

# HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

**Date:** January 9, 2004

**Name of Proposer:** Kris Balliet, Alaska Regional Director

**Affiliation:** The Ocean Conservancy

**Address:**

Alaska Regional Office  
425 G Street, Suite 400  
Anchorage, AK 99501

Please check applicable box (es):

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

**Title of Proposal.**

Aleutian Islands Marine Reserve Network

**HAPC Site Location.**

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

See attached map. These areas are those identified in the preliminary draft EFH EIS Alternative 6 in the Aleutian Island and Eastern Bering Sea Management Areas 518, 519, 541, 542, and 543 (Preliminary draft EFH EIS Figure 2-52).

**Summary Statement of the Proposal.**

*(Provide a brief paragraph concisely describing the HAPC.)*

This HAPC proposal consists of a series of marine reserves in the Aleutian Islands. These marine reserves were designed around areas that had an identified presence of habitat such as high relief coral, sponges, and sea onions, with emphasis on areas with notable benthic structure and/or high concentrations of benthic invertebrates that provide shelter for managed species. For the purpose of this proposal, the proposed marine reserves are intended to be considered both individually and as a system of reserves.

**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 and nurseries for long-lived slow-growing species such as rockfish, and (4) the rarity of Aleutian Islands habitat.

Of particular importance are the aggregations of corals and sponges throughout the Aleutian Islands. 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 and NMFS 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 1999) 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 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 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, McConnaughy *et al.* 2000). NMFS, in the draft programmatic supplemental EIS, has indicated that impacts to habitat from fishing impacts include:

- 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 of coral and sponge were discovered on these dives.

### **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 refugia for commercially and non-commercially fished species and the value of 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 any 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.

While NMFS has analyzed the closures suggested in Alternative 6 of the EFH EIS, they were not broken down by the Aleutian Islands area specifically. It is unclear how NMFS arrived at its numbers and what amount of purported economic loss could be made up through displacement of effort and benefits from habitat areas of refugia over the long-term. The Ocean Conservancy believes that this data is readily available and should be put forward by NMFS.

## ALEUTIAN ISLAND MARINE RESERVE NETWORK BIBLIOGRAPHY

- Andrews, A.H., Cordes, E.E., Mahoney, M.M., Munk, K., Coale, K.H., Caillet, G.M. and Heifetz, J. 2002. Age, growth, and radiometric age validation of a deep-sea, habitat forming gorgonian (*Primnoa resedaeformis*) from the Gulf of Alaska. *Hydrobiologia* 471: 101-110.
- Auster, P.J., and R.W. Langton. 1999. "The effects of fishing on fish habitat." *Fish habitat: Essential Fish Habitat and Rehabilitation.*, L.R. Benaka, ed., American Fisheries Symposium, Bethesda, Maryland. pp. 150-187. *In* National Marine Fisheries Service 2001(a).
- Fossa, J.H., D.M. Furevik, P.B. Mortensen, and M. Hovland. 1999. "Effects of bottom trawling on *Lophelia* deep water coral reefs in Norway. Poster presented at ICES meeting on Ecosystem Effects of Fishing, March 1999. Institute of Marine Research, Bergen, Norway.
- Freese, J.L. (2003 in press). Trawl-induced damage to sponges observed from a research submersible. *Marine Fisheries Review*. In Press.
- Freese, L., Auster, P.J., Heifetz, J., and Wing, B.L. 1999. "Effects of trawling on seafloor habitat and associated invertebrate taxa in the Gulf of Alaska." *Marine Ecology Progress Series*, 182, pp. 119-126.
- Heifetz, J. 2002. Coral in Alaska: distribution, abundance, and species associations. *Hydrobiologia* 471: (1-3): 19-28.
- Krieger, K.J., and B.L. Wing. 2000. "Megafauna associations with gorgonian corals (*Primnoa* spp.) in the Gulf Of Alaska," NMFS, Auke Bay Laboratory, 11305 Glacier Highway, Juneau, Alaska 99801. *In* National Marine Fisheries Service 2001(a).
- McConnaughey, R.A., Mier, K.L., and Dew, C.B. 2000. "An examination of chronic trawling effects on soft-bottom benthos of the eastern Bering Sea." *ICES Journal of Marine Science*, 57(5): 1377-1388.
- Parker, S.J., S.A. Berkeley, J.T. Golden, D.R. Gunderson, J. Heifetz, M.A. Hixon, R. Larson, B.M. Leamon, M.S. Love, J.A. Musick, V.M. O'Connell, S.Ralston, H.J. Weeks, and M.M. Yoklavich. 2003. AFS Policy Statement #31d: Management of Pacific Rockfish. [http://www.fisheries.org/html/Public\\_Affairs/Policy\\_Statements/ps\\_31d.shtml](http://www.fisheries.org/html/Public_Affairs/Policy_Statements/ps_31d.shtml). 14 pages.
- PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans). 2002. The Science of Marine Reserves. <http://www.piscoweb.org>. 22 pages.
- Risk, M.J., McAllister, D.E., and Behnken, L. 1998. "Conservation of cold- and warm-water seafans: Threatened ancient gorgonian groves." *Sea Wind*, 10(4), pp. 20-22.
- Stone, R. P. and P. W. Malecha. 2003. Deep-sea coral habitat in the Aleutian Islands of Alaska. (REF)
- U.S. Dept. of Commerce. 2003a. Preliminary Draft Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska.
- U.S. Dept. of Commerce. 2003b. Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement.
- Witherell, D., and Cathy Coon. 2000. Protecting gorgonian corals off Alaska from fishing impacts. *Proceedings of the First International Symposium on Deep-Sea Corals*: 117-125.

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

