

Draft

**Designating
Habitat Areas of Particular Concern (HAPC)
for West Coast Groundfish:
Beginning the Process**

A proposal to the Habitat Steering Group
of the
Pacific Fishery Management Council
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1. Background: Habitat Areas of Particular Concern

In 1996, the Magnuson-Stevens Fishery Management and Conservation Act was amended by the Sustainable Fisheries Act to include a number of requirements for the identification and protection of marine and anadromous "essential fish habitat"(EFH). In this Act, EFH is defined as: "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity". As a requirement of the Act, regional fishery management councils, with the assistance of the National Marine Fisheries Service (NMFS), were required to amend their fishery management plans to identify and describe EFH for the species covered by the fishery management plans.

While implementing the requirements for identifying EFH, it became clear that when all of the EFH for all the managed species were grouped, EFH essentially became all national waters (including freshwater) with any marine connection extending out to the Exclusive Economic Zone (EEZ). In an effort to better focus the attention of fishery management councils and NMFS on priority habitats, it was suggested through the Interim Final Rule, that there was a need for a description of "habitat areas of particular concern" (HAPC). According to the Interim Final Rule, HAPC should be: "EFH that is judged to be particularly important to the long-term productivity of populations of one or more (federally) managed species, or to be particularly vulnerable to degradation". The Interim Final Rule suggests using at least one of the following criteria for choosing HAPCs:

- 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.

2. How other regional management councils are designating HAPC:

The Magnuson-Stevens Act and the Interim Final Rule offer little guidance to the process of HAPC designation. As a result, each regional fishery management council has been left to determine its own method of HAPC designation. For those councils where progress has been made with regard to HAPC designation, the process has tended to involve ad hoc identifications made by a "habitat" or "technical advisory" committee of the fishery management council, which were then recommended to the voting council. To date, for most councils the simplest choices for HAPC designation were those areas which were "pretty" or already protected in some manner (e.g. Gulf of Mexico Council - sanctuaries, marine protected areas). Nation-wide, a general lack of information on fish/habitat associations is making the process of designating HAPC (as distinct from EFH) difficult.

Some of the regional councils have created relatively structured methods for designating HAPC. The North Pacific Fishery Management Council has produced a

series of draft amendments addressing designation of HAPC. The four Interim Final Rule criteria were applied to habitats and they were described on a "low", "medium" and "high" scale, where any habitats exhibiting "high" ratings were more likely to be listed as HAPC than habitats with "low" ratings. To aid with this process, a call for proposals from the public was made for identifying HAPC. So far, this council has listed as groundfish HAPC all substrates which are covered with living plants or animals. This council is also proposing a number of more specific sites.

The New England Fishery Management Council has created a number of flowcharts and decision matrices to facilitate the identification of HAPC (~~see Appendix 1~~). This council has also drafted plans for the calling of proposals from the public to identify potential HAPC. They are using the NPFMC experience in designing their proposal process. Finally, this council has also drafted a number of decision matrices for the choosing of HAPC management strategies. So far, they have only one groundfish HAPC - cobble areas on the Georges Bank.

The South Atlantic Fishery Management Council has perhaps made the greatest efforts of any council towards habitat issues, including HAPC. Through the use of workshops and committees devoted to specific habitats, this council has produced an extensive "Habitat Management Plan" in which the various habitat types along the southeastern coast have been described in detail. This Habitat Management Plan also contains a description of HAPC for each managed species/species group.

3. The Proposed Pacific Fishery Management Council Method:

As a part of EFH legislation, and to better focus attention on key habitat areas, the Pacific Fishery Management Council needs to implement the process of HAPC designation for its groundfish fishery (for list of groundfishes, see Appendix 1).

There are quite a number of ways to approach designating HAPC and any method whether quantitative or qualitative will be somewhat subjective. The following proposed method for the West Coast is a modified version of the process that was used by the North Pacific Fishery Management Council. The steps are:

1. NMFS to obtain list of potential habitats for HAPC designation from council, fishermen, and public.
2. Forward this information to the HAPC Advisory Group for discussion and application of criteria. This group will make judgment call as to "Low", "Medium" or "High" significance of criteria.
3. NMFS forwards recommendations to the PFMC Habitat Steering Group.
4. Public comment, other council bodies.
5. Comments to PFMC Habitat Steering Group.
6. Submit proposed HAPC designations to Pacific Fishery Management Council for adoption.

