

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

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Please check applicable box (es):

- GOA Groundfish FMP
- BSAI Groundfish FMP
- Scallop FMP
- BSAI Crab FMP
- Salmon FMP

Title of Proposal.

Aleutian Islands Coral and Sponge Marine Reserves

HAPC Site Location.

(Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)

See attached map. These areas encompass a circle with a 5 nautical mile radius around the following points:

- (1) Lat: 51.9654 Long: -176.8284
- (2) Lat: 51.9100 Long: -177.4095
- (3) Lat: 51.8500 Long: 179.8304
- (4) Lat: 51/3996 Long: -179.0371
- (5) Lat: 51.8441 Long: 179.8195

Summary Statement of the Proposal.

(Provide a brief paragraph concisely describing the HAPC.)

This HAPC proposal consists of individual marine reserves centered around known concentrations of coral and sponge biodiversity in the Aleutian Islands, with emphasis on areas with notable benthic structure and/or high concentrations of benthic invertebrates that provide shelter for managed species. These areas were chosen based upon video evidence from submersible dives.

Statement of Purpose and Need.

(Provide a specific purpose as why the HAPC needs to be identified.)

These HAPCs are necessary due to (1) the sensitivity of Aleutian Islands habitat to fishing impacts, (2) the need for 'control areas' and ecological reserves for purposes of adaptive management, (3) the need for refugia for long-lived slow-growing species such as rockfish, (4) the rarity of Aleutian Islands habitat, and (5) the high amount of biodiversity discovered in these five areas.

The habitats formed by corals support marine ecosystems with high biodiversity (Risk et al. 1998, Fossa et al. 1999). NMFS has stated that although scientists have a limited understanding of the specifics of the function of corals as habitat, "deep water corals clearly provide vertical structure that fish use for protection and cover" (NMFS 2003). Furthermore, submersible dives

have confirmed that there is a habitat association with some rockfish species in Alaska (Krieger and Wing 2000). NPFMC staff has indicated that gorgonian corals, particularly members of the genera *Primnoa* and *Paragorgia* may be extremely valuable as fish habitat (Witherell and Coon 2001, Heifitz 2002).

Finally, marine protected areas have been recommended for both protecting ecosystem functioning (NMFS 2003b) and protecting vulnerable rockfish populations (AFS 2003).

Habitat Type and Species Information.

(Identify of any habitat type(s) and FMP species of the HAPC.)

Habitat types include high relief coral, sponges, and areas with notable benthic structure and/or high concentrations of benthic invertebrates that provide shelter for managed species. Although data is not available to describe the spatial distribution of Aleutian Island substrates, these areas also likely include a mix of substrates, including pebbles, cobbles, boulders, and rock.

According to NOAA's EFH maps and queriable database, the selected areas are EFH for at least the following species:

Golden King Crab -- Adults, Eggs, Late Juveniles
Walleye Pollock – Adults, Late Juveniles
Northern Rockfish -- Adults, Late Juveniles
Weathervane Scallop -- Adults, Late Juveniles
Sculpin -- Adults, Late Juveniles
Skate -- Adults, Late Juveniles
Flathead Sole -- Adults, Late Juveniles
Rex Sole -- Adults, Late Juveniles
Red King Crab -- Larvae
Scarlet King Crab -- Adults, Eggs
Grooved Tanner Crab -- Adults, Eggs
Triangle Tanner Crab -- Adults
Tanner Crab – Larvae, Eggs, Late Juveniles
Arrowtooth Flounder -- Adults, Late Juveniles
Pacific Ocean Perch -- Adults, Late Juveniles
Dusky Rockfish -- Adults, Late Juveniles
Shortraker and Rougheye Rockfish -- Adults, Late Juveniles
Sablefish -- Adults, Late Juveniles
Thornyhead Rockfish -- Adults, Late Juveniles
Flathead Sole -- Adults, Late Juveniles

Describe How the Proposal Addresses the each of the 4 HAPC Considerations (50CFR 600.815):

The **IMPORTANCE** of the ecological function provided by the habitat.

The habitats formed by corals and sponges support marine ecosystems with high biodiversity (Risk et al. 1998, Fossa et al. 1999). NMFS has stated that although scientists have a limited understanding of the specifics of the function of corals and sponges as habitat, “deep water corals
Aleutian Islands Coral and Sponge Marine Reserves Proposal-The Ocean Conservancy

clearly provide vertical structure that fish use for protection and cover” (NMFS 2003). Furthermore, submersible dives have confirmed that there is a habitat association with some rockfish species in Alaska (Krieger and Wing 2000). NPFMC and NMFS staff has indicated that gorgonian corals, particularly members of the genera *Paragorgia* and *Primnoa*, may be extremely valuable as fish habitat (Witherell and Coon 2001; Heifitz 2002).

The extent to which the habitat is **SENSITIVE** to human-induced degradation.

