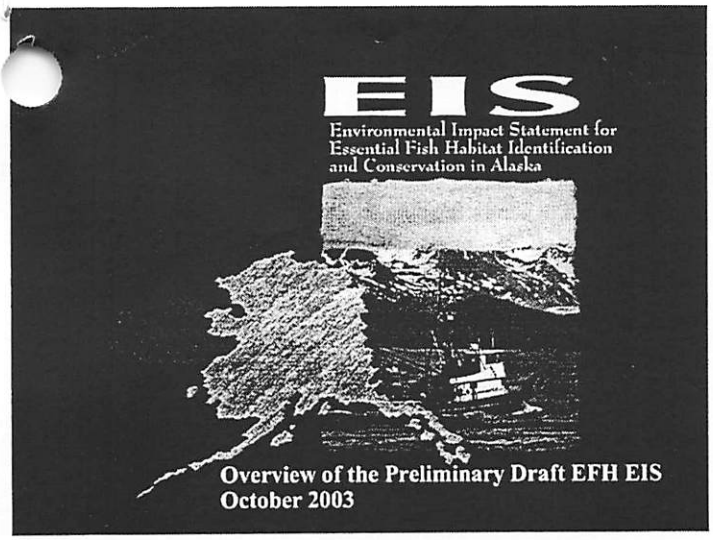
Marine Reserve (MRV)
Expand to include research activities.

Marine Research Reserve (MRR)
Strike this sub-category, as research has been included under MRV's.

Marine Managed Area (MMA)
Strike this definition, which is similar to the originally written MPA definition without the requirement for the protection measures to be year-round. If desired, a new definition could be created to cover protections measures that are year-round.

Other Managed Areas (OMA)
The Committee finds this definition acceptable, however, if the NPFMC will be considering or recommending restrictions on other (non-fisheries) activities, those stakeholders or interest groups should be included in a process that takes their concerns into consideration.

Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC)
The committee finds these definitions acceptable.



Staff Presentation on the EFH EIS

1. Background Behind the EIS
2. EFH Description and Identification
3. Approach for HAPCs
4. Minimizing the Effects of Fishing
5. NMFS Recommendations
6. HAPC Process

NOAA Fisheries
National Marine Fisheries Service

North Pacific Fishery Management Council

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"Defendants' EAs are insufficient, and violate the mandates and principles underlying NEPA. ...Defendants are ordered to perform a new and thorough EA or EIS as to each EFH Amendment, in compliance with the requirements of NEPA."

– U.S. District Judge Gladys Kessler
AOC v. Daley, September 2000

2

Background Behind the EFH EIS

- This NEPA analysis reconsiders the action taken by the Council in 1998 and approved by NMFS in 1999.
- PROPOSED ACTION: Amending the Council's FMPs to include EFH information, as required by Section 303(a)(7) of the Magnuson-Stevens Act
- Since the focus of AOC v. Daley was the effects of fishing on EFH, the evaluation of alternatives to address fishing impacts is especially important.

3

Three Actions in the EFH EIS

1. Describe and identify EFH
2. Adopt an approach for identifying HAPCs
3. Minimize to the extent practicable the adverse effects of fishing on EFH

For each action the EIS evaluates "no action," the action taken by the Council and NMFS in 1998-99, and other alternatives.

4

Describing and Identifying EFH

Four Level Approach in the EFH Regulations

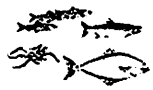
- Level 1: distribution data
- Level 2: relative abundance data
- Level 3: growth, reproduction, or survival rate data
- Level 4: production rate data

If only Level 1 information is available, Councils should identify EFH as the habitats most commonly used by the species. If Level 2 through 4 information is available, Councils should identify EFH as the habitats supporting the highest relative abundance; growth, reproduction, or survival rates; and/or production rates within the geographic range of the species.

5

Approach for Identifying HAPCs

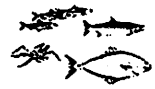
- Under the EFH regulations, Councils should identify specific types or areas of habitat within EFH as HAPCs based on their ecological importance, sensitivity, susceptibility to stress, or rarity.
- The alternatives in the EIS are a range of different methodological approaches, rather than different specific types or areas of habitat.
- The Council plans to identify specific HAPCs via a separate process.



6

Minimizing the Effects of Fishing on EFH

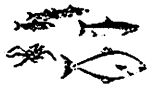
- "Councils must act to prevent, mitigate, or minimize any adverse effects from fishing, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature..."
- "Temporary impacts are those that are limited in duration and that allow the particular environment to recover without measurable impact. Minimal impacts are those that may result in relatively small changes in the affected environment and insignificant changes in ecological function."



7

When Is Action Needed to Minimize the Effects of Fishing on EFH?

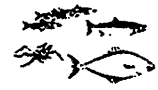
- "Such action is warranted to regulate fishing activities that reduce the capacity of EFH to support managed species, not fishing activities that result in inconsequential changes to the habitat."
- "It is not appropriate to require definitive proof of a link between fishing impacts to EFH and reduced stock productivity before Councils can take action to minimize adverse fishing impacts to EFH to the extent practicable. Such a requirement would raise the threshold for action above that set by the Magnuson-Stevens Act."



8

What Actions Are "Practicable" to Minimize the Effects of Fishing on EFH?

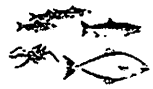
- "In determining whether it is practicable to minimize an adverse effect from fishing, Councils should consider the nature and extent of the adverse effect on EFH and the long and short-term costs and benefits of potential management measures to EFH, associated fisheries, and the nation, consistent with national standard 7... Councils are not required to perform a formal cost/benefit analysis."
- "FMPs must explain the reasons for the Council's conclusions regarding the past and/or new actions that minimize to the extent practicable the adverse effects of fishing on EFH."



9

Council Actions at this Meeting

1. The Council needs to pick its preferred alternative for each action in the EFH EIS. The Council may select one preferred alternative for each action, or may designate a subset of the alternatives as the preferred range of alternatives.
2. The Council needs to finalize the HAPC process and give direction to staff to begin implementing that process.



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Staff Presentation on the EFH EIS

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NOAA Fisheries

North Pacific Fishery Management Council

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EFH Description and Identification

- Appendix D contains EFH descriptions for each FMP species, by life history stage, for each of the 6 EFH description alternatives and the methodology for these descriptions.
- Section 2.3.1 presents a subset of the **300+ EFH text descriptions and 295 EFH map descriptions** found in Appendix D.
- EFH description alternatives 3,4,& 6 use specific analytical approaches developed in cooperation with the Science Center and each description has been reviewed by scientific stock assessment authors for accuracy.
- EFH descriptions incorporate scientific information compiled in updated Habitat Assessment Reports (HAR): Appendix F.

12

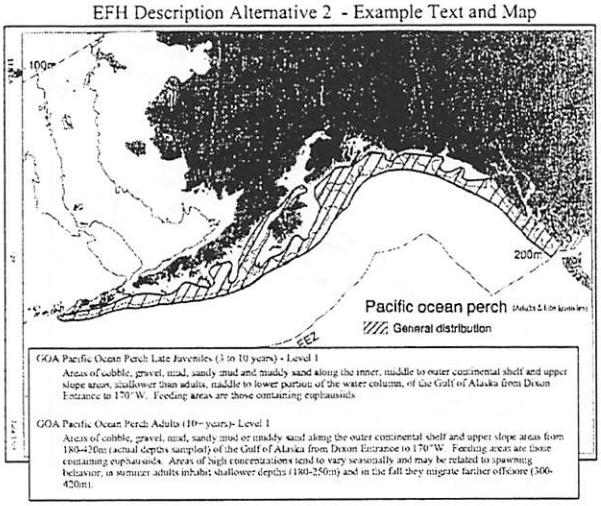
EFH Description Alternative 1 – EFH is <u>not</u> Described

- No Action Alternative. Each FMP would be amended to remove any description or identification of EFH.

If Alternative 1 is chosen, Council FMPs would not describe and identify EFH for each federally managed species as required by the Magnuson-Stevens Act.

13

EFH Description Alternative 2 - Example Text and Map



14

EFH Description Alternative 2

<u>If Alternative 2 is chosen, EFH will be:</u>

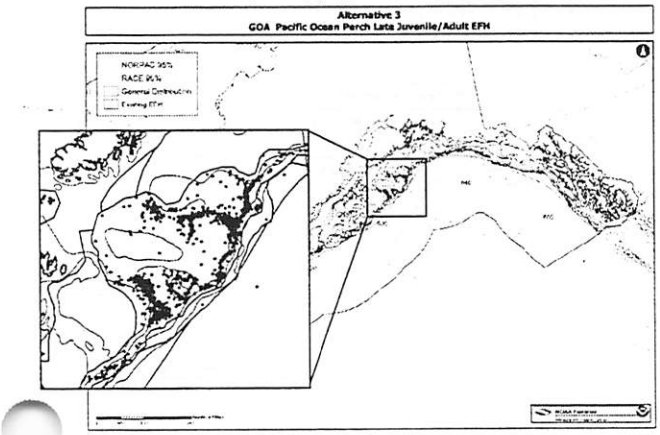
- The area of *general distribution* for a specific life stage of a federally managed species
- Described without a detailed GIS analysis
- Primarily based on 1999 information; not updated

<u>So EFH will be:</u>

- All waters when all life stages of all species are combined
  - This is due to pelagic distributions (pollock, marine salmon), diverse habitat characteristics (arrowtooth flounder, pacific cod), and migratory behavior (salmon; freshwater areas)
- A subset of all waters when EFH is described for a life stage of a species

15

EFH GIS Data Layer Mapping with Cumulated Data Points – 95%



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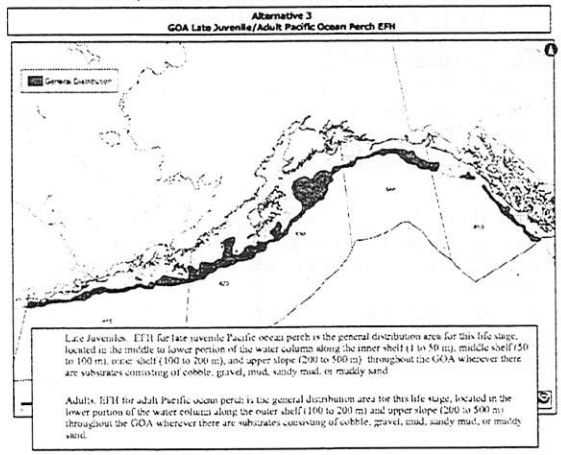
EFH Description Alternative 3 – Example EFH Text and Map



17

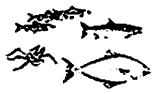
EFH Description Alternative 3

If Alternative 3 is chosen, EFH will:

- Be the area of *general distribution* (Level 1 only) for a life stage of a managed species, as represented by 95% of the cumulated population analysis
- Be described by GIS analysis
- Incorporate updated scientific information and Habitat Assessment Reports

So EFH will be:

- All waters, when all life stages of all species are combined
  - This is due to pelagic distributions (pollock, marine salmon), diverse habitat characteristics (arrowtooth flounder, pacific cod), and migratory behavior (salmon; freshwater areas).
- A subset of all waters when EFH is described for a life stage of a species
  - However, the EFH area will be noticeably smaller than Alt 2 due to the analytical approach.

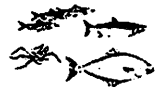


18

EFH Description Alternative 4 - Highest Known Level of Information

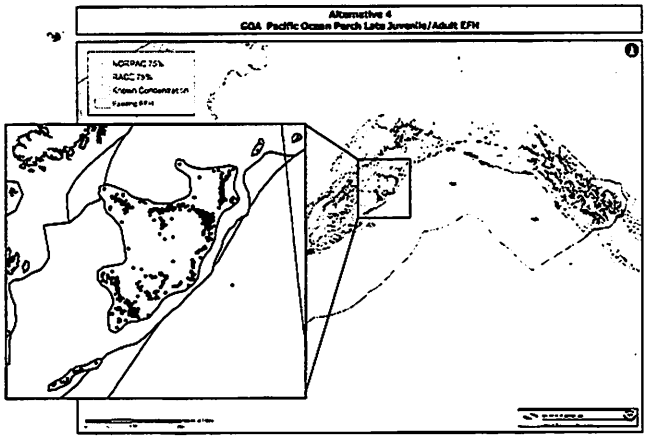
Alternative 4 uses the same methodology, analytical approach, and information sources as Alternative 3, but refines the analysis as follows:

- If Level 2 or higher information for the life stage of the species can be determined, then EFH for the life stage is the refined concentration area, as compared to general distribution or an area with little or no information.
- Known Concentration is 75% of the total cumulated population.
- Higher levels of information, Levels 3 and 4, are known only for certain life stages of salmon where the area is linked to productivity and/or production rate, such as spawning areas.



19

EFH GIS Data Layer Mapping with Cumulated Data Points – 75%



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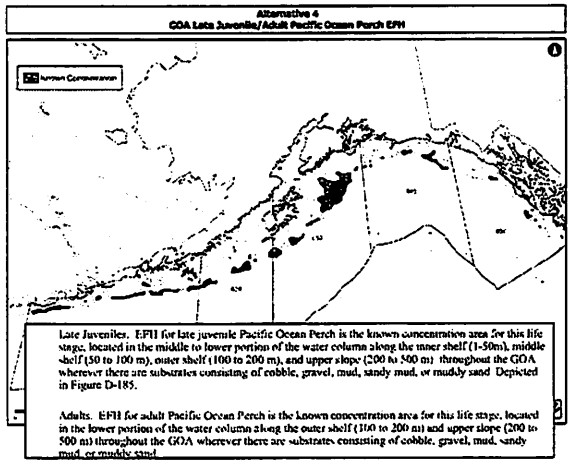
EFH Description Alternative 4 Example EFH Text and Map



21

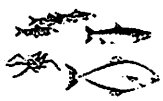
EFH Description Alternative 4

If Alternative 4 is chosen, EFH will:

- Be described EFH at the highest level of information known for a life stage of a managed species, if known
- Be described by GIS analysis
- Incorporate updated scientific information and Habitat Assessment Reports

So EFH will be:

- All waters, when all life stages of all species are combined
  - This is due to pelagic distributions (pollock, marine salmon), diverse habitat characteristics (arrowtooth flounder, Pacific cod), and migratory behavior (salmon; freshwater areas)
- A subset of General Distribution, where sufficient information exists
- Smaller in area than Alt 3 and noticeably smaller than Alt 2, due to the analytical approach



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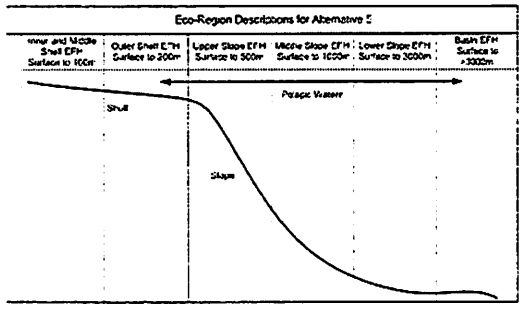
EFH Description Alternative 5



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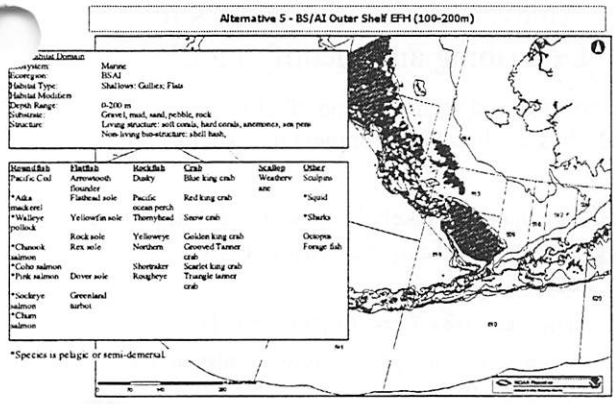

24

EFH Description Alternative 5

If Alternative 5 is chosen, EFH will:

- Be all waters, even if more specific information exists
- Be described over a broad area and for many life stages and species
- Be described without GIS analysis
- Incorporate updated scientific information and Habitat Assessment Reports
- Equal the compilation of all life stages and species in the other alternatives, with no delineation for each life stage of a species

25

EFH Description Alternative 6 - EFH is Within the EEZ Only

- Alternative 6 uses the same methodology, analytical approach, and information sources as Alternative 3.
- However, Alternative 6 limits EFH descriptions and analysis to only those waters in the Economic Exclusive Zone (EEZ), 3-200 nautical miles.