The ideas for HAPC designation can come from any number of sources, including public comment at PFMC meetings. But, for a habitat to be seriously considered for HAPC designation, there must be a reasonable amount of information available pertaining to the designation criteria. The importance or significance of the criteria will be judged "Low", "Medium" or "High". Where a habitat exhibits "Low" ratings, there are fewer concerns regarding the significance of the criteria to this habitat and it is less likely to be designated as HAPC. "High" ratings indicate that there are more concerns for this habitat and that this habitat should be considered further for HAPC designation.

4. The HAPC Advisory Group:

The HAPC Advisory Group will be composed of around 14 scientists from a wide range of locations and disciplines, with connections to an even wider number of scientists for consultation, depending on specific needs. It is expected that the HAPC Advisory Group will be composed of representatives from the following organizations:

NMFS – WA, OR, AK, CA and SE region
State governments – WDF&W, ODF&W and CDF&G
Academia – CA and OR
National Marine Sanctuaries – CA or WA
Geologist – from university or USGS

5. Time Frame:

The PFMC is behind the other councils in terms of progress on HAPC issues for groundfish and needs to implement the process this year. In order to be implemented this year, the process for the adoption of HAPC into council process needs to proceed according to the scheduled meeting times for the council and the relevant committees. The proposed time line for this year is briefly outlined below:

- March 2000** – Notify PFMC Habitat Steering Group of intention to proceed with HAPC process this year.
- April 2000** – Briefly summarize to Habitat Steering Group the proposed method of implementation.
- June 2000** – Notify other council committees, public comments.
- September 2000** – Final version of proposed HAPC process submitted to council.
- November 2000** – Final reports of HAPC process.

The process of HAPC designation will need to be an annual process, again following the council schedule. This would be:

December to February – Collect HAPC ideas, collate information related to criteria, provide this information to HAPC Advisory Group for application of criteria.

March/April – Submit summaries of HAPC decisions to Habitat Steering Group for comment.

June – Begin public comment.

September – Final proposed HAPC to PFMC.

November – Final reports of HAPC designation.

6. The HAPC Designation Criteria:

Described in more detail below are the four criteria as specified in the Interim Final Rule, plus some potential additional criteria that may be considered important.

i. The importance of the ecological function provided by the habitat (or location):

The ecological importance of a habitat could be defined as the values or services provided by a habitat to a species at a particular life stage, based on ecological function. Some ecological functions for which a habitat may be of vital importance to the survival of certain species include:

- Primary food source to any or all life stages from larvae to adult
- Primary shelter to any or all life stages from egg to adult
- Migration pathway for all life stages from juvenile to adult
- Primary maturation area for all life stages
- Primary settlement area (sink) for larvae and juveniles
- Primary breeding/spawning area for adults
- Keystone habitat for species and other habitats
- Primary egg/larval dispersal area from which other areas obtain individuals

While considering the ecological function of a habitat, it may be necessary to consider the historic ecological function as well. Some species populations and ranges have been considerably reduced over time and it may be necessary to identify such habitat in the event of a return of the species to historic population levels. It may also be necessary to consider oceanographic features as an important aspect of "habitat" since oceanographic features are often responsible for conditions found at any habitat as well as being responsible for the transport of life stages. In addition, it may be necessary, given a lack of information about a species life history, to infer the ecological importance of a habitat based on the mere presence of a species life stage in that habitat. In a similar manner, it may be necessary to infer the importance of a habitat based on the presence of features (e.g. food, shelter) typically associated with the life history of a species, but where that species has not yet been seen.

ii. Sensitivity of habitat (or location) to human induced degradation:

The degree to which a habitat is sensitive to human induced degradation is variable and depends on how resilient the habitat is to unusual situations. Some of the different factors to consider are:

- Innate tolerance of the habitat to environmental fluctuation
- Physical/chemical buffering capacity of habitat
- Flushing characteristics of habitat
- Proximity of habitat to its ecological limits of existence
- Ability to persist in an altered state
- Structural fragility of habitat
- Required time for recovery between alterations/impacts

iii. Exposure of habitat (or location) to human activities:

The exposure of a habitat refers to the probability that a habitat or location will be exposed to activities, events or conditions that may affect the habitat. Some factors that should be considered are:

- Frequency and intensity of stresses/impacts
- Altered temperature, turbidity, chemical/physical features as a result of human activities such as dredging, fishing, effluent, runoff, oil spill, and development.

iv. Rarity of the habitat type (or rarity of the component features of a location):

Rarity refers to the quantities that remain of a habitat. This can be looked at in a number of ways such as:

- Rarity of this habitat relative to other habitats
- Rarity of this habitat in a regional context
- Features that make this habitat or location unique, including any combination of location, physical features, chemistry and ecology
- How pristine the habitat is relative to the habitat in other areas
- Rate of loss of that habitat

v. Other criteria or factors for consideration:

There may be criteria other than those mentioned in the Interim Final Rule which could help identify or describe HAPC. Some examples are:

- Unusual or high diversity of groundfish or other species within habitat or location
- Temporal / seasonal / annual variability of conditions, e.g. water temperature or salinity

7. Application of HAPC Designation criteria:

Listed below are some examples of habitats/areas that will be submitted to the HAPC Advisory Group. A judgment of the significance of the criteria has been applied. This application of "Low", "Medium" and "High" is purely a measure of "feel" at the moment, reflecting an interpretation of available information. Where it was uncertain as how to best measure something, "Unknown" was written with the hope of getting more information.

Habitat	Ecological Function	Sensitivity	Exposure	Rarity
Kelp Forest	High	High	Medium	Medium
Estuarine Eelgrass	High	High	High	Unknown
Deep water banks	Medium	High	Medium	Unknown
Mid shelf silty/sandy	Low	Low	Low	Unknown

High = very significant, very rare; Low = not so significant or rare

To start with the process of actually designating HAPC this year, Kelp Forests will be put forward as a strong candidate for designation. (See next section).

8. Kelp Forest: A Prime Candidate for HAPC designation

Description:

"Kelp forest" is a habitat defined by its biological community. Though it is typically composed of a wide diversity of macroalgae species, the term "kelp forest" is reserved for those areas with large floating-canopy forming species. Kelp forests are found all along the west coast of the USA, but with few exceptions are restricted to rocky substrates from 5-20m depth. Typically, the forests tend to be dominated structurally by the canopy forming macroalgae *Macrocystis* spp. (Giant Kelp) south of Santa Cruz, CA and *Nereocystis luetkeana* (Bull Kelp) to the north.

Utilization by groundfish:

At least 26 species of groundfish can be commonly found in kelp forest (see Table 1). Three of these groundfish species are currently listed as overfished (Bocaccio, Lingcod, Canary Rockfish). The juveniles of nineteen of these species are known to commonly reside in kelp forests (Table 1) and at least six of these species show a preference for settlement in kelp forest (Table 1). Finally, two managed species of coastal pelagic (Northern Anchovy and Jack Mackerel) as well as juvenile salmon have also been found to commonly reside in kelp forest.

Ecological function:

Kelp forests are communities that typically show a high abundance and diversity of life. The presence of large macroalgae, particularly the larger canopy forming species such as *Macrocystis* and *Nereocystis*, provide complex three-dimensional structure that is attractive to many species of fish. Also, there is strong evidence that drifting, detached or broken kelp fronds stimulate food webs through decomposition.

Sensitivity to human induced degradation:

The distribution and health of kelp are affected by community dynamics, currents, light, temperature, nutrient availability, dispersal of spores, turbidity, exposure to swell, runoff and pollution. In many cases, the distribution of kelp forests is limited to narrow ranges of these parameters. The distribution and abundance of kelp can change with small changes in these parameters, whether natural or man-made.

Exposure of habitat to human activities:

There are many potential man-induced stresses to kelp forests that can be identified along the Pacific coast. Since kelp forests are sensitive to temperature and nutrients, they may be adversely affected by effluent pipelines from factories, power plants and sewage treatment plants. They may also be adversely affected by increased turbidity resulting from the runoff from land development or clearance. Kelp forests are occasionally affected by oil spills. Finally, community dynamics could be affected through such things as sea urchin fisheries and kelp harvesting.

Rarity:

Although kelp forests can be found all along the coast, their distribution tends to be patchy and variable from year to year.

Table 1. List of species commonly found in kelp forests, the juveniles found in kelp forests and for which species kelp forest is a preferred area for settlement.

Species in Kelp	Juveniles in Kelp	Settlement Preference
Black Rockfish	X	X
Black&Yellow Rockfish	X	
Blue Rockfish	X	
Bocaccio	X	X
Brown Rockfish		
Cabezon	X	
Canary Rockfish		
Chilipepper	X	
China Rockfish		
Copper Rockfish	X	X
Gopher Rockfish	X	X
Grass Rockfish	X	
Kelp Greenling	X	X
Kelp Rockfish	X	X
Leopard Shark		
Lingcod		
Olive Rockfish	X	
Pacific Whiting		
Quillback Rockfish	X	
Ratfish		
Speckled Rockfish	X	
Spiny Dogfish		
Stripetail Rockfish	X	
Treefish		
Vermillion Rockfish	X	
Widow Rockfish	X	