Benthic habitat encompasses seafloor habitat that is generally believed to be at greater risk to the impacts of fishing than non-benthic habitat in the water column (NMFS 2003b). Gorgonian corals, which may live to be over 100 years old, are considered to be particularly vulnerable to fishing impacts (Andrews *et al.* 2002). Sponges also have long recovery times after damage from trawling (Freese 2003).

Past fishing without protective measures for HAPC species such as corals and sponges have led to a determination by NMFS that the Aleutian Islands benthic habitat community has been cumulatively conditionally significantly adversely affected by fishing impacts (NMFS 2003b). NMFS has undertaken no specific measures to remedy this and it is expected that a continuation of status quo policies will add to the negative consequences to benthic living habitat in the Aleutian Islands (NMFS 2003b).

Whether, and to what extent, the activity **STRESSES** the habitat type.

Fishing gears, in particular bottom trawling, have been found to reduce the diversity of benthic habitat (Auster and Langton 1999). Bottom trawling has been found to reduce habitat complexity in Alaska (Freese *et al.* 1999, McConnaughey *et al.* 2000) NMFS, in the draft programmatic supplemental EIS has indicated that impacts to habitat from fishing impacts includes:

- Alteration of the physical structure
- Direct mortality of benthic organisms
- Sediment suspension
- Physical and chemical modifications to the water column
- Benthic community changes
- Ecosystem changes

As stated above, NMFS has indicated that continued fishing under status quo policies will add to the historical significant impacts to Aleutian Islands benthic habitat (NMFS 2003b).

The **RARITY** of the habitat type. (*Mandatory requirement*).

The Aleutian Islands are home to the greatest diversity and abundance of cold-water corals in Alaska and perhaps, the world (Stone 2003). The reaction of global cold-water coral experts to the diversity discovered during recent submersible dives in the Aleutian Islands has been, in a word, incredulity. These dives have produced specimens of coral and sponge that have never before been taxonomically described. The Smithsonian is currently evaluating how many new species were discovered. These specific areas have been ground-truthed as having high biodiversity.

Objectives of the Proposal.

(List objectives specific to the identification of the HAPC.)

The objectives of this proposal are to: 1) Conserve known and unknown fish and invertebrate species and habitat associated with Aleutian Islands habitats by providing protection for these unique and rare areas from incidental disturbance from fishing effort and other human development; 2) Provide sanctuary for FMP and non-commercial fish and invertebrate species; and 3) Preserve these relatively unknown but pristine ecosystems for future conservation and fisheries research.

Describe any Proposed Solutions to Achieve These Objectives.

(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)

One of the problems in regards to Aleutian Island coral and sponge habitat is that there is a general lack of information and understanding of the physical environments and biological communities of these unique systems and that the systems have been shown to be very sensitive to human-induced degradation. Therefore, the proposed solutions entail further research and a precautionary management approach until we can develop a better working knowledge of these systems.

Proposed activities to achieve the above-stated objectives include:

- Designate the areas as HAPC and marine reserves;
- Create an inventory of the physical environments and biological communities that inhabit the Aleutian Islands seafloor;
- Improve our knowledge of the structure, function, and variability of coral and sponge ecosystems;
- Develop a more comprehensive understanding of the interaction between coral and sponge ecosystems and other oceanic and nearshore ecosystems;
- Further our understanding of the relationships and population dynamics between commercial and non-commercial species which inhabit coral and sponge ecosystems;
- Further our understanding of the known and potential human-induced threats to coral and sponge biodiversity; AND
- Further our knowledge of the local effects of establishing a harvest refugia on commercially and non-commercially fished species and the value of harvest refugia as a fisheries and marine management tool.

Describe any Proposed Management Measures for the HAPC.

(Include specific objectives, if appropriate.)

The Ocean Conservancy proposes that these areas be designated as marine reserves, and that all extractive activities be banned. Exceptions for research and traditional subsistence activities are applicable.

Identify any Expected Benefits to Habitat or FMP species.

(Include specific information regarding a species life history stage, if known.)

Most well-enforced marine reserves result in relatively large, rapid and long-lasting increases in population sizes, numbers of species and reproductive output of marine mammals and plants.

For example, average biomass, or weight of all animals and plants, in studied areas was more than four times greater in reserves than in unprotected areas nearby. Furthermore, average density, or number of animals in an area, triples, and the number of species was 1.7 times higher in marine reserves than unprotected areas. Likewise, average body size of animals was 1.8 times larger in reserves than in fished areas. This statistic is particularly important because larger fish and invertebrates typically produce substantially more young (PISCO 2002).

Through spillover and export, marine reserves may also influence populations in adjacent waters. Some adults or juveniles may swim or crawl into neighboring areas to move into less-crowded areas to avoid competition for food and living space. In addition, larvae and plant propagules may drift out of a reserve and seed the surrounding waters (PISCO 2002). Research benefits might include studies on life-history requirements, dispersal and recruitment, genetic connectivity, regional and local oceanographic influences, natural biodiversity, natural mortality, refugia design and effectiveness, and human impact.