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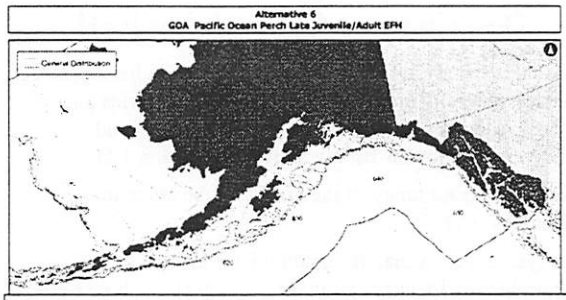
EFH Description Alternative 6 Example EFH Text and Map



Late Juveniles. EFH for late juvenile Pacific Ocean Perch is the general distribution area for this life stage, located in the middle to lower portion of the water column along the inner shelf (1-50m), middle shelf (50 to 100 m), and outer shelf (100 to 200 m) and upper slope (200 to 500 m) limited to the EEZ of the GOA wherever there are substrates consisting of cobble, gravel, mud, sandy mud, or muddy sand.

Adults. EFH for adult Pacific ocean perch is the general distribution area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) limited to the EEZ of the GOA wherever there are substrates consisting of cobble, gravel, mud, sandy mud, or muddy sand.

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EFH Description Alternative 6

If Alternative 6 is chosen, EFH will:

- Be the area of *general distribution* (Level 1 only) for a life stage of a managed species, as represented by 95% of the cumulated population analysis within the EEZ only
- Describe EFH using GIS analysis
- Incorporate updated scientific information and Habitat Assessment Reports

So EFH will be:

- All waters of the EEZ, when all life stages and species are combined
  - This is due to pelagic distributions (pollock, marine salmon) and diverse habitat characteristics (arrowtooth flounder, Pacific cod)
- A subset of all waters when EFH is described for a life stage of a species
  - EFH area for a specific life stage will be somewhat smaller than Alt 3 due to the removal of areas inside of 3nm, such as nearshore marine waters used by Atka mackerel and freshwater anadromous fish waters

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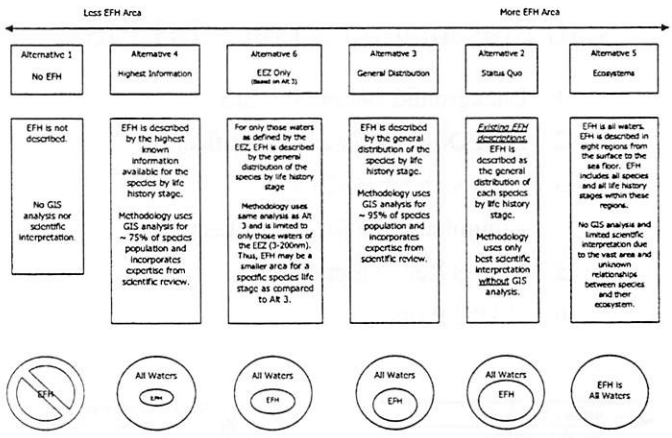
EFH Description and Identification Alternatives Summary



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EFH Description Alternatives Comparison

Alaska Region EFH Descriptions Area Comparison by DEIS Alternative - Example Species

			Area in Square Nautical Miles (nm²)				
			ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Species	Distribution Trait	Main Area Feature	Existing EFH Designation	General Distribution 95%	Presumed Known Concentration 75%	Ecosystem Approach	EEZ Only (3-200nm)
Yellowfin sole	broad	slope	270,414	111,609	77,076	1,024,460	106,164
Sablefish	narrow	shelf	169,880	75,999	30,586	1,024,460	74,792
				↓	↓	↓	↓
Percentage Decrease (-) or Increase in EFH Area by Alternative as Compared to Existing EFH Description (ALT 2)		Yellowfin sole	-58.7	-71.5	279	60.7	
		Sablefish	-55.3	-81.9	503	-56.0	

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Analysis of the Alternatives for Describing and Identifying EFH

- Description and identification of EFH, in and of itself, has no direct environmental or socioeconomic impacts.
- Indirect effects are likely because EFH designation triggers two sets of requirements under the Magnuson-Stevens Act:
  - Minimize adverse effects of fishing on EFH
  - Interagency consultations and recommendations for non-fishing activities

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Analysis of the Alternatives for Describing and Identifying EFH

- Qualitative analysis [E+, 0, E- U] of effects on habitat, target species, federally managed fisheries, other fisheries and fishery resources, protected species, ecosystems and biodiversity, and non-fishing activities (Section 4.1)
- Comparative summary of the effects of the alternatives (Section 4.5.1)
- Analysis assumes that designating EFH affords an opportunity to identify and minimize potential adverse effects from fishing and non-fishing activities, which in turn is likely to result in certain impacts for most of the factors evaluated

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Analysis of the Alternatives for Describing and Identifying EFH

Alt 1: Loss of potential benefits from EFH designation; possible benefits for non-fishing activities

Alt 2: Status quo effects

Alt 3: To the extent EFH is reduced in size, potential slight benefits for target species because conservation could focus on more discrete areas

Alt 4: Increased potential benefits for target species

Alt 5: Larger EFH; possibly less beneficial for target species; difficult to distinguish EFH from all habitat

Alt 6: Same as Alt 3 in federal waters; loss of potential benefits in state waters

* Alternatives 1, 2, and 6 are not consistent with M-S Act

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Staff Presentation on the EFH EIS

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NOAA Fisheries

North Pacific Fishery Management Council

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HAPC Background

In June 1998, the Council identified three habitat types as HAPCs in EFH Amendments 55/55/8/5/5:

- Living substrates in deep water
- Living substrates in shallow water
- Streams that support anadromous fish

In October 1998, the Council approved further analysis regarding HAPCs:

- Preparation of a gap analysis
- Consideration of additional habitat types and areas as HAPCs

No additional HAPCs were implemented.

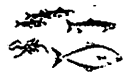
35

HAPC Alternative Development

The alternatives for this analysis were developed in a two year time period using a public process via the EFH Committee, stakeholder meetings, and a public workshop.

EFH Committee met 15 times and advised Council on HAPC alternatives.

- Scientific background papers and technical assistance
- Review in Council process (AP and SSC)
- December 2001: reported a preliminary set of HAPC alts to Council
- June 2002: further staff work and Committee changes on HAPC alts presented to Council



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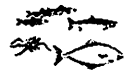
HAPC Alternative Development

- In June 2002, Council advised the staff to describe in the EIS how each HAPC identification alternative would apply to each of the following four examples of HAPCs:
  - Pinnacles and Seamounts
  - Corals
  - Bristol Bay Red King Crab (or similar species habitat)
  - Shelf Break

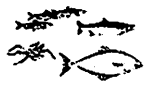


37

HAPC ALTERNATIVES

Alternative 1: No HAPC Identification
Alternative 2: Status Quo
Alternative 3: Site Based Concept
Alternative 4: Type/Site Based Concept
Alternative 5: Species Core Area

- To understand differences among the alternatives the PDEIS gives examples of each alternative and how it would apply towards corals, pinnacles and Seamounts, Bristol Bay red king crab, and the continental shelf break.



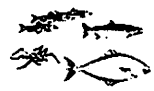
38

HAPC ALTERNATIVES

Alternative 1: No HAPC Identification
FMPs would be amended to remove any description and identification of HAPCs

Alternative 2: Status Quo
HAPCs would remain as adopted under Amendments 55/55/8/5/5: living substrates in shallow waters, living substrates in deep waters, and freshwater areas used by anadromous fish.

-Corals would be considered HAPCs in that they are living substrates in shallow waters and deep waters.
-Pinnacles and Seamounts, BB-Red King Crab, and the slope area would not be considered HAPCs under this alternative.



39

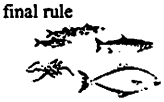
HAPC ALTERNATIVES

Alternative 3: Site Based Concept
FMPs would be amended to allow for identification of geographically defined HAPC sites; Does not allow for HAPCs to be identified as types of habitat.

-Some portion of Corals, Pinnacles and Seamounts, BB-RKC, and the slope area could be considered HAPCs under this alternative.

Alternative 4: Type/Site Based Concept
FMPs would be amended to allow for identification of HAPC sites selected as subsets of types. This would establish a two step process:

Step A.) Habitat types would be selected based on the HAPC considerations in the EFH final rule
Step B.) HAPC sites would be identified within the habitat type based on the HAPC considerations in the EFH final rule



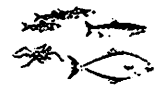
40

HAPC ALTERNATIVES

Under Alternative 4:
-Corals could be identified as a habitat type and specific areas could be considered HAPCs
-Pinnacles and Seamounts could be identified as a habitat type and specific areas could be identified as HAPCs (e.g., if stressed by fishing)
-BB-RKC would not likely be considered as a HAPC type
-Slope area would not likely be considered as a HAPC type

Alternative 5: Species Core Area
FMPs would be amended to allow for identification of HAPC areas for individual species based on the productivity of the habitat.

-Corals could only be HAPCs if they are core habitat for FMP species
-Pinnacles and Seamounts presumably not considered core to FMP species
-BB-RKC core area could be considered HAPC
-Slope area presumably not considered core to FMP species



41

Analysis of the Alternative Approaches for Identifying HAPCs

- Identifying HAPCs, like identifying EFH, has no direct environmental or socioeconomic impacts.
- Indirect effects are likely because NMFS and the Council may be more risk averse when considering threats to HAPCs from fishing and non-fishing activities.
- Analysis is difficult because the alternatives are a range of different methodological approaches, rather than different specific HAPCs.

42

Analysis of the Alternative Approaches for Identifying HAPCs

- Qualitative analysis [E+, 0, E- U] of effects on habitat, target species, federally managed fisheries, other fisheries and fishery resources, protected species, ecosystems and biodiversity, and non-fishing activities (Section 4.2)
- Comparative summary of the effects of the alternatives (Section 4.5.2)
- Analysis assumes that facilitating the identification of HAPCs affords an opportunity to identify and minimize potential adverse effects, which in turn is likely to result in certain impacts for most of the factors evaluated

43

Analysis of the Alternative Approaches for Identifying HAPCs

Alt 1: Loss of potential benefits from HAPC designation; possible benefits for non-fishing activities

Alt 2: Status quo effects

Alt 3: Indirect effects depend upon the specific HAPCs identified; More focused than Alt. 2 so could be more effective

Alt 4: Indirect effects depend upon the specific HAPCs identified; Structured stepwise approach may offer more benefits than other alternatives

Alt 5: Indirect effects depend upon the specific HAPCs identified; Scare information about species' habitat requirements could limit effectiveness of this approach

44

Staff Presentation on the EFH EIS

1. Background Behind the EIS
2. EFH Description and Identification
3. Approach for HAPCs
4. Minimizing the Effects of Fishing
5. NMFS Recommendations
6. HAPC Process

NOAA Fisheries

North Pacific Fishery Management Council

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Alternatives to Minimize the Effects of Fishing on EFH (section 2.3.3)

Alternative 1: Status quo

Alternative 2: GOA slope rockfish bottom trawl closures

Alternative 3: Entire GOA slope closed to bottom trawl for slope rockfish

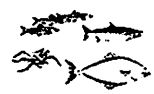
Alternative 4: Bottom trawl closures in all management areas

Alternative 5A: Expanded bottom trawl closures in all management areas

Alternative 5B: Same as 5A, but with additional measures in the AI area

Alternative 6: 20% closure area to all bottom tending gear

Note: All alternative measures are in addition to status quo measures.



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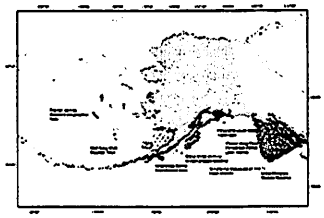
Overview of Minimization Alternative 1 (Status Quo)

Objectives:

- Conserve, restore, and maintain habitat for fish productivity

Measures:

- gear restrictions
- MPAs
- harvest limits
- effort limits
- rationalization programs
- other regulations



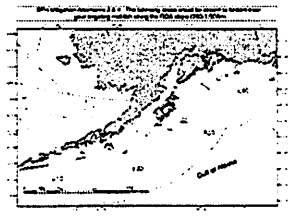
Location of existing year-round closures to bottom trawling.

47

Overview of Minimization Alternative 2
(Gulf Slope Bottom Trawl Closures)

Objectives:
- Allow some recovery of GOA slope
- Provide incentive for gear conversion

Measures (in addition to status quo):
- Prohibit bottom trawling for rockfish in designated areas of GOA slope
- Allow conversion from bottom trawl to pelagic trawl or fixed gear within these areas



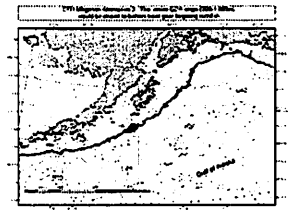
Location of proposed areas closed to bottom trawling for rockfish.

48

Overview of Minimization Alternative 3
(GOA Slope Closure to Rockfish)

Objectives:
- Allow more recovery of GOA slope
- Provide incentive for gear conversion

Measures (in addition to status quo):
- Prohibit bottom trawling for rockfish on the GOA slope (200-1000m),
- Allow conversion from bottom trawl to pelagic trawl or fixed gear on the slope



Location of proposed areas closed to bottom trawling for rockfish.