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Appendix 1 – Federally Managed Groundfish Species

Butter sole - *Isopsetta isolepis*
 Curifin sole - *Pleuronichthys decurrens*
 Dover sole - *Microstomus pacificus*
 English sole - *Parophrys vetulus*
 Flathead sole - *Hippoglossoides elassodon*
 Pacific sanddab - *Citharichthys sordidus*
 Petrale sole - *Eopsetta jordani*
 Rex sole - *Glyptocephalus zachinus*
 Rock sole - *Lepidopsetta bilineata*
 Sand sole - *Psettichthys melanostictus*
 Starry flounder - *Platichthys stellatus*
 Arrowtooth flounder - *Atheresthes stomias*
 Ratfish - *Hydrolagus colliei*
 Finsecale codling - *Anumora microlepis*
 Pacific rattail - *Coryphaenoides acrolepis*
 Leopard shark - *Triakis semifasciata*
 Soupfin shark - *Galeorhinus zyopterus*
 Spiny dogfish - *Squalus acanthias*
 Big skate - *Raja binoculata*
 Longnose skate - *Raja rhina*
 Pacific ocean perch - *Sebastes alutus*
 Shortbelly rockfish - *Sebastes jordani*
 Widow rockfish - *Sebastes entomelas*
 Aurora rockfish - *Sebastes aurora*
 Bank rockfish - *Sebastes rufus*
 Black rockfish - *Sebastes melanops*
 Black-and-yellow rockfish - *Sebastes chrysomelas*
 Blackgill rockfish - *Sebastes melanostomus*
 Blue rockfish - *Sebastes mystinus*
 Bocaccio - *Sebastes paucispinis*
 Bronzespotted rockfish - *Sebastes gilli*
 Brown rockfish - *Sebastes auriculatus*
 Calico rockfish - *Sebastes dallii*
 California rockfish - *Scorpena guttata*
 Canary rockfish - *Sebastes pinniger*
 Chilipepper - *Sebastes goodie*
 China rockfish - *Sebastes nebulosus*
 Copper rockfish - *Sebastes caurinus*
 Cowcod rockfish - *Sebastes levis*
 Darkblotched rockfish - *Sebastes crameri*
 Dusky rockfish - *Sebastes ciliatus*
 Flag rockfish - *Sebastes rubrivinctus*
 Gopher rockfish - *Sebastes carnatus*
 Grass rockfish - *Sebastes rastrelliger*
 Greenblotched rockfish - *Sebastes rosenblatti*
 Greenspotted rockfish - *Sebastes chlorostictus*
 Greenstriped rockfish - *Sebastes elongatus*
 Harlequin rockfish - *Sebastes variegatus*
 Honeycomb rockfish - *Sebastes umbrosus*
 Kelp rockfish - *Sebastes atrovirens*
 Mexican rockfish - *Sebastes macdonaldi*
 Olive rockfish - *Sebastes serranoides*
 Pink rockfish - *Sebastes eos*
 Quillback rockfish - *Sebastes maliger*
 Reubanded rockfish - *Sebastes babcocki*
 Redstripe rockfish - *Sebastes proriger*
 Rosethorn rockfish - *Sebastes helvomaculatus*
 Rosy rockfish - *Sebastes rosaceus*
 Rougheye rockfish - *Sebastes aleutianus*
 Sharpchin rockfish - *Sebastes zacentrus*
 Shortraker rockfish - *Sebastes borealis*
 Silvergrey rockfish - *Sebastes brevispinis*
 Speckled rockfish - *Sebastes ovalis*
 Splitnose rockfish - *Sebastes diploproa*
 Squarespot rockfish - *Sebastes hopkinsi*
 Starry rockfish - *Sebastes constellatus*
 Stripetail rockfish - *Sebastes saxicola*
 Tiger rockfish - *Sebastes nigrocinctus*
 Treefish - *Sebastes serriceps*
 Vermilion rockfish - *Sebastes miniatus*
 Yelloweye rockfish - *Sebastes ruberrimus*
 Yellowmouth rockfish - *Sebastes reedi*
 Yellowtail rockfish - *Sebastes flavidus*
 Longspine Thornyhead - *Sebastolobus altivelis*
 Shortspine Thornyhead - *Sebastolobus alascanus*
 Cabezon - *Scorpaenichthys marmoratus*
 Kelp greenling - *Hexagrammos decagrammus*
 Lingcod - *Ophiodon elongatus*
 Pacific cod - *Gadus macrocephalus*
 Pacific whiting - *Merluccius productus*
 Sablefish - *Anoplopoma fimbria*