Finally, marine reserves offer us the greatest chance of protecting these extremely sensitive and rare habitats from human disturbance, which has possibly irreversible impacts.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.

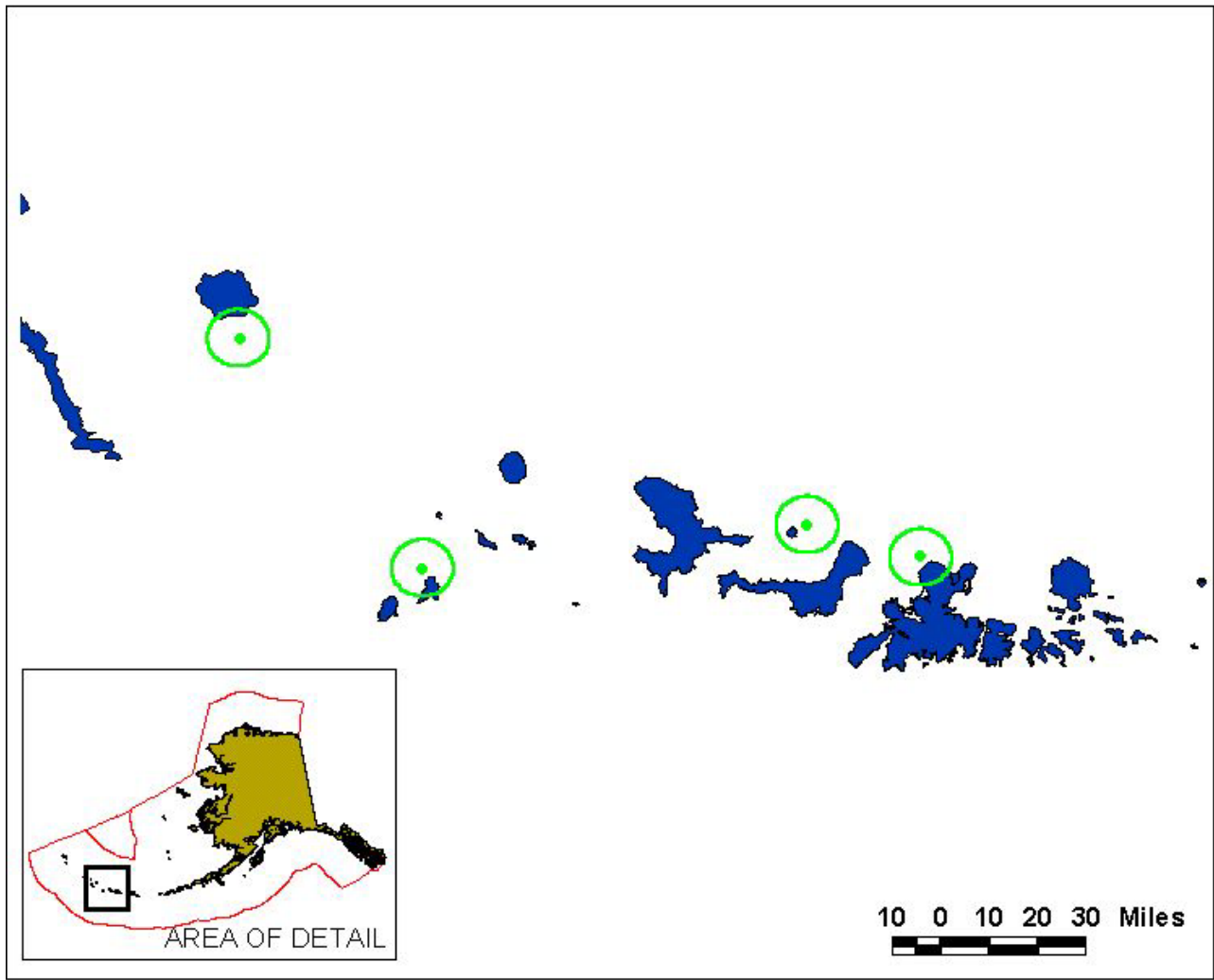
(Who may or may not benefit from the proposal? Include known or indirect socioeconomic costs.)

The proposal will benefit the fishing community, research community and general public through the development of a more thorough understanding of coral and sponge and their interaction with nearshore and other oceanic systems. We also believe that these closed systems will provide an important resource for future research of both commercial and non-commercial species and habitats.


Considering the relatively small size of these areas, it is not expected that there will be a reduction of fishing effort so large that it cannot be offset through displacement of effort. Furthermore, marine reserves provide long-term benefits as nurseries for various populations of managed species.

ALEUTIAN ISLAND CORAL GARDEN MARINE RESERVES BIBLIOGRAPHY

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MAP LEGEND

-  10 nautical mile buffer
-  Coral gardens
-  EEZ Boundary