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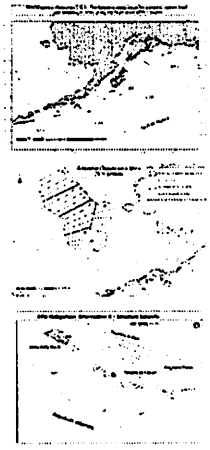
Overview of Minimization Alternative 4
(Trawl Closures in All Management Areas)

Objectives:
- Allow some recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (Bering Sea trawl disc requirement)
- Provide incentive for gear conversion (GOA rockfish fisheries)

Measures (in addition to status quo):
- 'Open' areas for BS bottom trawl
- Rotating closures in BS (25%, 10yr)
- Bottom trawl closures in all areas (rockfish in GOA; all species in BSAI)
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope)

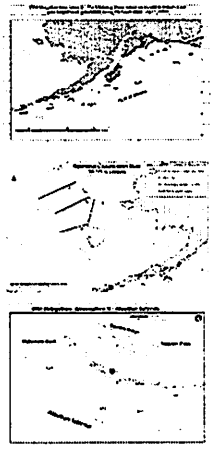


50

Overview of Minimization Alternative 5A
(Expanded Bottom Trawl Closures)

Objectives:
- Prevent expansion of trawl effort (BS)
- Allow more recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (Bering Sea trawl disc requirement)
- Provide incentive for gear conversion (GOA rockfish fisheries)

Measures (in addition to status quo):
- 'Open' areas for BS bottom trawl
- Rotating closures in BS (33%, 5yr)
- Bottom trawl closures in all areas (more extensive in BS and AI; more restrictive in GOA - all slope closed to rockfish bottom trawl & designated areas closed to all bottom trawl)
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope)

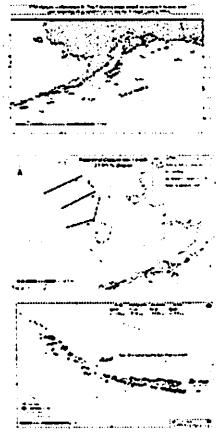


51

Overview of Minimization Alternative 5B
(Additional Measures in AI)

Objectives:
- Prevent expansion of trawl effort (BS,AI)
- Allow more recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (BS trawl gear)
- Provide incentive for gear conversion (GOA rockfish)
- Indirectly control effort in AI (via TAC reduction)
- Control/reduce bycatch of sessile invertebrates (AI)

Measures (in addition to status quo):
- 'Open' areas in BS and AI
- Rotating closures in BS (33%, 5yr)
- Bottom trawl closures in all areas
- AI only: TAC reduction; bycatch limits for sponges, corals, and bryozoans; 100% observers and VMS; mandatory research plan
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope rockfish)



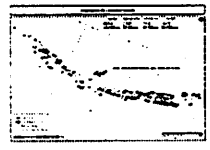
52

Details of AI measures for Minimization Alternative 5B

TAC reduction:
- 10% for Pacific cod (BSAI trawl apportionment)
- 12% for rockfish (POP, Northerns, SR/RE, Other rockfish)
- 6% for Atka mackerel

Sessile Epifauna Bycatch Limits (mt)

(note revised numbers)	Area 541	Area 542	Area 543
Mackerel			
sponge	10	20	66
coral/bryozoans	2	3	8
Pacific cod			
sponge	11	22	22
coral/bryozoans	2	1	6
Rockfish			
sponge	13	5	10
coral/bryozoans	1	1	8



Alternative 5B 'open' areas shown in blue. All white space (low effort areas) and red areas (high bycatch rate areas) closed to bottom trawling.

53

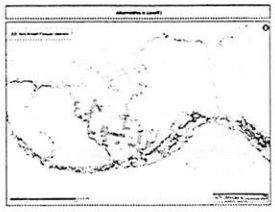
Overview of Minimization Alternative 6
(Closure of 20% to All Bottom Tending Gear)

Objectives:

- Allow 20% of all shelf and slope areas (<1,000 m) to fully recover from any and all impacts due to fisheries

Measures (in addition to status quo):

- Prohibit commercial fisheries for FMP species and halibut from using bottom tending gear (including dredges, bottom trawls, pelagic trawls that contact bottom, longlines, dinglebars, and pots) in designated areas on a year-round basis.



Location of proposed closures to bottom tending gear.

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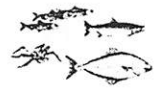
Effects of Fishing on EFH
Overview of Presentation

- Relevant rules and definitions
- Effects of Fishing Analysis (Appendix B)
- Evaluation of effects on managed species (Appendix B)
- Effects of minimizing the adverse effects of fishing on EFH (Section 4.3)
- Summary



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Effects of Fishing on EFH
Relevant rules and definitions

- EFH Definition
  - *those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.*
- *"necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem*

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Effects of Fishing on EFH
Relevant rules and definitions

- *"Councils must act to prevent, mitigate, or minimize any adverse effects from fishing...if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature"*
- What constitutes "more than minimal" and "not temporary in nature"?
- **Effects that are either minimal or temporary do not require such actions**

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Effects of Fishing on EFH
Effects of Fishing Analysis

- Quantitative mathematical model employed
- Input: (*Many values with high uncertainty*)
  - fishing intensity and distribution
  - sensitivity of habitat features
  - recovery rates of habitat features
  - habitat distribution
- Output: **L**ong-term **E**ffect **I**ndex (LEI)
  - The estimated percentage by which habitat features would be reduced from a hypothetical unfished abundance if recent intensity and distribution of fishing effort were continued over a long enough term to achieve equilibrium

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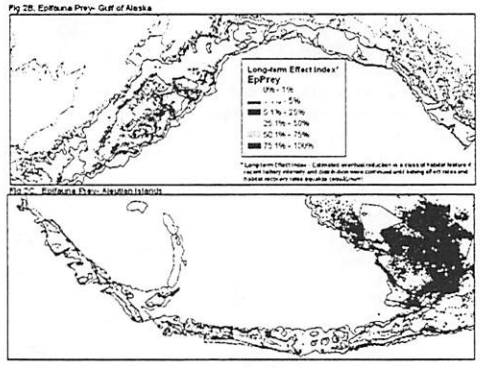
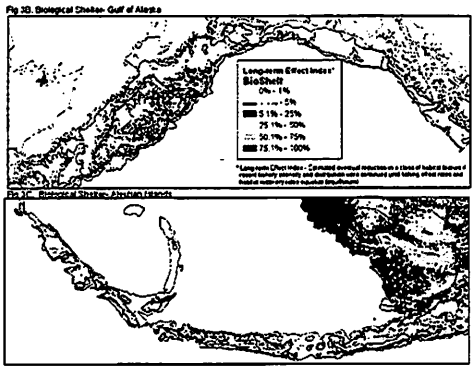
Effects of Fishing on EFH
Effects of Fishing Analysis



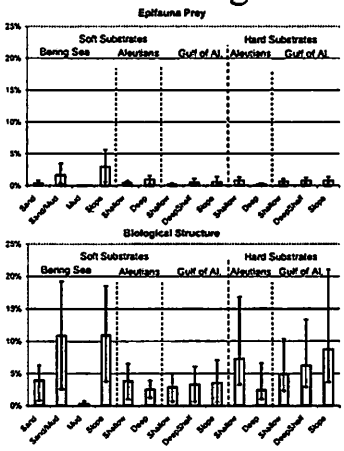
59

Effects of Fishing on EFH
Effects of Fishing Analysis



6c

Effects of Fishing on EFH



6c1

Effects of Fishing on EFH
Effects of Fishing Analysis
LEI by Fishery

Bering Sea Fishery	Sand/Mud BioStructure	Slope BioStructure
Total	10.9%	10.9%
Pollock Pelagic Trawl	4.6%	4.2%
Yellowfin Sole Trawl	2.9%	0.2%
Flathead Sole/Flatfish Trawl	1.5%	1.6%
Rock Sole Trawl	0.9%	0.2%
Pollock Bottom Trawl	0.4%	0.6%
Pacific Cod Trawl	0.2%	0.4%
Sablefish Turbot Trawl	0.1%	0.1%
Pacific Cod Longline	0.0%	0.0%
Rockfish Trawl	0.0%	0.0%
Pot	0.0%	0.0%
Sablefish Turbot Longline	0.0%	0.0%
Total Bottom Trawl	9.2%	3.7%

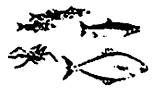
Gulf of Alaska Fishery	Slope BioStructure
Total	8.7%
Rockfish Bottom Trawl	4.2%
Deepwater Flatfish Trawl	4.1%
Pacific Cod Trawl	0.2%
Shallow-water Flatfish Trawl	0.1%
Sablefish Turbot Longline	0.1%
Pollock Bottom Trawl	0.0%
Pacific Cod Longline	0.0%
Pot	0.0%
Pollock Pelagic Trawl	0.0%
Rockfish Pelagic Trawl	0.0%

Aleutian Islands Fishery	Hard Substrate Shallow BioStructure
Total	7.3%
Pacific Cod Trawl	4.2%
Atka Mackerel Trawl	2.4%
Sablefish Turbot Trawl	0.2%
Rockfish Trawl	0.2%
Pollock Bottom Trawl	0.1%
Pacific Cod Longline	0.1%
Sablefish Turbot Longline	0.0%
Pot	0.0%
Pollock Pelagic Trawl	0.0%

6c2

Effects of Fishing on EFH
Evaluation of effects on managed species

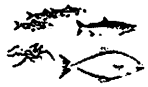
- Evaluation Questions:
  - Effects more than temporary?
  - Affected features connected to species welfare? (spawning, breeding, feeding, growth to maturity)
  - More than minimal effects on species ability to support a sustainable fishery or role in a healthy ecosystem?
    - If available, MSST used as threshold for the ability to support a sustainable fishery



6c3

Effects of Fishing on EFH
Evaluation of effects on managed species

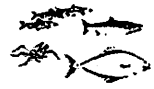
- Information used in species evaluations:
  - Connections spreadsheet
  - LEI by habitat for species general distribution and concentrations
  - Experts' knowledge of species life history and stock status and productivity analyses



6c4

Effects of Fishing on EFH
Evaluation of effects on managed species

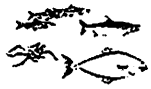
- Results
  - Out of 105 ratings for 35 species/species groups there were 70 MT and 35 U ratings
  - No MMNT ratings
  - U ratings were primarily for species/species groups with limited knowledge of life history and stock status
  - Table B.4-2 summarizes species evaluations



6c5

Effects of Fishing on EFH
Minimizing the adverse effects on EFH

- Similar evaluation methods applied to comparing minimization alternatives to current effects of fishing.
- Ratings looked at direction of effects (E+, 0, E-, U)
- Evaluation of effects on habitat characteristics and by species



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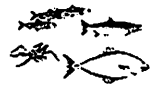
Effects of Fishing on EFH
Minimizing the adverse effects on EFH

Summary of Evaluations of Minimization Alternatives

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Habitat							
Habitat complexity	⊘	⊘	E+	E+	E+	E+	E+
Benthic biodiversity	⊘	⊘	E+	E+	E+	E+	E+
Prey species	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Target Species							
Groundfish	⊘/U	⊘/U	⊘/U	⊘/U	⊘/U	⊘/U	⊘/U
Salmon	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Crabs	⊘	⊘	⊘	⊘/E+	⊘/E+	⊘/E+	⊘/E+/E-
Scallops	⊘/U	⊘	⊘	⊘	⊘	⊘	⊘/E-



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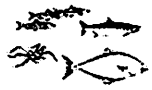
Effects of Fishing on EFH
Summary

- Estimated non-temporary effects on habitat features
- Model limitations:
  - Model still in developing state
  - Limited quality of parameter estimates
  - model results subject to considerable uncertainty
- Effects on species welfare are not expected to be more than minimal or are unknown



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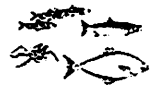
Alternatives to Minimize the Effects of Fishing
Other Biological Effects (Section 4.3)

- With two exceptions, the alternatives are expected to have no effect on protected resources (mammals, salmon, seabirds), predator-prey relationships, or energy flow and balance. *Alternatives 5B and 6 may have negative effects on Steller sea lions and great whales due to fleet redistribution and potential for spatial and temporal concentration of fishing effort.*
- Alternatives 3, 4, 5A, 5B, and 6 may have positive effects on biodiversity.



69

RIR/IRFA Presentation

1. Methodology
2. Overview of Costs & Benefits Approach
3. Revenue at Risk and Distribution of Impacts Among Areas and Fleet Components
4. Community Impacts

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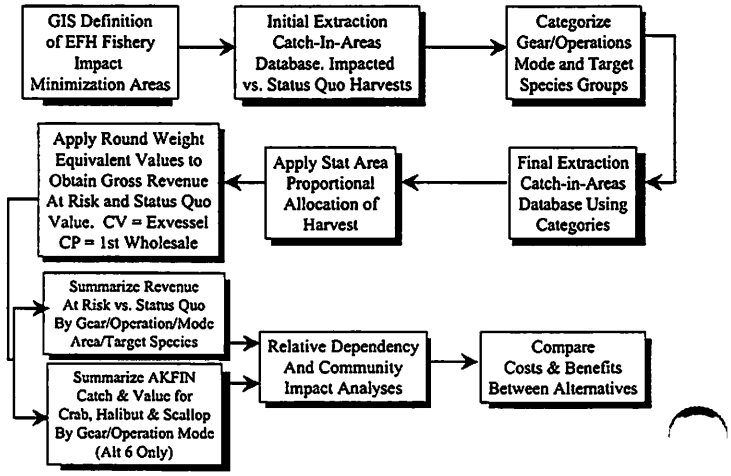
Revenue At Risk and Community Impacts Analysis



71

Catch-In-Areas and Redistribution Database with ExVessel and First Wholesale Catch-At-Risk Values

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The Fisheries Analysis

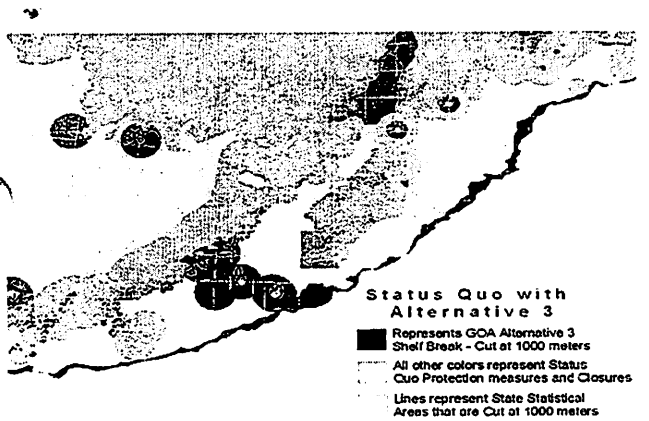
Restricted Catch by…

- Area
- Gear
- Probable (haul) Target
- Week Ending Date

Must match ALL to be included with a record.

73

The Front End…



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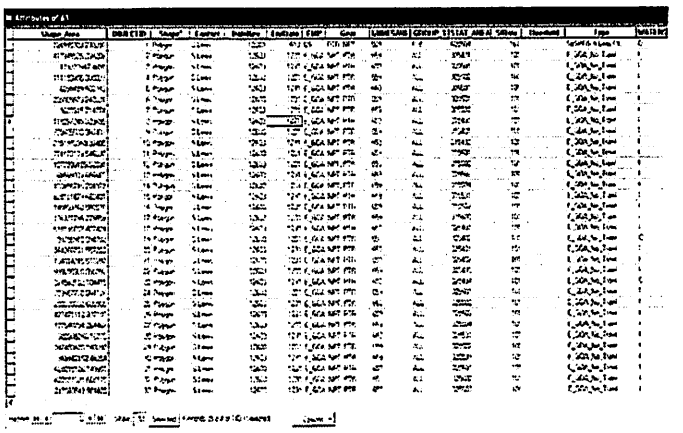
The Database Behind the Picture



75

AREA: Proportional Allocation

Programmatic Groundfish SEIS alternatives 3.2 and 4.1 were designed using State Statistical Areas and did not require proportional allocation. The EFH alternatives are not based on State Statistical Areas, and require proportional allocation.

Example: Stat Area 635402 has an area of 4,032,034m^2

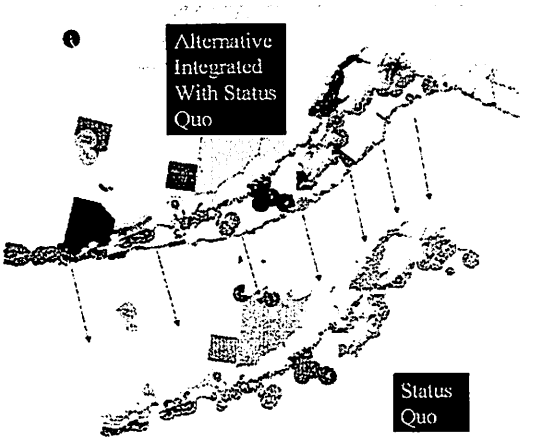
An EFH restriction impacts 502,876m^2 of this stat area.

The Relative effect is 12.5%

76

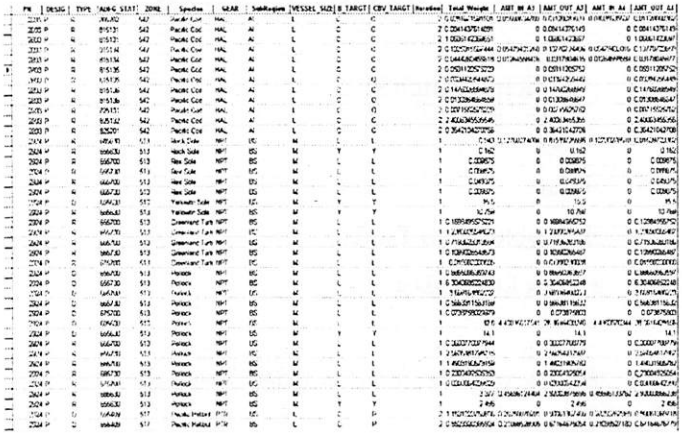
Finding the Net Catch-At-Risk by completing two sets of spatial analysis:

One is the alternative integrated with the status quo; the other is simply the status quo.



77

Sample Output



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Adding Economic Data

EMP	DESG	GEAR	Total Wt	CV Value	Average CV Value\Ton	CP Value	Average CP Value\Ton
BSAI	M	NPT	3,811			$4,267,104	$1,177
BSAI	M	POT	1,364			$1,712,334	$1,075
BSAI	M	PTR	141,287			$104,297,864	$1,197
BSAI	P	HAL	116,083			$141,890,951	$1,103
BSAI	P	NPT	204,026			$179,260,011	$988
BSAI	P	POT	3,091			$3,891,220	$1,138
BSAI	P	PTR	608,507			$448,804,818	$990
BSAI	S	HAL	1,827	$4,060,780	$1,382		
BSAI	S	JIG	74	$43,586	$622		
BSAI	S	NPT	16,137	$8,124,283	$306		
BSAI	S	POT	12,765	$7,576,714	$649		
BSAI	S	PTR	606,871	$102,907,576	$108		
GOA	M	NPT	0			$7	$1,176
GOA	M	PTR	67			$78,748	$1,176
GOA	P	HAL	5,563			$11,851,690	$3,240
GOA	P	NPT	19,754			$20,282,279	$1,725
GOA	P	POT	1,629			$2,098,888	$1,184
GOA	P	PTR	573			$300,481	$1,172
GOA	S	HAL	17,867	$52,067,217	$1,660		
GOA	S	JIG	345	$270,980	$926		
GOA	S	NPT	42,145	$16,094,291	$393		
GOA	S	POT	5,468	$3,590,583	$696		
GOA	S	PTR	67,850	$9,698,304	$205		
Retaine	Total		1,877,133	$204,434,313		$919,236,395	

For illustration only: average value per ton is non-weighted

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Effects on Communities: Methodology

- Secondary data focused (no field work)
- Use of composite AKFIN database
- CV, CP, and shoreside processor data attributed to communities
- Limitations due to confidentiality
- Known limits of attributing sectors by ownership data

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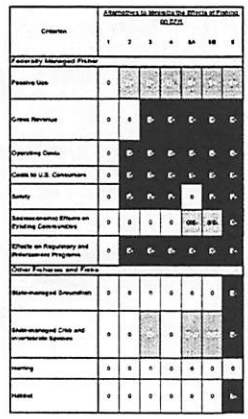
Summary of Results:
Overall Costs & Benefits

- Passive Use
- Gross Revenue
- Operating Costs
- Costs to U.S. Consumers
- Safety
- Socioeconomic Effects on Existing Communities
- Effects on Regulatory and Enforcement Programs



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REVENUE AT RISK:

ALTERNATIVE 2
GOA NPT Slope Rockfish in 11 Areas

- $900,000 or 9.6% of $9.36 million status quo gross revenue at risk.
- Main impact, $870,000, to CP fleet operating in the Central and Western GOA.
- Minor impact, $30,000, to CV fleet operating in the Central GOA.
- Some mitigation of revenue at risk potential by fishing in adjacent areas.

ALTERNATIVE 3
GOA NPT Slope Rockfish >200m <1,000m

- $2.65 million or 28.3% of $9.36 million status quo gross revenue at risk
- Main impact, $2.22 million, to CP fleet operating in the Central GOA
- Impact to CV fleet in Central GOA of $430,000 at risk or 18.6% of $2.33 million status quo gross revenue
- Some mitigation possible in water less than 200 m and transfer to alternative gears such as PTR. Some transfer of revenue from small CV to larger CV and CP fleet possible.

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REVENUE AT RISK:

ALTERNATIVE 4
GOA NPT Slope Rockfish in 11 Areas
BS&AI NPT All Species in Areas

- Revenue at risk ranges from $3.53 million to $6.11 million depending upon BS rotational areas affected or 2.2% to 3.8% of the $156.86 million to $162.79 million status quo gross revenue.
- GOA impacts identical to Alt 2.
- BS revenue at risk is $1.8 million to $4.4 million or 2.0% to 4.5% of the $90.92 million to $96.74 million status quo gross revenues.
- AI revenue at risk is $0.82 million or 1.4% of the $56.70 million of status quo gross revenue.
- Main impacts in GOA are to CVs and CPs targeting rockfish, in the BS to CPs targeting flathead sole and to CPs in the AI targeting rockfish.
- Some mitigation of revenue at risk potential by fishing in adjacent areas.

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Effects on Communities: Alternatives 2, 3, and 4

- No significant community level impacts
- Relatively small numbers of individual operations may experience adverse impacts
- AK at-risk entities generally concentrated in Kodiak, greatest number under Alt 3
- In general, most at-risk entities based in WA, small impacts in large economy

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REVENUE AT RISK:

ALTERNATIVE 5A and 5B

GOA NPT Slope Rockfish Entire Area - GOA NPT All Species 10 Areas
BS&AI NPT All Species in Areas - TAC Reduction (5B)

- Revenue at risk ranges from $7.92 million to $10.90 million (5A) to $12.94 million to $15.93 million (5B) depending upon BS rotational areas affected.
- BS&AI gross revenue reduction of $15.16 million possible due to TAC reduction (5B).
- GOA revenue at risk of $3.6 million or 13% of $27.69 status quo.
- BS revenue at risk is $2.63 to $5.61 million or 2.7% to 5.8% of the $96.27 to $96.914 million status quo gross revenues.
- AI revenue at risk is $1.69 million or 3% of the $56.70 million of status quo gross revenue (5A) or $6.71 million or 12% at risk of the $55.81 million of status quo revenue (5B).
- Main impacts in GOA are to CVs and CPs targeting rockfish and Pacific cod, in the BS to CPs targeting flathead sole and Pacific cod and to CPs in the AI targeting rockfish and Atka mackerel.
- Some mitigation of revenue at risk potential by fishing in adjacent areas, however, revenue lost from TAC reduction would not necessarily be mitigated by the same fleet components.

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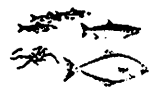
Effects on Communities: Alternatives 5A and 5B

- Community level impacts possible in WGOA
- AK at-risk entities concentrated in Kodiak, King Cove, and Sand Point
- Smaller King Cove and Sand Point CVs generally have less flexibility in response
- GOA entities already facing adverse conditions in other fisheries or management actions (salmon prices, Area M restrictions, SSL closures)



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REVENUE AT RISK:

ALTERNATIVE 6

20% Closure to all Bottom Contact Gear GOA & BS&AI

- Revenue at risk of $237.20 million or 18.9% of the $1.26 billion status quo gross revenue.
- GOA revenue at risk of $46.52 million or 22% of status quo revenue of $211.48 million.
- BS revenue at risk is $177.54 million or 19% of the $934.36 million status quo gross revenues.
- AI revenue at risk is $13.14 million or 11.8% of the $111.3 million of status quo gross revenue.
- Main impacts to groundfish fisheries with $163.76 million of revenue at risk (16% of status quo) followed by the halibut longline fishery with $38.24 million (34.2% of status quo), crab pot fisheries with $34.11 million (29.4% of status quo) and the scallop dredge fishery with $980,000 of gross revenue at risk (29.1% of status quo).
- Very little opportunity to mitigate revenue at risk due to large amount of fishing effort displaced.

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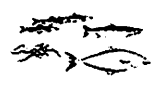
Effects on Communities: Alternative 6

- AK community multi-sector impacts particularly apparent in Kodiak, King Cove, Sand Point, Akutan, Unalaska, St. Paul, St. George, Homer, Seward, Sitka, and Petersburg; associated municipal tax revenues would decline
- Impacts to CP fleet based primarily in Seattle would also be adverse to CDQ groups
- Multiple interactive and cumulative impacts
- Issues of near-community closures and small vessel fleets



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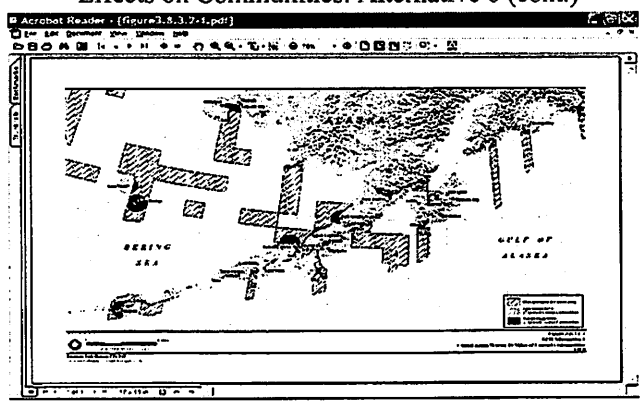
Effects on Communities: Alternative 6 (cont.)



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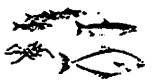
Effects on Communities: Environmental Justice

- Alts 5A and 5B likely to disproportionately impact predominately Alaska Native WGOA communities
- Under Alt 6, multiple EJ impacts possible: small fleet impacts disproportionately accrue to Alaska Native communities (most obviously St. George); indirect impacts to subsistence may occur; CDQ program could experience adverse impacts; any processing employment declines would likely accrue to minority workforce



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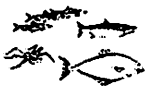
Practicability Analysis
(section 4.5.3.3)

The Magnuson-Stevens Act requires that FMPs must minimize *to the extent practicable* the adverse effects of fishing on EFH.

Councils should Consider:

- the nature and extent of adverse effects on EFH (*provided in Appendix B and 4.3*), and
- the long and short-term costs and benefits to EFH, associated fisheries, and the nation (*provided in Appendix C and 4.3*), consistent with national standard 7 *(Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication).*



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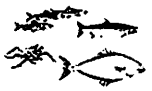
Practicability Analysis

	Benefits	Costs
Alternative 1	-	-
Alternative 2	very low	1
Alternative 3	low	2.7
Alternative 4	medium	3.5
Alternative 5A	medium/high	7.9
Alternative 5B	highest	23.1
Alternative 6	medium	237.2

Notes:
Additional benefits to EFH are relative to maximum.
Additional costs to fisheries are revenues ($ in millions) at risk.



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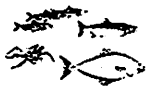
Practicability Analysis

Closure of deepwater areas (>1,000 m) to bottom trawling may provide conservation of lower slope and basin area habitat with almost no short-term costs. These areas are EFH for sablefish, turbot, thornyheads, and scarlet king crab. Hagfish, genadiers, shrimp, and other crabs are also present.

These closures are included in Alternatives 4 (BS only), 5A (BS and some AI) and 5B (BS and AI).



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Staff Presentation on the EFH EIS

1. Background Behind the EIS
2. EFH Description and Identification
3. Approach for HAPCs
4. Minimizing the Effects of Fishing
5. NMFS Recommendations
6. HAPC Process

NOAA Fisheries

North Pacific Fishery Management Council

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NMFS RECOMMENDATION for Describing and Identifying EFH

Alternative 4 (Presumed Known Concentration)

- Experience gained since 1999 suggests there may be advantages to identifying EFH more narrowly in cases where sufficient scientific information exists
- Where Level 2 information is available, narrower EFH designations would encompass areas that commonly support higher concentrations of the managed species; For other species EFH would be the General Distribution (Alt. 3)
- Would enable the Council, NMFS, and others to focus on smaller areas for avoiding and minimizing adverse effects, thereby prioritizing management efforts

NOTE: The aggregated EFH area under Alts. 2-4 would be identical because of data limitations for some species.

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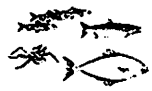
NMFS RECOMMENDATION
for the Approach for Identifying HAPCs

Alternative 4 (Type/Site Based Concept)

- Encourages site-based HAPCs that are more focused than the status quo HAPCs, and provides a means for the Council to first prioritize the kinds of habitat for which HAPCs should be considered
- Screening process would evaluate specific areas that meet characteristics defined by the Council as being especially important
- More structured effort to ensure HAPCs focus on the EFH that is most valuable and/or vulnerable, so may offer more potential benefits for target species



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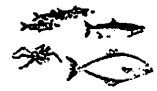
NMFS RECOMMENDATION
for Minimizing the Effects of Fishing on EFH

1. Continue to analyze carefully the effects of Council management actions on sea floor habitats.
2. Continue to support research funded by various entities to improve scientific understanding of the effects of fishing on habitat, the linkages between habitats and managed species, and the recovery rates of sea floor habitats following disturbance by fishing gear.
3. Take specific precautionary management actions to avoid additional disturbance to fragile sea floor habitats that may be especially slow to recover – most notably deep water coral communities.



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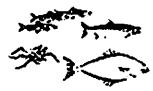
NMFS RECOMMENDATION
for Minimizing the Effects of Fishing on EFH

Although NMFS is not recommending any particular precautionary measures at this time, two avenues are especially promising:

- Prohibit bottom-contact trawling (bottom trawling as well as pelagic trawling that contacts the bottom) in the lower slope/basin areas >1000 m to protect such habitats from reasonably foreseeable future impacts.
- Use the HAPC process as a means to identify and protect corals and other especially fragile habitats that recover slowly following disturbance.



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6. HAPC Process

NOAA Fisheries
National Marine Fisheries Service

North Pacific Fishery Management Council

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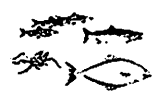
HAPC Identification Process
(Appendix J)

1. Establish HAPC criteria and priorities
2. Issue a call for proposals
3. Use a proposal screening process
4. Conduct a scientific review
5. Initiate a public review process

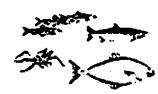


100

Decision: HAPC Criteria

HAPCs are those areas of special importance that may require additional protection from adverse effects. FMPs should identify specific types or areas of habitat within EFH as HAPCs based on one or more of the following considerations from the EFH final rule: (50 CFR 600.815 (a)(8))

- The importance of the ecological function provided by the habitat
- The extent to which the habitat is sensitive to human-induced environmental degradation
- Whether, and to what extent, development activities, or or will be, stressing the habitat
- The rarity of the habitat



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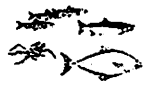
Decision: HAPC Criteria

Option 1 Council would identify HAPCs based on the four considerations in the EFH regulations

- Regulations specify that habitats that are particularly vulnerable to fishing activities should be considered for possible HAPC identification.
- HAPC designation is intended to identify important areas in need of additional protection from adverse impacts (fishing or non-fishing).
- HAPC designation is intended to determine which areas within EFH should receive more of Council/NMFS attention when providing comments on federal/state actions, AND to establish higher standards to protect or restore such habitat.

Option 2 Council adds additional criteria to supplement those in the EFH regulations

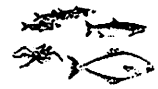


Decision: HAPC Priorities

The Council may wish to prioritize what types of HAPCs would be considered in the proposal cycle. These would be identified in the call for proposals

Priorities

- Option 1- Council can elect not to set priorities. Any any all types of HAPC proposals would be evaluated.
- Option 2- Council may select habitat priorities which would be reviewed and modified (or affirmed) at each call for proposals. This would focus proposals on specific species and/or habitats of concern to the Council.



Call for Proposals & Screening

Proposal Cycle Decision

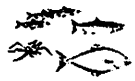
- Option 1-Proposals are solicited and reviewed every 3 or 5 years.
- Option 2 - Proposals can be submitted during the regular cycle or on a separate track.

Proposal Screening Process

Initial screening - Council staff

Scientific Review - Council will establish a HAPC technical/scientific panel

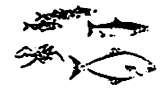
Committee Review



Decision: Stakeholder Process

Different stakeholder processes may be appropriate based on the nature of the HAPC proposal.

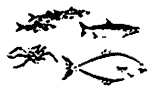
- Option 1-The stakeholder process is conducted by the EFH Committee
- Option 2- The Council establishes an HAPC Committee
  a) The Committee holds meetings in each region affected by proposals
  b) The Committee holds meetings in location(s) determined the most convenient.
- Option 3- In addition to the EFH Committee, two stakeholders from each region affected by proposals are appointed to the committee



Decision: Stakeholder Process

Different stakeholder processes may be appropriate based on the nature of the HAPC proposal.

- Option 4 - The Council establishes a committee with additional scientists and stakeholders.
  - The Committee, plus two scientists and two stakeholders from each regions affected by proposals, holds meetings to review HAPC proposals
- Option 5 - Council asks that appropriate regional fish and game advisory committees review proposals and report their comments back to the Council and EFH/HAPC Committee
- Option 6 - Three regional committees of stakeholders are formed to review proposals in their designated regions [GOA,BS,AI]. Each regional committee could have a representative from the current EFH Committee.



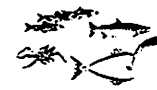
Scientific Review Process

Technical review teams (ecological and socioeconomic) would review proposals before conducting public workshops.

Evaluation Procedure Develop scientific criteria against which the proposals will be measured, the criteria should also be adopted by the Council and presented to the pubic so the pubic understands how proposals will be scored.

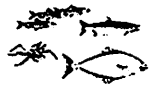
Scientific Uncertainty The scientific panel should highlight available science and information gaps that may have been overlooked or are not available to the submitter of the proposal.

Socioeconomic Criteria Socioeconomic considerations have to be balanced against expected ecological benefits at some relevant point in the development of measures. Have economists and social scientists participate.



Public Review Process

- A technical/ public workshop will be conducted. The Science/Technical review team, EFH/HAPC Committee, and the public will meet to review stakeholder recommendations. The EFH/HAPC Committee will finalize recommendations to the Council on management measures, research design, and adaptive management strategy.
- The Council will receive public comments and take final action on HAPC selections and management alternatives. Each proposal will have one of three possible outcomes:
  - 1) The proposal could be accepted and the area would be designated as a HAPC.
  - 2) The proposal could be used to identify an area or topic requiring more research, which the Council would request from NMFS (or other agency).
  - 3) The proposal could be rejected.



HAPC Timeline

- October: Council selects HAPC criteria and/or HAPC priorities, and a stakeholder process
- November/December: Initial call for HAPC proposals
- August 13, 2006: NMFS must promulgate any resulting regulations, supported by NEPA analysis

Table B.3-3 - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type. (Bold outlines around habitat types containing 25% or more of either general or concentration areas).

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
Red King Crab												
Revised Total	100	100	3	3	2	2	16	16	2	2	0	0
May Total	100	100	5	5	4	5	29	29	4	4	1	0
Blue King Crab												
Revised Total	100	100	0	0	0	0	2	0	0	0	0	0
May Total	100	100	1	0	0	0	4	0	1	0	0	0
Golden King Crab												
Revised Total	100	100	1	1	1	1	6	10	3	4	11	13
May Total	100	100	1	2	2	2	12	13	5	6	20	17
Tanner Crab												
Revised Total	100	100	3	3	2	3	14	17	2	3	0	0
May Total	x	x	x	x	x	x	x	x	x	x	x	x
Snow Crab												
Revised Total	100	100	1	1	1	1	7	5	1	0	0	0
May Total	x	x	x	x	x	x	x	x	x	x	x	x
Walleye Pollock												
Revised Total	100	100	1	1	1	1	7	7	1	1	5	6
May Total	100	100	2	2	2	2	13	13	2	2	11	11
Pacific Cod												
Revised Total	100	100	1	1	1	1	7	8	1	2	6	6
May Total	100	100	2	2	2	2	14	14	3	3	11	11
Sablefish												
Revised Total	100	100	2	1	2	1	9	8	2	2	14	27
May Total	100	100	3	2	3	2	16	12	4	3	24	41
Atka Mackerel												
Revised Total	100	100	2	3	2	4	13	20	8	12	28	37
May Total	100	100	2	4	3	5	18	26	10	16	38	48
Yellowfin Sole												
Revised Total	100	100	1	2	1	1	8	10	1	1	0	0
May Total	x	x	x	x	x	x	x	x	x	x	x	x
Greenland Turbot												
Revised Total	100	100	2	2	2	2	9	12	2	3	2	1
May Total	100	100	3	3	2	3	15	15	3	3	3	1
Arrowtooth Flounder												
Revised Total	100	100	2	2	1	2	10	13	2	3	8	12
May Total	x	x	x	x	x	x	x	x	x	x	x	x
Rock Sole												
Revised Total	100	100	1	2	1	1	8	10	2	2	5	4
May Total	100	100	2	3	2	2	14	17	3	3	9	7
Flathead Sole												
Revised Total	100	100	1	2	1	2	8	10	1	2	5	6
May Total	100	100	2	3	2	2	15	16	2	3	10	9
Alaska Plaice												
Revised Total	100	100	1	1	1	1	9	7	1	1	0	0
May Total	100	100	3	3	2	2	17	17	2	2	0	0

Rex sole												
Revised Total	100	100	2	3	2	3	12	16	3	4	12	26
May Total	100	100	3	5	3	4	18	23	4	6	18	39
Dover Sole												
Revised Total	100	100	1	1	1	1	7	7	2	1	17	20
May Total	100	100	3	2	2	2	15	14	3	3	38	41

Table B.3-3 (cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.
(Bold outlines around habitat types containing 25% or more of either general or concentration areas).

Habitat	% of Area		Infauna prey		Epifanna prey		Living structure		Non-Liv. Struct.		Hard Coral	
Pacific Ocean perch												
Revised Total	100	100	1	1	1	1	8	10	3	4	20	31
May Total	100	100	2	2	2	2	12	13	4	5	33	41
Shortraker & Rougheye Rockfish												
Revised Total	100	100	1	1	1	1	6	7	2	3	15	24
May Total	100	100	2	1	2	1	10	11	4	4	28	37
Northern Rockfish												
Revised Total	100	100	1	1	1	1	9	11	3	4	25	35
May Total	100	100	2	2	2	2	12	14	4	6	35	46
Dusky Rockfish												
Revised Total	100	100	2	1	2	1	11	10	3	2	31	45
May Total	100	100	3	2	3	2	17	14	5	2	48	60
Yelloweye Rockfish												
Revised Total	100	100	1	1	1	1	7	8	2	2	30	35
May Total	100	100	1	2	1	2	11	12	3	3	47	52
Thornyheads												
Revised Total	100	100	1	1	1	1	6	5	2	2	14	15
May Total	100	100	2	2	2	2	11	10	4	3	27	27

Table B.3-3 - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type. (Bold outlines around habitat types containing 25% or more of either general or concentration areas).

Red King Crab Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	0	0	0	0	1	0	7	2	4	1	16	8
AI_Shallow	2	1	0	0	0	0	6	3	3	1	17	10
BS_Sand	68	74	1	1	1	1	8	9	1	1	0	0
BS_Sand/Mud	30	25	7	7	6	6	35	35	5	5	0	0
BS_Slope	0	0	42	0	34	0	82	0	51	0	0	0
Total	100	100	3	3	2	2	16	16	2	2	0	0

Blue King Crab Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
BS_Mud	27	20	0	0	0	0	0	0	0	0	0	0
BS_Sand	17	32	0	0	0	0	1	0	0	0	0	0
BS_Sand/Mud	57	48	1	0	0	0	4	1	1	0	0	0
Total	100	100	0	0	0	0	2	0	0	0	0	0

Golden King Crab Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	56	45	0	0	0	1	3	5	2	3	9	14
AI_Shallow	24	24	1	1	1	2	8	11	5	7	20	25
BS_Sand	3	11	4	3	3	3	17	17	6	6	0	0
BS_Sand/Mud	1	2	1	1	1	1	8	7	1	1	0	0
BS_Slope	10	18	3	4	3	3	14	15	4	4	0	0
GOA_Deep_Shelf	2	0	0	0	0	0	3	0	1	0	18	0
GOA_Slope	4	0	1	0	1	0	5	0	2	0	21	0
GOA_Shallow	0	0	0	0	0	0	0	0	0	0	0	0
Total	100	100	1	1	1	1	6	10	3	4	11	13

Tanner Crab Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	0	0	3	0	4	0	35	0	22	0	60	0
AI_Shallow	0	0	1	0	1	0	11	0	7	0	25	0
BS_Mud	1	0	1	0	1	0	7	0	3	0	0	0
BS_Sand	26	32	2	2	2	1	11	11	1	1	0	0
BS_Sand/Mud	71	68	3	4	2	3	15	20	2	3	0	0
BS_Slope	2	0	4	17	4	14	16	44	5	24	0	0
Total	100	100	3	3	2	3	14	17	2	3	0	0

Snow Crab Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
BS_Mud	28	36	0	0	0	0	0	0	0	0	0	0
BS_Sand	7	7	2	0	2	0	9	4	1	0	0	0
BS_Sand/Mud	65	57	2	1	2	1	10	7	1	1	0	0
BS_Slope	0	0	0	0	0	0	2	0	1	0	0	0
Total	100	100	1	1	1	1	7	5	1	0	0	0

Table B.3-3(cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.

Walleye Pollock Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	6	6	0	0	0	0	3	3	2	2	7	8
AI_Shallow	4	5	1	1	1	1	7	7	4	4	16	16
BS_Mud	10	8	0	0	0	0	0	0	0	0	0	0
BS_Sand	21	22	1	1	1	1	6	6	1	1	0	0
BS_Sand/Mud	28	28	2	2	2	2	12	13	2	2	0	0
BS_Slope	3	3	2	2	2	2	9	9	2	2	0	0
GOA_Deep_Shelf	13	13	1	1	1	1	5	5	1	1	16	16
GOA_Slope	4	4	1	1	1	1	5	5	1	1	23	23
GOA_Shallow	11	12	0	0	0	0	4	4	1	1	12	12
Total	100	100	1	1	1	1	7	7	1	1	5	6

Pacific Cod Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	4	2	1	1	1	1	5	8	3	5	11	19
AI_Shallow	4	4	1	1	1	1	8	10	5	6	19	24
BS_Mud	7	6	0	0	0	0	1	1	0	0	0	0
BS_Sand	21	23	1	1	1	1	6	7	1	1	0	0
BS_Sand/Mud	32	36	2	2	2	2	11	13	2	2	0	0
BS_Slope	2	3	2	2	2	2	10	10	3	3	0	0
GOA_Deep_Shelf	15	14	1	1	1	1	4	6	1	1	15	19
GOA_Slope	2	1	1	2	1	1	7	9	2	2	31	43
GOA_Shallow	13	12	0	0	0	0	4	5	1	1	11	15
Total	100	100	1	1	1	1	7	8	1	2	6	6

Sablefish Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	17	10	0	0	1	1	4	5	2	3	8	12
AI_Shallow	3	2	2	2	2	4	15	26	9	16	32	54
BS_Sand	3	0	17	0	15	0	56	0	14	0	0	0
BS_Sand/Mud	11	1	5	20	4	18	21	66	4	7	0	0
BS_Slope	9	1	2	0	2	0	9	1	3	0	0	0
GOA_Deep_Shelf	35	47	1	1	1	1	6	8	1	1	21	31
GOA_Slope	16	32	1	1	1	1	4	5	1	1	21	24
GOA_Shallow	6	7	1	1	1	2	10	11	2	3	27	31
Total	100	100	2	1	2	1	9	8	2	2	14	27

Atka Mackerel Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	33	37	2	3	2	3	15	20	10	13	32	40
AI_Shallow	44	50	1	2	2	3	14	20	8	13	30	40
BS_Sand	1	2	37	38	31	32	81	84	37	38	0	0
GOA_Deep_Shelf	8	5	0	0	0	0	3	3	0	1	20	20
GOA_Slope	2	2	1	1	1	1	7	7	1	1	38	37
GOA_Shallow	11	4	0	0	0	0	3	1	1	0	17	8
Total	100	100	2	3	2	4	13	20	8	12	28	37

Table B.3-3(cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.

Yellowfin Sole — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	0	0	14	17	14	18	49	56	36	42	69	80
AI_Shallow	0	0	8	8	9	9	34	37	23	23	38	39
BS_Mud	1	0	0	0	0	0	0	0	0	0	0	0
BS_Sand	53	61	1	0	0	0	5	5	0	0	0	0
BS_Sand/Mud	43	39	2	3	2	3	13	18	1	2	0	0
BS_Slope	0	0	18	17	15	15	56	56	20	18	0	0
GOA_Deep_Shelf	0	0	6	0	5	0	39	0	9	0	0	0
Shallow	3	0	0	0	0	0	3	2	1	0	6	1
Total	100	100	1	2	1	1	8	10	1	1	0	0

Greenland Turbot — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	11	6	0	1	0	1	3	5	2	3	7	9
AI_Shallow	4	2	1	2	1	3	11	15	7	9	23	26
BS_Mud	18	14	0	0	0	0	0	1	0	0	0	0
BS_Sand	6	4	5	11	4	10	21	39	4	9	0	0
BS_Sand/Mud	56	65	2	3	2	2	12	14	2	2	0	0
BS_Slope	5	9	2	2	2	2	9	9	2	2	0	0
GOA_Deep_Shelf	0	0	2	0	2	0	11	0	3	0	51	0
GOA_Slope	0	0	4	0	3	0	18	0	6	0	53	0
GOA_Shallow	0	0	0	0	0	0	0	0	0	0	1	0
Total	100	100	2	2	2	2	9	12	2	3	2	1

Arrowtooth Flounder — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	6	2	1	2	1	2	5	11	3	7	11	21
AI_Shallow	4	1	1	2	1	3	10	23	6	14	22	42
BS_Mud	1	0	1	2	1	1	4	9	1	3	0	0
BS_Sand	7	4	3	10	3	8	20	39	3	8	0	0
BS_Sand/Mud	33	34	3	4	2	3	16	20	2	3	0	0
BS_Slope	3	5	2	3	2	2	10	12	3	3	0	0
GOA_Deep_Shelf	24	35	1	1	1	1	4	5	1	1	13	17
GOA_Slope	6	7	1	1	1	1	5	7	1	2	24	32
Shallow	16	11	0	1	0	1	4	9	1	2	13	26
Total	100	100	2	2	1	2	10	13	2	3	8	12

Rock Sole — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	3	1	1	3	1	3	7	16	4	11	16	32
AI_Shallow	6	3	1	1	1	1	7	10	4	6	17	22
BS_Mud	4	1	0	0	0	0	1	0	0	0	0	0
BS_Sand	28	37	1	1	1	1	6	6	1	1	0	0
BS_Sand/Mud	37	41	2	3	2	2	13	15	2	2	0	0
BS_Slope	2	1	3	2	2	1	11	9	3	2	0	0
GOA_Deep_Shelf	6	3	1	3	1	2	9	14	2	3	27	38
GOA_Slope	1	0	1	1	1	1	8	8	2	2	41	45
GOA_Shallow	13	13	0	1	0	1	5	6	1	2	14	17
Total	100	100	1	2	1	1	8	10	2	2	5	4

Table B.3-3(cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.

Flathead Sole — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	1	1	2	3	2	3	10	12	7	8	18	19
AI_Shallow	2	1	1	1	1	2	10	10	6	6	21	19
BS_Mud	12	7	0	0	0	0	0	1	0	0	0	0
BS_Sand	16	16	1	2	1	2	9	12	1	1	0	0
BS_Sand/Mud	35	41	2	3	2	2	13	15	2	2	0	0
BS_Slope	3	4	2	3	2	2	10	11	3	3	0	0
GOA_Deep_Shelf	15	15	1	1	1	1	5	6	1	1	17	19
GOA_Slope	2	1	1	2	1	2	9	10	2	3	39	40
GOA_Shallow	15	14	0	0	0	0	4	5	1	1	12	14
Total	100	100	1	2	1	2	8	10	1	2	5	6

Alaska Plaice — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	0	0	18	17	20	18	64	57	48	43	86	77
AI_Shallow	0	0	12	10	13	11	46	39	33	27	53	45
BS_Mud	5	5	0	0	0	0	0	0	0	0	0	0
BS_Sand	42	42	1	0	1	0	5	4	0	0	0	0
BS_Sand/Mud	52	52	2	2	2	2	12	10	1	1	0	0
BS_Slope	1	1	2	0	1	0	7	2	2	1	0	0
GOA_Deep_Shelf	0	0	2	0	1	0	10	0	2	0	14	0
GOA_Shallow	1	1	1	0	0	0	6	0	1	0	15	0
Total	100	100	1	1	1	1	9	7	1	1	0	0

Rex sole — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	3	2	1	4	1	4	8	18	5	13	16	33
AI_Shallow	2	2	2	4	2	4	16	25	10	16	32	44
BS_Sand	7	6	6	18	5	16	31	61	5	15	0	0
BS_Sand/Mud	29	9	4	9	3	7	21	37	4	9	0	0
BS_Slope	5	5	3	6	2	5	12	22	3	6	0	0
GOA_Deep_Shelf	34	51	1	1	1	1	5	8	1	1	17	31
GOA_Slope	9	14	1	1	1	1	6	9	1	2	28	39
GOA_Shallow	11	10	1	1	1	1	8	12	2	3	24	34
Total	100	100	2	3	2	3	12	16	3	4	12	26

Dover Sole — Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	3	0	1	7	1	7	7	24	5	18	13	32
AI_Shallow	1	0	1	5	2	6	13	36	7	23	25	54
BS_Sand	2	1	17	10	14	9	70	72	14	6	0	0
BS_Sand/Mud	1	0	11	13	9	11	49	55	10	13	0	0
BS_Slope	0	0	17	0	14	0	47	0	19	0	0	0
GOA_Deep_Shelf	57	58	1	1	1	1	5	5	1	1	16	18
GOA_Slope	17	19	1	1	1	1	5	5	1	1	22	22
GOA_Shallow	20	21	1	1	1	1	7	8	2	2	21	24
Total	100	100	1	1	1	1	7	7	2	1	17	20

Table B.3-3(cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.

Pacific Ocean perch Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	21	26	1	1	1	1	5	9	3	5	12	21
AI_Shallow	10	13	1	1	2	2	13	17	8	10	28	38
BS_Sand	2	2	12	3	10	3	32	15	15	6	0	0
BS_Sand/Mud	5	4	2	1	1	1	9	6	2	1	0	0
BS_Slope	6	7	3	2	2	1	12	7	4	2	0	0
GOA_Deep_Shelf	32	30	1	1	1	1	7	10	1	1	29	46
GOA_Slope	16	16	1	1	1	1	6	9	1	2	27	43
GOA_Shallow	8	2	1	0	1	0	5	3	1	1	20	17
Total	100	100	1	1	1	1	8	10	3	4	20	31

Shortraker & Rougheye Rockfisl Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	22	36	0	0	0	1	3	5	2	3	8	13
AI_Shallow	16	12	1	1	1	2	7	12	4	7	17	27
BS_Sand	1	0	20	5	17	4	40	16	24	8	0	0
BS_Sand/Mud	1	0	1	1	1	1	6	5	1	1	0	0
BS_Slope	5	2	3	3	2	3	11	13	3	4	0	0
GOA_Deep_Shelf	33	14	1	1	1	1	5	7	1	1	17	37
GOA_Slope	16	34	1	1	1	1	5	6	1	2	21	30
GOA_Shallow	6	1	1	0	1	0	6	5	1	1	16	28
Total	100	100	1	1	1	1	6	7	2	3	15	24

Northern Rockfish Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	19	17	1	1	1	2	6	13	4	8	16	28
AI_Shallow	27	21	1	1	1	2	8	16	5	10	19	34
BS_Sand	3	1	5	1	4	1	24	20	6	2	0	0
BS_Sand/Mud	3	1	3	0	3	0	15	3	4	0	0	0
BS_Slope	2	0	3	2	2	2	12	10	4	3	0	0
GOA_Deep_Shelf	26	37	2	1	1	1	10	10	1	1	41	42
GOA_Slope	8	10	2	2	1	1	10	9	2	2	43	43
GOA_Shallow	13	13	0	0	1	0	6	5	1	1	24	22
Total	100	100	1	1	1	1	9	11	3	4	25	35

Dusky Rockfish Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	3	1	4	4	6	6	26	39	18	26	45	63
AI_Shallow	3	1	4	3	6	4	35	31	23	20	61	55
BS_Sand	3	0	22	0	19	0	66	0	15	0	0	0
BS_Sand/Mud	1	0	6	0	5	0	23	0	7	0	0	0
BS_Slope	0	0	2	0	2	0	12	0	3	0	0	0
GOA_Deep_Shelf	57	69	1	1	1	1	8	10	1	1	31	46
GOA_Slope	14	19	1	1	1	1	8	10	2	2	38	45
GOA_Shallow	20	11	1	1	1	1	7	8	2	2	25	38
Total	100	100	2	1	2	1	11	10	3	2	31	45

Table B.3-3(cont.) - Long-term effect indices (percent reduction) of habitat features within intersections of species distributions and habitat types, including percent of each species distribution within each habitat type.

Yelloweye Rockfish Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	6	2	1	2	1	2	8	19	5	12	20	36
AI_Shallow	2	1	1	2	2	3	15	26	9	16	34	46
BS_Sand	0	0	10	0	9	0	42	0	8	0	0	0
BS_Sand/Mud	0	0	17	0	14	0	54	0	22	0	0	0
BS_Slope	0	0	7	0	6	0	30	0	8	0	0	0
GOA_Deep_Shelf	57	60	1	1	1	1	6	7	1	1	30	35
GOA_Slope	25	32	1	1	1	1	8	9	2	2	33	37
GOA_Shallow	11	6	0	0	0	0	6	5	2	1	28	24
Total	100	100	1	1	1	1	7	8	2	2	30	35

Thornyheads Percent Reduction (General Distribution (95%)/Concentration (75%))

Habitat	% of Area		Infauna prey		Epifauna prey		Living structure		Non-Liv. Struct.		Hard Coral	
AI_Deep	27	23	0	0	0	1	3	4	2	2	7	9
AI_Shallow	7	5	1	1	1	2	11	12	6	7	24	27
BS_Sand	1	1	20	17	17	14	42	38	22	20	0	0
BS_Sand/Mud	2	1	1	1	1	1	7	7	1	1	0	0
BS_Slope	10	12	2	2	2	1	8	8	2	2	0	0
GOA_Deep_Shelf	30	33	1	1	1	1	5	4	1	1	20	18
GOA_Slope	19	22	1	1	1	1	4	5	1	1	21	23
GOA_Shallow	4	2	0	0	0	0	4	2	1	1	15	14
Total	100	100	1	1	1	1	6	5	2	2	14	15

PUBLIC TESTIMONY SIGN-UP SHEET FOR AGENDA ITEM C-3 EFH

	NAME (PLEASE PRINT)	AFFILIATION
1 6	Jason Brune	Resource Development Council
2 6	Ben Enticknap	Alaska Marine Conservation Council
3 3	Jon Warrenchuk	citizen of Juneau
4 6	Whit Sheard	The Ocean Conservancy
5 2	Joe Moore	Individual / Recreational fisherman
6	Ron Clarke	Marine Conservation Alliance
7	Terry Leitzell	Icicle Seafoods
8	Glenn Reid	BSPA
9	Donna Parker	H&C
10	Heather McCarty	CBSFA
11	Ed Richardson	PCC - Pollock Conservation Coop
12	John Gauvin	Groundfish Forum
13	Julie Bonney	Groundfish Data Bank
14	Jim Ayers	Oceana
15 3	Jon Sealey	individual + Plaintiffs Rep
16	Joe Sullivan	Mundt MacKodiak
17	Susan Murray	city of Juneau
18 3	Michelle Ridgway	Individual
19	Paul MacGregor	At-Sea Processors Assn
20	Thom Smith	North Pacific Longline Assn.
21	~~Chuck McCallum~~	Lake Peninsula Borough
22		
23		
24		
25		

NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

C-3
Ben Entrikin
AMCC

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Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska

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Key words: corals, Alaska, submarine

Abstract

Few *in situ* observations have been made of deepwater corals and, therefore, little is known about their biology or ecological significance. Deepwater corals (*Primnoa* spp.) were observed from a manned submersible at 11 sites in the Gulf of Alaska from 1989 to 1997 at depths of 161–365 m. We identified 10 megafaunal groups that associate with *Primnoa* to feed on the coral, use the coral branches for suspension feeding, or for protection. Predators on *Primnoa* polyps included sea stars, nudibranchs, and snails. Sea stars were the main predators, consuming 45% and 34% of the polyps at two sites. Suspension-feeders included crinoids, basket stars, anemones, and sponges. Most suspension-feeders observed at depths >300 m were associated with *Primnoa*. Protection seekers included rockfish, crab, and shrimp. Six rockfish species were either beneath, among, or above *Primnoa*. Shrimp were among the polyps, and a pair of mating king crabs were beneath *Primnoa*. These observations indicate *Primnoa* are important components of the deepwater ecosystem and removal of these slow-growing corals could cause long-term changes in associated megafauna.

Introduction

Primnoa spp. are deepwater gorgonian corals that occupy the North Atlantic and Pacific Oceans, including Norway, Greenland, Nova Scotia, British Columbia, and Alaska (Breeze et al., 1997). The damage caused by fishing gear to these slow-growing corals is a concern because of their possible importance in the ecosystem. Most coral studies have focused on shallow water corals, which provide habitat and prey for many types of fish and invertebrates and share a wide diversity of symbiotic relationships (see Jones & Endean (1973–76) for an overview). Few *in situ* observations have been made of *Primnoa* and little is known about their biology or ecological significance. However, the few studies on deepwater corals indicate they have a similar ecological importance. Jensen & Frederiksen (1992) identified 298 species associated with the deepwater coral *Lophelia pertusa*, and Mortensen et al. (1995) found a high density and diversity of fauna associated with *L. pertusa*. In the Gulf of Alaska (GOA), Krieger (1993) observed small rockfish (mainly juveniles) associated with *Primnoa*, and O'Connell et al. (1998) observed and photographed a yelloweye rockfish (*Sebastes ruberrimus*) associated with *Primnoa*. Here, we describe megafauna that associated with *Primnoa* during four years of observations from a submersible in the GOA.

Primnoa colonies grow in a tree form. A calcium-carbonate skeleton supports branching colonies of individual red polyps that capture plankton with stinging cells. *Primnoa* colonies can exceed 2 m height and 7 m width (pers. observations). Common names for *Primnoa* in the United States are sea corn, popcorn coral, bush coral, and spruce trees on the Atlantic coast, and red trees or gold coral on the Pacific coast (Breeze et al., 1997). In Alaska, *Primnoa* have been reported from Dixon Entrance in southeastern Alaska, to Amchitka Island in the Aleutian Islands (Cimberg et al., 1981). *Primnoa willeyi* (Hickson, 1915) and *P. resedaeformis* (Gunnerus, 1763) have been identified in the GOA, but other *Primnoa* species probably occur. Distribution records of *Primnoa* indicate they extend to 800 m depth and are most abundant in certain inlets

in southeastern Alaska and certain bays on the northwestern side of Kodiak and Afognak Island (Cimberg et al., 1981). *Primnoa* have not been confirmed within SCUBA depths in Alaska, indicating that their minimal depth is >30 m. Cimberg et al. (1981) generated a habitat profile for *Primnoa* that includes substrates of large boulders or exposed bedrock, lack of turbidity, and yearly temperatures remaining above 3.7 °C. A Norwegian fjord containing *P. resedaeformis* had a temperature range of 4.74–10.62 °C and a salinity range of 30.99–34.05 psu (Strömgren, 1970). Cimberg et al. (1981) speculate that *Primnoa* have a limited reproductive period, a life span of more than 100 years, and a growth rate of approximately 1 cm/year. Heikoop et al. (1998) aged a 5-cm diameter *Primnoa* specimen at about 500 years using isotope dating.

Materials and methods

Study area

Primnoa were observed at 11 dive sites in the spring and summer of 1989, 1991, 1992, and 1997. Dive sites were located on the outer continental shelf in the southeastern GOA (Fig. 1). *Primnoa* were observed incidentally at Sites 1–5 during rockfish studies in 1989, 1991, and 1992, and were targeted for observations at Sites 6–11 in 1997. The targeted sites were selected based on *Primnoa* catches during bottom-trawl surveys by the National Marine Fisheries Service (NMFS), Alaska Fisheries Science Center in 1990 and 1996.

Submersible

All dives were from the two-person submersible *Delta*, which is battery-powered, 4.7 m long, and has a maximum 365 m depth capability. It is equipped with halogen lights, internal and external video cameras, magnetic compass, directional gyro compass, underwater telephone, and transponder for charting the submersible path from a surface vessel; GPS and LORAN fixes were recorded at the beginning and end of a dive, and every 1 min during a dive. A pilot and one scientist were aboard the submersible on each dive. The pilot sat above the observer in a tower with a panoramic view and maintained the submersible on the seafloor at a speed of 1–3 km/h while the scientist observed through a starboard porthole 0.5 m above the bottom; a video camera was mounted on the starboard side, and the side portholes provided the widest range of view. The submersible lights provided illumination of 5–7 m. Observations were audio- and video-recorded by an externally mounted video camera that was aimed downward and by an internal video camera that was aimed parallel to the seafloor. During the rockfish dives (Sites 1–5), corals were recorded on video tape as the submersible passed by them on a predetermined compass course. During the coral dives (Sites 6–11), corals were approached and a loop was completed around the perimeter of large colonies for improved viewing. The volume of each colony was estimated from their length, width, and height. Most of these measurements were obtained using 20 cm laser-beam marks that were projected onto the colonies or onto the seafloor next to colonies. The dimensions of extremely large colonies were estimated by comparison with the length and height of the submersible. Colony dimensions were estimated to within 0.1 m for small colonies (<1 m^3) and to within 0.5 m for large colonies (1–18 m^3). Visual estimates of the polyps missing from each colony were used to calculate the percentage of missing polyps at a dive site. Fish and invertebrates that were among corals or within 1 m of the base of corals were considered 'associated' with them. At Site 1, megafauna counts were underestimated and no estimates were made of the coral volume because rugged substrates prevented the complete video recording of colonies.

Results

Primnoa colonies were attached to boulders or bedrock at depths of 161–365 m (the maximum dive depth of the submersible). Less than 1% of the boulders contained *Primnoa* colonies. Small colonies consisted of single trees to 2 m high with sparse branches, or multiple small trees 0.1–1 m high. Large colonies consisted of single or multiple trees 1–3 m high with numerous branches that occupied most of the volume between the major branches. Of the 599 colonies viewed for megafauna, 95 were large and accounted for 88% of the total coral volume (Table 1).

Ten megafaunal groups were associated with *Primnoa*: rockfish, sea stars, nudibranchs, crinoids, basket stars, crabs, shrimps, snails, anemones, and sponges (Table 1). At least six species of rockfish and three genera of sea anemones were associated with *Primnoa*. Rockfish species included rougheye (*S. aleutianus*), redbanded (*S. babcocki*), shortraker (*S. borealis*), sharpchin (*S. zacentrus*), dusky (*S. cili-*

Table 1. The number and volume of small (< 1 m^3) and large (1–18 m^3) coral colonies, *Primnoa* spp., with megafauna species. Observations were from a submersible in the gulf of Alaska, 1989–1997

Site	Date (m/y)	Depth (m)	Small colonies						Large colonies											
			No.	Volume (m^3)	Rock-fish	Sea Stars	Cri-noids	Nudi-Branchs	No.	Volume (m^3)	Rock-fish	Sea Stars	Cri-noids	Basket Stars	Nudi-branchs	Shrimp	Snails	Sponges	Anem-ones	King Crab
1[a]	8/89	198–260	109	..	2		1		24	-	10	3	4	1	3		11	3	4	
2	6/91	161–167	143	6.1	2		2		0	0.0										
3	6/91	201–204	2	0.1					0	0.0										
4	6/91	184–185	2	0.1			1		0	0.0										
5	5/92	178–178	0	0.0					1	5.2	1					1				
6	7/97	238–262	75	4.2	7	2	1	1	9	23.3	8	4	2		6	>2				
7	7/97	363–364	6	1.4		2	1		8	24.0	8	6	7		2	>1				
8	7/97	341–361	49	15.0	12	10	6	1	16	95.2	9	13	11		3	>4				1
9	7/97	364–365	16	3.7	3	1	4		9	62.0	5	1	7	1	2	>1				
10	7/97	356–364	47	7.8	5		6	2	21	83.6	11	2	14	1	5	>2				
11	7/97	362–364	55	6.8	4	3	3		7	18.2	4	4	2	1		>1				
Totals			504	42.5	35	18	25	4	95	311.5	56	33	47	4	21	0	11	3	4	1

[a]Observations incomplete at site 1 because of rugged habitat.

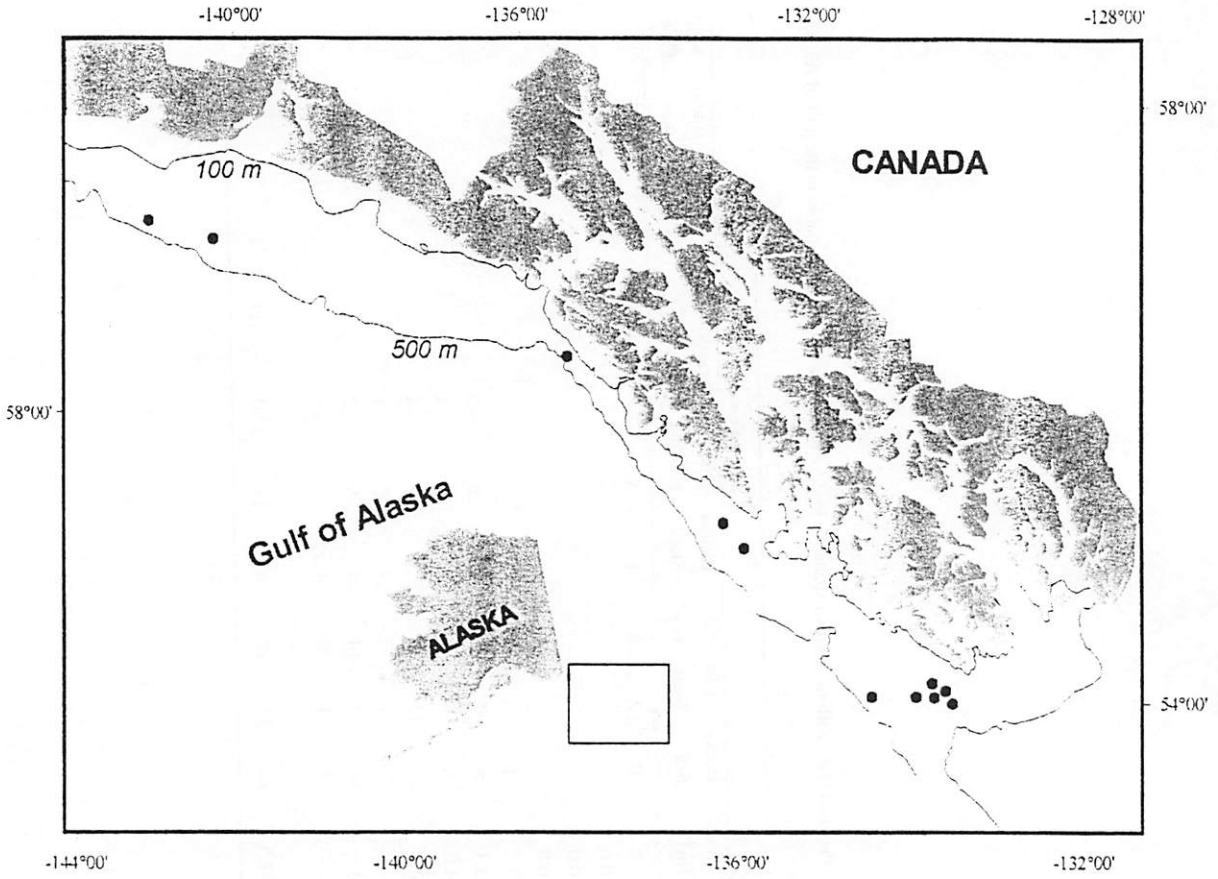

Figure 1. Locations of *Primnoa* spp. that were observed from a submersible in the eastern Gulf of Alaska in 1989, 1991, 1992, and 1997.

atus), and yelloweye rockfish. Sea anemones included *Cribinopsis* spp., *Stomphia* spp., and *Tealia* spp. The number of shrimp species was not determined. Seven of the megafaunal groups probably contained a single species, based on their similar morphology and color: *Hippasteria heathi* (sea star), *Tritonia exulsans* (nudibranch), *Florometra* sp. (crinoid), *Gorgonocephalus eucnemis* (basket star), *Lithodes aquaspina* (golden king crab), a trochid snail, and an unidentified sponge. These megafauna either fed on *Primnoa* polyps, used the branches for suspension feeding, or sought protection.

Polyp feeders (sea stars, nudibranchs, snails)

Sea stars were associated with 33 large colonies and 18 small colonies at seven sites (Table 1). Sea stars were consuming polyps, based on several observations: (1) sea stars were consistently attached to branches without polyps, indicating they had consumed the

Table 2. The number of sea stars, *Hippasteria* sp., associated with coral, *Primnoa* spp., and the percentage of coral polyps that sea stars consumed. Observations were from a submersible in the gulf of Alaska, 1989–1997

Site	Sea Stars		Sea Star Predation	
	Total	Among Coral	Polyps Colonies	(%)
6	8	7	20 of 84	13
7	15	14	13 of 14	45
8	43	41	38 of 65	34
9	2	1	5 of 25	4
10	5	4	5 of 68	3
11	10	9	20 of 62	27
Totals	83	78	101 of 318	

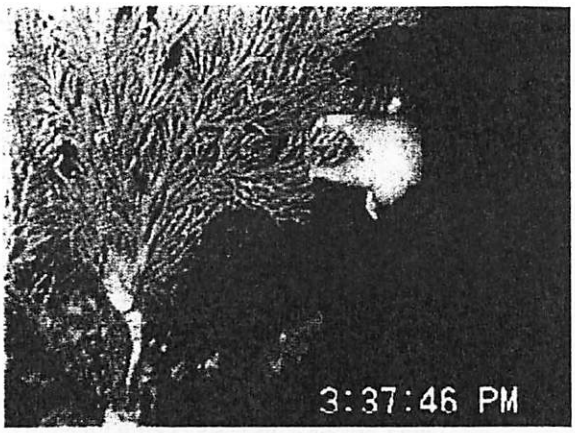

Figure 2. Sea stars (*Hippasteria* spp.) feeding on *Primnoa* spp. that were observed from a submersible in the eastern Gulf of Alaska.

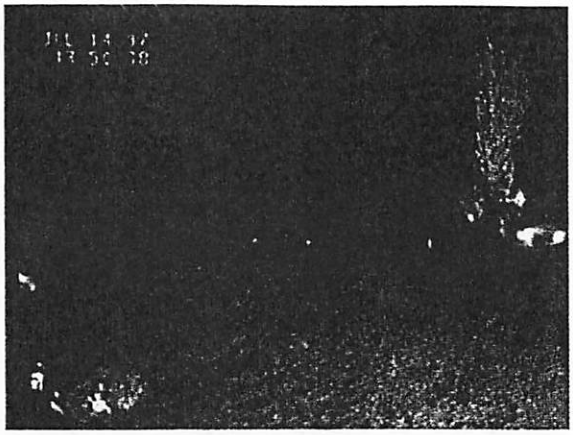

Figure 4a. (A) A rockfish (*Sebastes* spp.) associated with *Primnoa* spp.

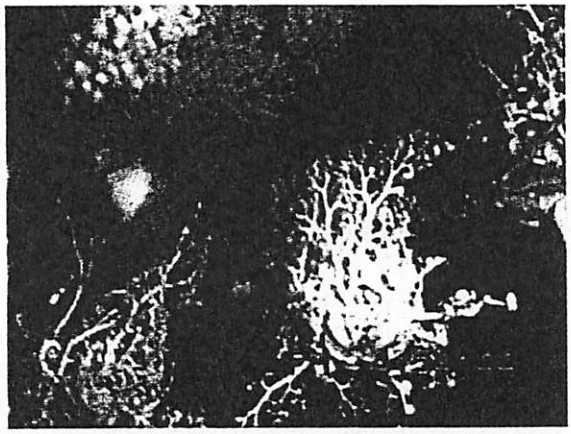

Figure 3. Suspension feeders (anemones and basket stars) attached to *Primnoa* spp. in the eastern Gulf of Alaska.

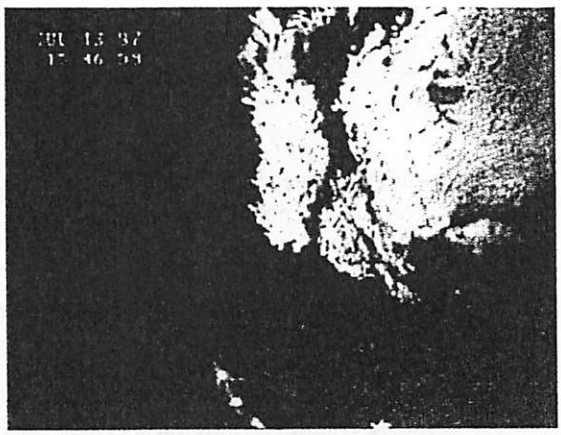

Figure 4b. (B) three rockfish associated with *Primnoa* that were observed from a submersible in the eastern Gulf of Alaska. Laser points are 20 cm apart.

polyps as they moved upwards and outwards on the branches (Fig. 2), (2) sea stars were attached to branches without polyps, (3) everted stomachs of sea stars were covering polyps, and (4) sea stars were associated with 54 of 104 coral colonies with missing polyps; the other 50 colonies were missing polyps in an upward and outward pattern and were assumed to have been consumed by sea stars. Detailed counts were made of sea stars at Sites 6–11, and only 5 of 83 sea stars were not directly associated with *Primnoa* (Table 2). These five sea stars were within 10 m of a coral colony, possibly moving between colonies. Sixty of the 78 sea stars were associated with large colonies, including 13 colonies with 2–4 sea stars. Sea stars had consumed polyps at 101 of the 318 colonies, including 45% of the polyps from 13 of the 14 colonies at Site 7 and 34% of the polyps from 38 of the 65 colonies at Site 8 (Table 2). Sea stars consumed a maximum of 80% of the polyps from a large colony and 100% of the polyps from a small colony.

Nudibranchs were associated with 21 large colonies and 4 small colonies at six dive sites (Table 1). Nudibranchs were either among polyps in the lower part of the colonies or at the base of the colonies. They were assumed to be feeding on *Primnoa* polyps, based on their reported diets, which include a variety of alcyonaceans (Kozloff, 1987; Brusca & Brusca, 1990). Less than 1% of the polyps were missing from colonies that contained nudibranchs and no other predator, indicating that nudibranchs consume few polyps.

Snails were attached to branches of 11 large colonies at Site 1. At least 30 snails were counted on two of the large colonies. Snails were attached to branches with polyps and also to branches without polyps that had been removed by sea stars. In the coastal waters

Table 3. The number of small and large rockfish, *Sebastes* spp., that were associated with coral, *Primnoa* spp. Observations were from a submersible in the gulf of Alaska, 1989–1997

Site	No.	Among coral	Species
			Small Rockfish (<40 cm)
1	203	12	sharpchin, redbanded, yelloweye, dusky
2	143	2	sharpchin
5	56	12	sharpchin
6	54	42	rougheye, redbanded, sharpchin
Total	456	68	
			Large Rockfish (40–70 cm)
7	12	12	redbanded, rougheye, shortraker
8	33	30	redbanded, rougheye, shortraker
9	15	15	redbanded, rougheye, shortraker
10	32	25	redbanded, rougheye, shortraker
11	16	10	redbanded, rougheye, shortraker
Total	108	92	

of France, Theodor (1967) reported that snails (*Simnia pelta*) ate the polyps of gorgonian corals and laid eggs on the branches.

Suspension feeders (Crinoids, basket stars, anemones, and sponges)

Suspension feeders that were attached to corals included crinoids at nine sites, basket stars at four sites, and anemones and sponges at one site (Table 1). They were usually attached to branches where predators had eaten the polyps (Fig. 3). Suspension feeders at the six sites <300 m depth were attached to a variety of substrates besides corals, whereas suspension feeders at the five deeper sites were attached mainly to corals.

Protection seekers (rockfish, shrimp, and crabs)

Rockfish were associated with 56 large colonies and 35 small colonies at nine sites (Table 1). Single rockfish were associated with 61 coral colonies, and 2–12 rockfish were associated with 24 coral colonies (Fig. 4). Rockfish associated with corals at the four sites <263 m depth were small (<40 cm fork length), whereas rockfish at the five sites >340 m depth were large (40–70 cm fork length: Table 3). The small rockfish species included sharpchin, dusky, yelloweye, and redbanded rockfish, and large rockfish species included shortraker, rougheye, and redbanded rockfish. Only 15% of the smaller rockfish were associated with corals, whereas 85% of the large rockfish were associated with corals (Table 3). Shortraker, rougheye, and redbanded rockfish were usually beneath corals, whereas sharpchin and juvenile yelloweye rockfish were usually among corals, and dusky rockfish were above corals.

Small shrimp (<3 cm) were observed among branches of large colonies at seven sites (Table 1). These small shrimp were camouflaged by the polyps and were seen only when the submersible was near the coral and the light reflected from their eyes. Precise counts of shrimp were not possible, but hundreds of pairs of eyes were observed among some colonies. Other crustaceans associated with coral were a pair of golden king crabs that were beneath a large colony. This pair was clasping, part of the mating process in which the male holds the female chelipeds with his chelipeds until the female sheds her carapace, followed by the male fertilizing the eggs. These were the only king crabs observed, and this was the first time clasping golden king crabs have been documented.

Discussion

Sea stars had caused extensive damage to *Primnoa*, and the presence of sea stars on *Primnoa* at sites 300 km apart and at 198–365 m depths indicates they were widespread in the GOA. Sea stars were missing from about half the colonies where they had consumed polyps, indicating they departed partially eaten colonies or they died before all polyps were consumed. The time frame when the predation occurred could not be determined because we do not know feeding rates or longevity of this sea star or whether polyps recolonize branches. Most species of sea stars are opportunistic predators, but *Hippasteria heathi* appeared to be feeding selectively on *Primnoa* polyps, similar to the crown of thorns sea star *Acanthaster planci*, which feed primarily on scleractinian coral polyps (Chesher, 1969). Feeding was mainly on large *Primnoa* colonies, in contrast to *Acanthaster planci*, which feed mainly on small colonies (Chess et al., 1997).

The nudibranch *Tritonia exulsans* feed on other invertebrates besides *Primnoa*, such as sea pens (*Ptilosarcus gunneyi*), at depths of 15–30 m in the fjords of southeastern Alaska (pers. observation).

Suspension feeders move above the seafloor when they attach to *Primnoa*, possibly to avoid predators and sediment. Most suspension feeders were attached to branches without polyps, perhaps because

the polyps contain stinging cells. Why most suspension feeders were using coral at deep sites and not at shallow sites is unknown.

The structure and color of *Primnoa* probably protect small rockfish and shrimp from predators. Large rockfish, however, have no known predators and probably were not seeking protection. Perhaps large rockfish associate with corals for feeding; shrimp is a main prey of shortraker and rougheye rockfish (Yang, 1993, 1996), and shrimp were abundant among some colonies. Corals are apparently a strong attraction for large rockfish. In habitat without corals, large rockfish were associated with soft substrate containing boulders and steep slopes, and about 10% of them were lying against boulders (Krieger & Ito, 1999); with corals, we observed large rockfish associated with hard substrate and minimal slope. Less than 1% of the boulders contained coral, but 85% of the large rockfish were next to boulders with corals. The pair of golden king crab was likely associated with *Primnoa* to avoid other crabs. Clasping pairs of red king crabs (*Paralithodes camtschaticus*) seek structures such as macrophytes and reef complexes during clasping to avoid competing with other crabs during the mating process (Stone et al., 1993).

This study identifies *Primnoa* as both habitat and prey for fish and invertebrates. Removal or damage of *Primnoa* may affect the populations of associated species, especially at depths >300 m, where species were using *Primnoa* almost exclusively. Current removals of *Primnoa* in the GOA include small amounts for jewelry and unknown amounts removed incidentally while targeting demersal fish species. This harvest for jewelry is reported at less than 200 kg/year during the last five years (pers. commun., Ken Imamura, Alaska Department of Fish and Game, Juneau). The amount of coral removed incidentally is unknown, but coral removed during assessment surveys is one indication of how frequently *Primnoa* is encountered with bottom-fishing gear: *Primnoa* was removed in 168 of 3553 bottom-trawl hauls during the GOA and Aleutian surveys in 1990–1996 at depths of 100–600 m (NMFS bottom-trawl data base, Alaska Fisheries Science Center, Seattle, Washington), and *Primnoa* and other coral species were caught on 619 of 541 350 hooks that were fished during the sablefish long-line survey in the GOA and Aleutian Islands in 1998 at depths of 150–900 m (NMFS sablefish long-line data base, Alaska Fisheries Science Center, Auke Bay, Alaska). More studies are needed to describe species associations with *Primnoa* because only a narrow range of *Primnoa* depths and habitats were observed in this study. Studies are also needed to understand species interactions, such as predation rates of *Primnoa* by sea stars and why large rockfish associate with *Primnoa*.

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M. RIDGWAY C-3

C-3 (a) Essential Fish Habitat

EFH description: ~~AP recommends~~ The Council adopts Alternative 3 as the Preliminary Preferred Alternative.

HAPC approach: ~~AP recommends t~~ The Council adopts Alternative 3, the site-based concept, as the Preliminary Preferred Alternative.

Minimization of fishing effects on EFH: The ~~AP recommends the~~ Council adopts Alternative 1, status quo habitat protections, Alternative 4 and Alternative 5B as the Preliminary Preferred Alternatives.

C-3 (b) HAPC Proposal and Review Process

Criteria for ~~consideration of~~ HAPCs: The four HAPC considerations apply to all HAPCs per Final Rule..
~~The AP recommends the following as criteria for consideration of HAPC proposals: HAPC proposals would be required to meet at least two of the four HAPC criteria established in the EFH Final Rule: importance of ecological function, sensitivity, vulnerability, and rarity. Additionally, the AP recommends that "rarity" be a mandatory criterion of all HAPC proposals.~~

~~**Council priorities for initial (2003) Request for HAPC Proposals**:~~
~~AP believes that concrete and realistic priorities need to be set by the Council for this initial HAPC RFP process, and for each subsequent cycle. Experience in 2002, the large number of broad and expansive HAPC proposals brought forward by the public (absent any call for proposals), underscores the need for prioritization in order to move forward expeditiously with the designation and possible protection of HAPCs. Without prioritization, the AP is concerned the initial RFP will bog down NMFS and the Council's available resources for consideration and review of HAPC proposals.~~

~~**AP recommendation for**~~ **HAPC priorities for the 2003 RFP:**
~~AP recommends that the priorities for~~ HAPC proposals in 2003 should be seamounts; ~~*(motion passed 18/0)* and~~ undisturbed hard coral beds exhibiting high biodiversity ~~*(motion passed 12/5)*~~; and juvenile rockfish habitat.

~~The Council should consider establishing HAPC's for a representative subset of those areas identified through HAPC proposals.~~

Proposal prioritization:
~~The AP recommends that s~~For proposal discussion purposes, submitted HAPC proposals may be ranked according to how many of the four HAPC criteria they meet, with the highest ranking given to those proposals that meet all four.

Review and Stakeholder process:
~~The AP recommends the Council utilize its normal public process in the review of HAPC proposals, including the use of a Technical Review Team of the appropriate scientists, social scientists and managerial expertise. Additionally, the AP recommends the following be considered to replace the existing portion of section J of the EIS:~~

Call for proposals for HAPC Process

~~(1)~~ HAPC proposals should be solicited every two ~~five~~ years, ~~and~~
~~(2) on the same cycle as the regular plan or regulatory amendment cycle.~~

Any member of the public may propose a HAPC, including fishery management agencies, other government agencies, scientific and educational institutions, non-governmental organizations, communities, industry groups.

~~HAPC proposals be taken from any individual or entity permitted to submit proposals for regular plan/regulatory amendments.~~

The format for a HAPC proposal should include (items with * are not required for processing proposal):

- Name of proposer, address, and affiliation
- Title of proposal: Provide a title for the HAPC proposal and a single, brief paragraph concisely describing the proposed action.
- Identification of the habitat and FMP species the HAPC proposal is intended to protect.
- Statement of purpose and need.
- * The four considerations set out in the final EFH regulations will be described in layterms in the RFP. Proposers may provide a description of whether and how the proposed HAPC addresses.
- Specific objectives for this proposal, including proposed management measures and their specific objectives, if appropriate.
- Proposed solutions to achieve these objectives (how might the problem be solved)
- ~~Methods of measuring progress towards those objectives.~~
- Expected benefits to the FMP species of the proposed HAPC~~, and supporting information/data.~~
- *Identification of the fisheries, sectors, stakeholders and communities to be affected by the establishment of the proposed HAPC (Who benefits from the proposal and who would it harm?) and any information you can provide on socioeconomic costs, including catch data from the proposed area over the last five years.
- Clear geographic delineation for proposed HAPC (~~written latitude and longitude reference points and delineation~~ Sketch of the HAPC area on an appropriately scaled NOAA chart)
- *Provide best available information and sources of such information to support the objectives for the proposed HAPC. (Citations for common information or copies of uncommon information)

• Proposals screened by Council staff to determine ~~consistency with EFH Final Rule and~~ application completeness. If not ~~consistent or~~ complete, the proposal is returned to the proposer with deficiencies identified ~~rejected~~, If accepted, proposal is forwarded to next step.

• Proposals reviewed by a Technical Review ~~Committee~~ Team

The Council names a Technical Review Committee made up of select Plan Team, Stock Assessment Biologists and ADF&G Biologists for review of ecological merits of proposals. ~~scientists in the appropriate disciplines,~~ Social scientists and economists, ~~and~~ management and enforcement specialists drawn from existing Team EFH could be engaged as needed. Collectively, the~~The~~ team evaluates the proposals for ecological, socio-economic, management and enforceability considerations~~., and for practicability.~~ The team ranks the proposals using a system like the matrix illustrated below, and makes their recommendations directly to the Council.

• Evaluation of Candidate HAPC's:

The team should evaluate each proposal on the basis of how well it meets the ~~criteria for HAPC established in step #1~~ four HAPC considerations, and the requirements established in step #2 above, and determine whether designation and any management measures are warranted. ~~The review team should give all considerations equal attention, but the overall depth of analysis at this stage needs further thought.~~

~~In the NPFMC Environmental Assessment of Habitat Areas of Particular Concern (NPFMC 2000), proposed HAPC types and areas were evaluated using a ranking system that provided a relative score to the proposed HAPCs by weighing them against the four considerations established in the EFH final rule.~~

Any member of the public may propose a HAPC, including fishery management agencies, other government agencies, scientific and educational institutions, non-governmental organizations, communities, industry groups.

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- ~~Methods of measuring progress towards those objectives.~~
- Expected benefits to the FMP species of the proposed HAPC~~, and supporting information/data.~~
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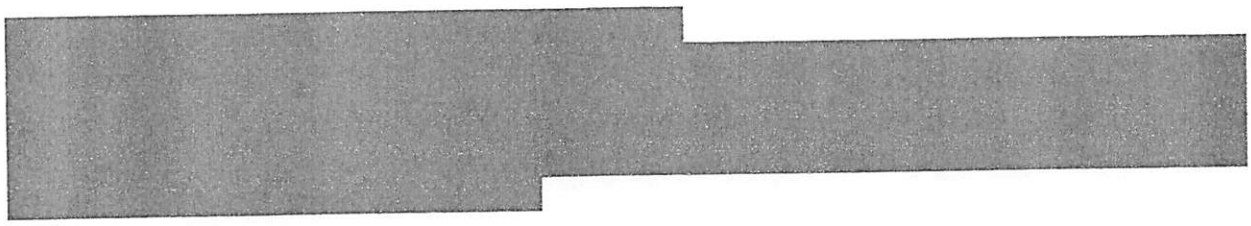

- Evaluation of Candidate HAPC's:

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~~In the NPFMC Environmental Assessment of Habitat Areas of Particular Concern (NPFMC 2000), proposed HAPC types and areas were evaluated using a ranking system that provided a relative score to the proposed HAPCs by weighing them against the four considerations established in the EFH final rule.~~

~~Two more columns should be added to the matrix. One column is to score the level of socio-economic impact, with the lower the impact, the higher the score~~. The final column is to score the level of likelihood that the proposal will successfully address the identified problem of the FMP species~~. To arrive at this~~

~~score, reviewers must consider the known information on the relative linkage of the habitat function to the health and productivity of the FMP species.~~

~~The "Data Level" column should be modified to be "Level and Certainty of Data" to reflect not only the amount of data available, but also the scientific certainty of the information supporting the proposal.~~

~~A written description should accompany the ranking so it is clear what data, scientific literature, and professional judgments were used in determining the relative score.~~

~~Evaluation matrix of proposed HAPC types and areas, with example proposals for illustration only. (NPFMC 2000)~~

~~Proposed HAPC area~~	~~Data Level~~	~~Sensitivity~~	~~Exposure~~	~~Rarity~~	~~Ecological Importance~~
~~Seamounts and Pinnacles~~	~~1~~	~~Medium~~	~~Medium~~	~~High~~	~~Medium~~
~~Ice Edge~~	~~3~~	~~Low~~	~~Low~~	~~Low~~	~~High~~
~~Continental Shelf Break~~	~~3~~	~~Medium~~	~~Medium~~	~~Low~~	~~High~~
~~Biologically Consolidated Sediments~~	~~1~~	~~Low~~	~~Medium?~~	~~Low~~	~~Unknown~~

- Socioeconomic and other criteria:

Per the EFH mandate, ~~states that~~ EFH measures are to minimize impacts on EFH "to the extent practicable" so socioeconomic considerations have to be balanced against expected ecological benefits at the earliest point in the development of measures. ~~NMFS' final rule for developing EFH plans states specifically that (Section (2) ii F.R. page 2378) FMPs should "identify a range of potential new actions that could be taken to address adverse effects on EFH, include an analysis of the practicability of potential new actions, and adopt any new measures that are necessary and practicable". In contrast to a process where the ecological benefits of EFH or HAPC measures are the singular initial focus and a later step is used to determine practicability, this approach would undertake the consideration of practicality simultaneously.~~

~~Specifically, HAPC proposals should be rated on their identifying as extensively as possible the exact locations that would be affected if the proposed HAPC mitigation measures were implemented. Proposals should also be rated on their identifying affected fishing communities and the potential effects on those communities, employment and earnings in the fishing and processing sectors, and related infrastructure.~~

Management and enforcement will also need representation in the review, to evaluate general management cost and enforceability of individual proposals.

- Council selection of HAPC proposals for analysis, to address Council priorities if identified.

- Stakeholder input
  The Council retains the authority to set up a stakeholder process as appropriate to obtain input on proposals.

- Technical reviews

~~The Council retains the authority to obtain additional technical reviews as needed from scientific, socio-economic and management experts.~~

- ~~Public comment on NEPA analysis~~

- ~~Council action~~
  ~~As per the normal Council process, the Council receives public comments and takes final action on HAPC selections and management alternatives.~~

~~*Motion passed 17/0*~~

~~Further, in reviewing the EIS, the AP suggest the following:~~

Further comments on the EIS:

1. Re-evaluate the economic impacts of GOA slope closures
2. Address the SSC's concerns regarding use of LEIs, MSSTs, and other issues raised by the EIS
3. For GOA alternatives, review comparisons between expected reductions in revenues to total annual revenues
4. Include first wholesale prices for the catcher processor sector in the GOA alternatives
5. Consider the use of ex-vessel revenues for catcher vessels may overlook a substantial and important portion of economic effects of the GOA alternatives
6. Re-evaluate the assumptions about the industry's ability to make up slope rockfish revenues by fishing in areas not part of the GOA slope or by using alternative fishing gear
7. ~~Economic impacts need to be evaluated in the context of open access management~~
8. Re-evaluate determinations of "no community impact"
9. Consistently apply methods to assess implementation and enforcement costs

~~*Motion passed 17/0*~~